



Natural Resources
Canada

Ressources naturelles
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Our file: A-2024-00053 /TR

March 31, 2025

Dear Susan O'Donnell:

RE: Access to Information Act request

This is in response to your above-referenced request under the *Access to Information Act*, received on April 19, 2024, which reads as follows:

“Provide all communications, including attachments, received by the Minister, Deputy Minister, Assistant Deputy Minister, Director Generals or Directors with respect to the "recycling" or "reprocessing" or re-use of nuclear fuel waste (irradiated nuclear fuel, used fuel, spent fuel, CANDU fuel) for any purpose received between January 1, 2023, and April 19, 2024. Include communications within the department and those received from other federal departments, Crown agencies, regulatory bodies and contracted entities, and any private sector entity or agent including but not limited to the Canadian Nuclear Society, Canadian Nuclear Association, CANDU Owners Group or others, and any non-governmental organization or educational institution or individual.”

Please find enclosed the information you requested that is accessible under the *Access to Information Act*. You will notice that certain information has been withheld from disclosure in accordance with the exemptions and exclusions described in sections 13(1)(a)(b)(c), 15(1) I.A., 16(2), 19(1), 20(1)(b)(c), 21(1)(a)(b)(d) and 69(1)(g) re (a)(c) of the *Act*. We have enclosed the texts of these sections of the *Act* for your information.

.../2

Please be advised that you are entitled to complain to the Information Commissioner concerning the processing of your request within 60 days after the day you become aware that grounds for a complaint exist. In the event you decide to avail yourself of this right, your notice of complaint should be addressed to:

The Information Commissioner of Canada
30 Victoria Street
Gatineau, Quebec K1A 1H3
Telephone: (613) 995-2410 (National Capital Region)
1-800-267-0441 (Toll-free)

Should you have any questions regarding this response, please do not hesitate to contact Tara Rapley at 343-543-4096 or by e-mail at tara.rapley@nrcan-rncan.gc.ca.

Sincerely yours,

for *Nikolina Vaskovic*

Ami Najm
Director
Access to Information and Privacy

Enclosures: Pages 1 to 1201

Access to Information Act

Exemptions and Exclusions

13(1)(a) GOVERNMENT OF A FOREIGN STATE

(a) the government of a foreign state or an institution thereof;

13(1)(b) AN INTERNATIONAL ORGANIZATION

(b) an international organization of states or an institution thereof;

13(1)(c) GOVERNMENT OF A PROVINCE

(c) the government of a province or an institution thereof; or

15(1) I.A. INTERNATIONAL AFFAIRS

The head of a government institution may refuse to disclose any record requested under this Act that contains information the disclosure of which could reasonably be expected to be injurious to the conduct of international affairs.

16(2) SECURITY

16. (2) The head of a government institution may refuse to disclose any record requested under this Act that contains information that could reasonably be expected to facilitate the commission of an offence, including, without restricting the generality of the foregoing, any such information

19(1) PERSONAL INFORMATION

19. (1) Subject to subsection (2), the head of a government institution shall refuse to disclose any record requested under this Act that contains personal information as defined in section 3 of the Privacy Act.

20(1)(b) FINANCIAL, COMMERCIAL, SCIENTIFIC OR TECHNICAL INFORMATION GIVEN IN CONFIDENCE TO THE GOVERNMENT AND TREATED IN A CONSISTENTLY IN A CONFIDENTIAL MANNER BY THE THIRD PARTY

(b) financial, commercial, scientific or technical information that is confidential information supplied to a government institution by a third party and is treated consistently in a confidential manner by the third party;

20(1)(c) INFORMATION THAT COULD RESULT IN A FINANCIAL LOSS OR GAIN

(c) information the disclosure of which could reasonably be expected to result in material financial loss or gain to, or could reasonably be expected to prejudice the competitive position of, a third party; or

21(1)(a) ADVICE OR RECOMMENDATIONS

(a) advice or recommendations developed by or for a government institution or a minister of the Crown;

21(1)(b) CONSULTATIONS OR DELIBERATIONS

(b) an account of consultations or deliberations involving officers or employees of a government institution, a minister of the Crown or the staff of a minister of the Crown,

21(1)(d) PLANS RELATING TO THE MANAGEMENT OF PERSONNEL OR THE ADMINISTRATION OF A GOVERNMENT INSTITUTION THAT HAVE NOT YET BEEN PUT INTO OPERATION

(d) plans relating to the management of personnel or the administration of a government institution that have not yet been put into operation,

69(1)(g) re (a) ANY RECORDS MAKING A REFERENCE TO (A)


Records that contain information about the contents of any record within a class of records referred to in paragraphs (a).

69(1)(g) re (c) ANY RECORDS MAKING A REFERENCE TO (C)

Records that contain information about the contents of any record within a class of records referred to in paragraphs (c).

FW: Re: Moltex Bullets

April 29, 2024 9:53 AM

Subject	FW: Re: Moltex Bullets
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Wilkinson, David
Sent	September 13, 2023 11:42 AM
Attachments	 202030 - Clean Ma...

Declassified by ATIP/
Déclassifié par l'ATIP
PROTECTED B / PROTÉGÉ B

FYI Pui Wai –

Strat Pol is expecting that, in relation to the funding request submitted by Moltex, we'll/they'll be asked to feed into a few quick turn around taskings in the coming week.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Prosser, Kathleen
Sent: Wednesday, September 13, 2023 11:41 AM
To: Cleary, Kaitlyn <Kaitlyn.Cleary@nrcan-rncan.gc.ca>
Cc: Jackson, Candice <Candice.Jackson@nrcan-rncan.gc.ca>
Subject: RE: Re: Moltex Bullets

Hi Kaitlyn,

A few pieces to share. On the reprocessing front, an ATIP that was released in August has created some interest and we received a media request about it yesterday, I've copied that in below as it has DG approved lines related to the document and our current position on the technology. For your awareness, we've reached out to COG to let them know what their document is circulating, and they've noted it was a draft that shows that the industry is thinking about it, submitted for NRCan for consideration in potentially developing a policy, and is not in any way a federal government affiliated piece.

Emilie also shared with us yesterday the current nuclear catalogue held by CPS, which has lines on Moltex – largely the same as what's articulated below.
<https://docs.google.com/document/d/1ZbKqUGP2Xnf4o4tADhINibfpbGDF1P9-/edit#heading=h.xr9qri78n7nz>

A0067712_1-000001

I've also attached for you a standard reply that was developed for the "ban reprocessing" letter campaign led by Nuclear Waste Watch, this was sent out from the DM, so approved to a pretty high level.

Happy to connect if there is more specific info you're looking for!

-Kate

CONTEXT/QUESTIONS:

Reporter has a number of questions for NRCAN regarding nuclear fuel reprocessing. He says a source provided him with documents from NRCAN obtained under the Access to Information Act concerning the reprocessing of spent nuclear fuel. The documents reveal that NRCAN has been studying nuclear fuel reprocessing, including the potential for increased proliferation risk. The documents also reveal that the CANDU Operators Group provided NRCAN with a "strategy to establish a policy on used nuclear fuel reprocessing" in September 2022. The documents indicate that Moltex has made a submission on the draft policy. It is evident from the documents that certain members of Canada's nuclear industry are eager to see the government release such a policy promptly. The COG had wanted it to be issued this spring, but as far as the reporter is aware, no policy has been released yet.

QUESTIONS FOR NRCAN:

- What is the status of NRCAN's efforts to establish a policy on used nuclear fuel reprocessing?
- Why has the policy not been released yet?
- When does NRCAN intend to release the policy?
- When did NRCAN ask the COG for input on this policy?
- Other than the COG, who else has NRCAN consulted on establishing a policy on used nuclear fuel reprocessing?
- What input did these other parties offer?

RESPONSE

- **What is the status of NRCAN's efforts to establish a policy on used nuclear fuel reprocessing?**
 - NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations.
 - There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. In the past, the nuclear industry has not deemed it necessary or cost-effective to reprocess and recycle used nuclear fuel from Canada's reactors given the domestic abundance of economical high-grade uranium. However, some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.

- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.
- NRCAN is aware of the draft document prepared by the CANDU Owners Group through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- **Why has the policy not been released yet?**
 - The Government of Canada does not have a policy specifically in favor of, or banning, spent fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.
- **When does NRCAN intend to release the policy?**
 - Please see above response.
- **When did NRCAN ask the COG for input on this policy?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCAN therefore did not solicit input from COG, the document was shared with NRCAN subject matter experts for discussion and consideration. It does not in any way represent a policy of or by the federal government.
- **Other than the COG, who else has NRCAN consulted on establishing a policy on used nuclear fuel reprocessing?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCAN therefore did not consult anyone on a used nuclear fuel reprocessing policy. During the course of the engagement on the modernization of Canada's Policy on Radioactive Waste Management and Decommissioning, reprocessing was raised through a number of submissions and engagement sessions, in which

other federal government departments participated.

- **What input did these other parties offer?**

- NRCan is not aware of who COG has consulted on their draft spent fuel reprocessing document.

Key messages:

Reprocessing in Canada would require consideration of all relevant factors by the federal government prior to its deployment, including ensuring the health, safety and security of people in Canada, and compliance with non-proliferation safeguards and international treaties. The government of Canada remains deeply committed to the 1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science. Our independent regulator – the Canadian Nuclear Safety Commission – ensures that all licensed nuclear facilities that manage radioactive material do so safely according to the regulatory framework under the *Nuclear Safety and Control Act*.

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Cleary, Kaitlyn <kaitlyn.cleary@nrcan-rncan.gc.ca>
Sent: Wednesday, September 13, 2023 11:24 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCAN-RNCAN.gc.ca>
Cc: Jackson, Candice <Candice.Jackson@nrcan-rncan.gc.ca>
Subject: Re: Moltex Bullets

Declassified by ATIP/
PROTÉGÉ PAR L'ARRP

Hey Kate,

Following up on our conversation, Strat Pol is looking for any recent lines URWD has on Moltex. The tech appears to be popping up in the [news](#) a bit lately and we are proactively trying to get ahead of any incoming taskings.

If you could send some lines by **COB tomorrow** that would be greatly appreciated.

Kaitlyn Cleary (she/her/elle)
Policy Advisor
Nuclear Energy Division | Direction de l'énergie nucléaire
Natural Resources Canada | Ressources naturelles Canada
Kaitlyn.Cleary@nrcan-rncan.gc.ca



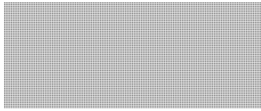
Natural Resources
Canada

Ressources naturelles
Canada

Deputy Minister

Sous-ministre

Ottawa, Canada
K1A 0E4



Dear [REDACTED]

Thank you for your correspondence about the reprocessing of spent nuclear fuel.

The Government of Canada is committed to the safe, effective, and environmentally sound management of radioactive waste. Protecting the health and safety of Canadians and the environment is a top priority when it comes to the Government's approach to nuclear energy.

All radioactive waste generated in Canada is safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science. Our independent regulator—the Canadian Nuclear Safety Commission—ensures that all licensed nuclear facilities that manage radioactive waste do so safely according to the regulatory framework under the *Nuclear Safety and Control Act*.

The Government of Canada is closely monitoring research developments in reprocessing CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government—including safety, security, sustainability, and peaceful use—prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

- 2 -

We appreciate hearing the perspectives of all Canadians on this important issue.

Again, thank you for writing on this important matter.

Yours sincerely,

John Hannaford
(he/him/il)
Deputy Minister
Natural Resources Canada

NUCLEAR CATALOGUE

CONTENTS

General Messages	2
Nuclear Industry	2
AECL and CNL	3
If pressed about the GoCo model	3
Small Modular Reactors	4
Nuclear Energy and SMRs General Messaging	4
Alberta Joining Provincial SMR Memorandum of Understanding	5
Supplementary Messaging	5
Budget 2021 - Small Modular Reactor Program	6
Green Recovery Budget 2021 and SMRs	6
Supplementary Messaging	7
Nuclear Energy	7
If pressed on how the SMR Action Plan will be implemented with no funding for a specific SMR program?	7
SMR Action Plan	8
Supplementary Messaging	9
Claims of Government Suppressing Dissent on Nuclear Energy	9
Key Messages on SMR Action Plan Engagement	9
Radioactive Waste	10
General Key Messages	10
NRCAN Working with Industry to Develop the Policy	11
Clarification of NWMO's Role in the Policy Review	12
If pressed on NWMO's Role	12
Supplementary Messaging – Engagement	13
Stakeholder Expectations on Rad Waste Policy Review	13
If pressed on the NWMO's Strategy engagement process	14

Labrador Waste	14
General Messages	14
If pressed on Canada's management of radioactive waste	14
Reprocessing Used Nuclear Fuel	15
General Messages	15
If pressed on the Policy review covering reprocessing as a topic	16
If pressed on if used nuclear fuel reprocessing is allowed/viable in Canada	16
If pressed on the risk of proliferation of nuclear weapons	17
Moltex Energy Nuclear Fuel Recycling and Reprocessing	17
Governance	18
General Messages	18
Reporting Structure	19
Regulatory Oversight	19
CNSC's environmental assessment process	20
Indigenous Consultation	20
SMR Regulation	21
Uranium	22
General Messages	22
If pressed on uranium weaponization [Global Affairs Canada]:	22
Pressure Tubes	22
Pickering Nuclear Facility	22
Bruce Power	23
If pressed on the CNSC's reporting structure	24

General Messages

Nuclear Industry

- Canada places the highest priority on health, safety, and environmental protection in all aspects of the nuclear industry.
- Nuclear energy accounts for 15 percent of Canada's electricity supply, making it an important part of our zero-carbon energy mix now and in the future.
- Canada has a long history of leadership in nuclear energy, and is well positioned to be a leader in Small Modular Reactor technology as a potential tool to reduce emissions in Canada and abroad for multiple applications, including producing heat without emissions to support the decarbonization of heavy industry.
- It plays an important role in helping meet climate targets and can provide future jobs and economic growth through new innovations such as small modular reactors.

AECL and CNL

- AECL is making significant progress in fulfilling its mandate to enable Canadian nuclear science and technology, and address Canada's radioactive waste management and decommissioning responsibilities.
- Since 2015, it has been delivering on its mandate through a long-term contract with a private sector operator, CNL.
- CNL has effectively and efficiently been making advances in science, innovation and environmental remediation.
- These advances include working efficiently and safely to reduce Canada's radioactive waste liabilities; revitalize the Chalk River Laboratories; and leverage Canadian nuclear expertise and technology to benefit Canadians.

If pressed about the GoCo model

- Canadian Nuclear Laboratories (CNL) is under contract with AECL to manage our sites, including the Chalk River Laboratories in Ontario and the Whiteshell Laboratories in Manitoba, under a Government-owned, Contractor-operated model.

- Under this model, the land, facilities and liabilities are owned by AECL, a federal Crown corporation. CNL employs the workforce and manages the licences and all other aspects of the running of the sites.
- As part of the Government-owned, Contractor-operated model, CNL is meant to be an 'enduring entity', meaning that it will remain as the operator of the Chalk River site (including the NSDF) even after a new contractor is selected. AECL continues to own the site, including the NSDF.
- As part of its oversight role, AECL sets priorities for CNL, manages the contract and assesses CNL's performance to bring value for Canada.

Small Modular Reactors

<https://docs.google.com/document/d/1RtKcFzG3OtRgpUgbmgS3Ca4f6nTHOzrx/edit>

Nuclear Energy and SMRs General Messaging

- SMRs are a potential tool to reduce greenhouse gas emissions while delivering good, middle-class jobs for Canadians as Canada moves towards a low-emissions energy future.
- SMRs can provide a non-emitting source of energy that can support the integration of variable renewables such as wind and solar in regions without access to large scale hydro, and provide an opportunity for Canada to produce both heat and power that can enable us to reach our climate goals.
- As a global leader in nuclear energy and nuclear safety, Canada is well-positioned to be a leader in the safe and responsible development of this new technology.
- The safety of Canadians and the protection of our environment remain top priorities – both for our government and the industry's strong regulator, the Canadian Nuclear Safety Commission (CNSC).
- The CNSC has put significant effort in recent years into refining and building on its regulatory framework and expertise to effectively regulate SMRs, working with partners from around the world.
- SMRs are an opportunity for Canada to produce both heat and power that can enable Canada to reach our climate goals. The Government of Canada recognizes that it has a role to play in supporting this emerging innovative sub-sector, and in enabling Canada to seize these benefits.

- Under Canada's SMR Roadmap, the Government of Canada brought together utilities, provincial and territorial governments, industry and other stakeholders to chart a path forward for SMRs in Canada. It also included early engagement with Indigenous communities and civil society groups.
- Building on this momentum, Canada launched an SMR Action Plan in December 2020. The Plan outlines over 500 concrete actions being taken by over 100 partners from across Canada to advance the development, demonstration and deployment of SMRs for multiple applications at home and abroad.
- Our government has invested in the future of nuclear energy by advancing SMR innovation in Canada through two recent funding announcements:
 - In October 2020, Terrestrial Energy received \$20 million in funding to help the Oakville, Ontario-based company reach a new milestone in the exciting development of its Generation 4 reactor project.
 - In March 2021, Moltex Energy Canada Inc. received over \$50 million to support production of emissions-free energy through the Waste To Stable Salts (WATSS) process that recycles existing used nuclear fuel.
- We will continue working closely with provinces and territories to support their priorities in a responsible way.

Darlington SMR Announcement

- Our government has ambitious climate targets and one of the world's most detailed and concrete plans in the world to help us reach them.
- In the transition to a low-carbon economy and a net-zero future, we must consider all non-emitting technologies, including wind, solar, and nuclear energy.
- Ontario Power Generation has selected GE Hitachi as a partner for the Darlington project, and is progress towards its commitment under Canada's SMR Action Plan to engage in this first-of-a-kind SMR demonstration.
- As provinces, utilities, and their partners seek to develop and deploy SMRs in Canada, the safety of Canadians and the protection of our environment remain the top for the federal government and Canada's independent nuclear regulator, the Canadian Nuclear Safety Commission (CNSC).
- Nuclear energy is already an important part of Ontario's non-emitting energy mix and leverages Ontario's expert labour force and supply chains.

- Canada's nuclear industry is a leader in driving innovation, including in the development of small modular reactors, and our government will continue to work with Ontario, other provinces and territories, and stakeholders, in supporting this emerging sub-sector.

Regarding Small Modular Reactors and the SMR Action Plan:

- The Government of Ontario, Ontario Power Generation, and GE Hitachi are all partners in Canada's SMR Action Plan.
- Canada has a strong history in nuclear energy, much of that rooted in Ontario.
- As provinces, utilities, and their partners seek to develop and deploy SMRs in Canada, the safety of Canadians and the protection of our environment remain the top for the federal government and Canada's independent nuclear regulator, the Canadian Nuclear Safety Commission (CNSC).
- The CNSC has put significant effort in recent years into refining and enhancing its regulatory framework and expertise to effectively and safely regulate SMRs, working with partners from around the world.
- In December 2020, Natural Resources Canada introduced Canada's SMR Action Plan with over 100 partners from across Canada. It outlined over 500 concrete actions that partners are taking to advance the development, demonstration, and deployment of SMR technologies in Canada. This built on Canada's SMR Roadmap of 2018.

Regarding provincial role:

- The federal government understands that partnerships with Canada's provinces are critical to making progress on our shared goal to develop an achievable pathway to zero emissions in the electricity sector. Net-zero electricity is a critical component of economy-wide decarbonisation.
- The federal government recognizes that provinces and territories have jurisdiction over electricity generation, and will continue to engage in dialogue with them on their priorities in this sector.

Responsive Lines:

Will the federal government provide funding for the Darlington Project?

- The Government of Canada has invested in SMR technologies through the Strategic Innovation Fund and is also supporting work through regional development agencies.

- This technology selection is one step in the Darlington SMR demonstration project and we look forward to further conversations with Ontario about its priorities.

What is the federal government's view about the OPG technology selection?

- We acknowledge the leadership of the provincial utilities as they make their own decisions for the electricity generation technologies that align with their respective provincial frameworks.

Alberta Joining Provincial SMR Memorandum of Understanding

- The federal government welcomes the Government of Alberta's decision to formally join Ontario, New Brunswick and Saskatchewan in support of provincial SMR development of this technology.
- The signed MOU among Alberta, Ontario, New Brunswick, and Saskatchewan will contribute to the advancement of Canada's SMR Action Plan.
- It is an example of the type of collaboration that will be needed to make Small modular reactors (SMRs) a reality in Canada.
- SMRs are a potential game-changing technology that could help Canada meet and exceed its emissions targets while creating economic opportunities in a post-pandemic world.
- We look forward to engaging with all interested parties to discuss how we can support their ongoing efforts.

Supplementary Messaging

- The government also welcomes the publication of the provincial utilities' feasibility study, which concludes there is strong potential for SMRs to help us reach net-zero by 2050.
- We will continue to work with the utilities under the SMR Action Plan and look forward to understanding more about their plans to demonstrate and deploy SMR technology when they publish their Strategic Plan.

Budget 2022

- Over \$50 million to the Canadian Nuclear Safety Commission to build the capacity to regulate small modular reactors and work with international partners on global regulatory harmonization.
- Almost \$70 million for Natural Resources Canada to undertake research to minimize waste generated from these reactors; support the creation of a fuel supply chain; strengthen international nuclear cooperation agreements; and enhance domestic safety and security policies and practices.
- \$250 million over four years to Natural Resources Canada to support pre-development activities of clean electricity projects of national significance, including small modular reactors.
- And announcing a broadened role for the Canada Infrastructure Bank to allow it to invest in small modular reactors.

Budget 2021 - Small Modular Reactor Program

G:\0 Strategic Comms\ESS\Programs and Initiatives\ERB\Budget 2021\SMRs

Green Recovery Budget 2021 and SMRs

- Budget 2021 is a plan to fight climate change, help Canadians make their homes greener, build a net-zero economy by investing in world-leading technologies that make industry cleaner, and reduce pollution.
- This plan complements investments made in the Fall Economic Statement 2020 and the Strengthened Climate Plan. Taken together, these lay the foundation for a green recovery that will create opportunities for all Canadians and support our transformation to a low-emissions energy future.
- The Budget emphasized the importance of reducing Canada's greenhouse gas emissions by expediting decarbonization projects, scaling-up clean technology, and accelerating Canada's industrial transformation. That is why it included an additional \$5 billion for the Strategic Innovation Fund (SIF) through the Net Zero Accelerator.
- To date, nearly \$70 million for SMR technologies have already been announced through the SIF.
- Nuclear energy remains a part of Canada's current energy mix and will continue to play a key role in achieving Canada's low-emissions energy future.

- The Government is committed to nuclear innovation and enabling new SMR technologies in a safe and effective way.
- The Canadian Nuclear Safety Commission (CNSC) is recognized as a world-class nuclear regulator who is working, in collaboration with its international partners, to be ready for new technologies when SMR applications from proponents are submitted to the CNSC. The CNSC will never compromise the safety of Canadians and the environment.
- The government will continue to work with provincial and territorial governments, along with their utilities, as they make their own decisions about supplying energy within their jurisdiction that can help meet Canada's climate goals.
- This includes with the four provinces – Alberta, Saskatchewan, Ontario, New Brunswick – that recently formalized an MOU to advance the development and demonstration of SMRs in Canada.

Supplementary Messaging

Nuclear Energy

- The Government of Canada remains committed to nuclear innovation.
- That is why, in March 2021, we announced a \$50.5 million investment for Moltex Energy Canada Inc., including \$47.5 million from the Strategic Innovation Fund, to develop a technology that will produce emissions-free energy through recycling existing spent nuclear fuel.
- At the same time, we announced an investment of \$5 million to NB Power, and \$500,000 to the University of New Brunswick in support of SMR development and deployment in the province.
- We also announced an investment of \$20 million through the Strategic Innovation Fund in a next generation SMR technology by Terrestrial Energy in Ontario last October.
- These investments complement the \$1.2 billion that has gone to revitalize our nuclear laboratories at Chalk River, which will ensure that Canada remains at the cutting edge of nuclear research and development of SMR innovation.

If pressed on how the SMR Action Plan will be implemented with no funding for a specific SMR program?

- In December 2020, we launched Canada's SMR Action Plan with over 100 partners from across Canada to outline over 500 concrete actions that partners are taking to advance the development, demonstration and safe deployment of SMR technologies in Canada.

- The Government of Canada chapter of the SMR Action Plan outlined 27 actions from across government, including from Natural Resources Canada; Innovation, Science and Economic Development Canada; Environment and Climate Change Canada; and others.
 - We are already making progress on our actions in the SMR Action Plan, including:
 - A \$50.5 million investment in Moltex Energy, including \$47.5 million from the Strategic Innovation Fund, to develop a technology that will produce emissions-free energy through recycling existing spent nuclear fuel.
 - A \$20 million investment through the Strategic Innovation Fund in a next generation SMR technology by Terrestrial Energy in Ontario last October. Both investments are clear progress on federal support to cost share SMR projects.
 - A \$5 million investment to NB Power, and \$500,000 to the University of New Brunswick in support of SMR development and deployment in the province. These investments demonstrate strong support for SMR R&D in Atlantic Canada and supporting New Brunswick's Advanced SMR Nuclear Energy Research Cluster.
 - Continuing ongoing dialogue with Indigenous communities, with over a dozen meetings held since the launch of the Action Plan, and establishing a technical working group on nuclear under the Hydrogen Strategy. These actions were identified as federal actions in the SMR Action Plan.
 - An additional \$5 billion has been allocated for the Strategic Innovation Fund's Net Zero Accelerator, for a total program size of \$8 billion over seven years, to help reduce Canada's greenhouse gas emissions by expediting decarbonization projects, scaling-up clean technology, and accelerating Canada's industrial transformation.
 - This new Budget 2021 funding could result in additional support for SMR technologies. Natural Resources Canada will work closely with Innovation Science and Economic Development Canada to identify potential opportunities to help deliver on the federal government actions in the SMR Action Plan.
 - This progress is supported by the launch of a review of Canada's Radioactive Waste Policy Framework, as well as a review of the liability limit for power reactors under the Nuclear Liability and Compensation Act, both of which are distinct commitments in the SMR Action Plan.
-

SMR Action Plan

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\SMRs\SMR Action Plan

- SMRs are a potential game-changing technology that can help Canada meet and exceed its emissions targets while creating economic opportunities in a post-pandemic world.
- The SMR Action Plan outlines a series of concrete actions that partners are taking to advance the development, demonstration and deployment of new SMR technologies in Canada.
- The Plan is the product of consultations with over 100 partners, including provincial and territorial governments, municipalities, Indigenous groups, power utilities, industry, innovators, research institutions and civil society.

Supplementary Messaging

- As a global leader in nuclear energy and nuclear safety, Canada is well positioned to lead in the safe and responsible development and deployment of this new technology.
- The SMR Action Plan shows that Canada is ready to seize this opportunity; we are well positioned to lead the development of this technology.
- SMRs represent the next wave of nuclear innovation with the potential for exciting new applications to complement other sources of clean energy, including:
 - hydrogen economy;
 - industrial decarbonization such as oil sands and mining; and
 - nuclear–renewable (hybrid) energy systems.
- The Canadian Nuclear Safety Commission (CNSC) has put significant effort in recent years into refining and building its regulatory framework and expertise to effectively regulate SMRs, working with partners from around the world.

Claims of Government Suppressing Dissent on Nuclear Energy

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\General\ML - Suppressing Dissent on Nuclear Energy

Key Messages on SMR Action Plan Engagement

- The SMR Action Plan is Canada's plan for the development, demonstration and deployment of SMRs for multiple applications in Canada and abroad.
 - The Action Plan will take stock of efforts underway by governments, Indigenous peoples, industry, and civil society organizations to outline our path forward in the development of small modular reactor technologies in Canada.
 - The process to develop the Action Plan was open and transparent. It included a public-facing website inviting all stakeholders and Canadians to participate. No particular groups or individuals were excluded from doing so.
 - The facilitated discussions brought together more than 100 organizations who have agreed to join the Action Plan, including federal and provincial governments, Indigenous groups, industry, academia, and civil society organizations.
 - The safety of Canadians and the protection of our environment is always the government's top priority with regards to nuclear energy. Canadians expect that all radioactive waste in Canada is safely managed.
 - That's why, in addition to the Action Plan, the government is also taking steps to modernize Canada's existing radioactive waste policy and to establish a strategy for the safe, long-term management of all our nuclear waste, including future waste from small modular reactors. This public consultation process began on November 16.
 - All Canadians will have the opportunity to participate in this process and to make their voices heard.
-

Radioactive Waste

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\Radioactive Waste\~ National Rad Waste Strategy\Launch - November 2020\Comms Products

General Key Messages

(these are only the main messages. additional messages in the folder)

- Nuclear power is poised to provide the next wave of clean, affordable, safe and reliable power, playing a key role in Canada achieving its target of net zero emissions by 2050.

- To support the ongoing and safe use of nuclear energy today, as well as future nuclear development, it is time to look at our radioactive waste policies in Canada.
- All radioactive waste in Canada is currently being safely managed according to international standards at facilities that are licensed and monitored by our world-class regulator - the Canadian Nuclear Safety Commission.
- But we must continue to modernize policies to promote long-term management solutions for Canada's radioactive waste.
- We want to build on our strong radioactive waste policy and ensure that it is based on the best available science, continues to meet international practices, and reflects the values and principles of Canadians.
- That is why we have launched a public engagement process to develop a modernized policy for Radioactive Waste Management.
- This commitment addresses international recommendations and national concerns, ensuring that Canadians can have confidence in the long-term solutions for all of Canada's nuclear waste.
- We have been reviewing our policy since November 2020, including engaging with stakeholders and talking to Canadians to ensure that Canada has a strong policy framework and a clear plan in place for the safe, long-term management of all of our nuclear waste, including any future waste from SMRs.
- Protecting the health and safety of Canadians and the environment is our top priority. Our government is committed to ensuring that Canada has a robust framework in place to ensure the safety of nuclear energy, radiation, and radioactive waste.

NRCan Working with Industry to Develop the Policy

G:\O Strategic Comms\LCES\Issues\ERB\ATIP\A-2020-00424 - Rad Waste Policy

- Natural Resources Canada (NRCan) launched a broad public engagement process in November 2020 to modernize Canada's policy for the management of radioactive waste.
- NRCan has held meetings with non-governmental organizations, Indigenous peoples, municipalities, industry, youth organizations, and academia to seek their input on the policy review. Our objective is to hear the views of a broad spectrum of stakeholders on these issues.

- Prior to the launch, the department met with waste owners, who potentially will be most impacted by this process, to provide them with general information about the engagement process because the current Radioactive Waste Policy clearly requires waste producers and owners to develop plans for their waste.
- The process is open and transparent and we encourage all Canadians, including Indigenous peoples, to provide comments by March 31, 2021, on what should be included in a modernized policy on radioactive waste.
- Following the engagement process, a What We Heard report will be available on our website outlining all feedback, and seeking further public comments. This report will also outline details and the next steps in modernizing the Policy.

Clarification of NWMO's Role in the Policy Review

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\Radioactive Waste\~ National Rad Waste Strategy\Letter to PM-MinORegan

- Protecting the health and safety of Canadians and the environment is the government's top priority when it comes to nuclear energy. This includes ensuring that all radioactive waste in Canada is managed safely for generations to come.
- Between now and fall 2021, the Government of Canada will be conducting a review of Canada's existing Radioactive Waste Policy.
- To be clear, the Minister of Natural Resources is responsible for the Policy Framework and Natural Resources Canada officials will be leading the policy review.
- As part of the process, officials will be engaging with stakeholders and talking to Canadians, including Indigenous peoples, to ensure that all voices are heard.
- Complementing this process, the Nuclear Waste Management Organization (NWMO), which is responsible for implementing Canada's current plan for nuclear fuel waste, has been asked to work with waste owners and engage Canadians to develop a comprehensive integrated strategy to address all forms of radioactive waste.
- The NWMO has been instructed to ensure the strategy takes into account any new direction set out by the Government of Canada's Radioactive Waste Policy review.
- The NWMO does not have a role in NRCan's policy review, and cannot finalize its integrated strategy until that review is complete.

If pressed on NWMO's Role

- Under our existing policy, waste owners are responsible for strategies and plans for the safe management of all waste they produce.
- The NWMO is a not-for-profit organization established under the Nuclear Fuel Waste Act. Since 2010, the NWMO has been implementing Canada's plan for the long-term management of nuclear fuel waste.
- NWMO has the expertise and engagement experience to lead the development of an integrated strategy that addresses all types of waste.
- We are confident that the NWMO will lead a successful dialogue through close collaboration with waste owners and producers, Indigenous peoples and interested Canadians to develop the Integrated Strategy for all waste based on the direction set out by the Government of Canada's Radioactive Waste Policy review.

Supplementary Messaging – Engagement

- Given the unprecedented times we are in and to protect the health and safety of all participants, officials will rely on online tools to ensure that all Canadians have an opportunity to have their voices heard. A virtual engagement hub is available to facilitate participation.
- In addition to the engagement hub, officials will be holding virtual meetings, roundtables, and workshops to solicit feedback. Officials are contacting Indigenous peoples, non-governmental groups, waste producers and owners, and other stakeholders to determine how best to engage.

Stakeholder Expectations on Rad Waste Policy Review

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\Radioactive Waste\~ National Rad Waste Strategy\Letter to PM-MinORegan\NWW - Feb 8, 2021

- Protecting the health and safety of Canadians and the environment is the government's top priority when it comes to nuclear energy. This includes ensuring that all radioactive waste in Canada is managed safely for generations to come.
- Natural Resources Canada (NRCan) launched an open and transparent public engagement process in November 2020 to modernize Canada's policy for the management of radioactive

waste and is committed to hearing Canadians' views on what should be included in a modernized Radioactive Waste Policy.

- While we encourage all Canadians, including Indigenous peoples, to provide comments by March 31, 2021, on what should be included in a modernized policy on radioactive waste, we are flexible if more time is needed to hear a broad spectrum of views to inform the policy review.
- NRCAN has already held meetings with non-governmental organizations, Indigenous peoples, municipalities, provinces, industry, youth organizations, and academia to seek their input, and will continue to do so.
- Steps have also been taken to incorporate feedback received to date, including ensuring that NRCAN work in close collaboration with other government departments who also play a leadership role in the management of radioactive waste.
- Following the engagement process, a What We Heard Report will be available on our website for further public comment.

If pressed on the NWMO's Strategy engagement process

- Complementing the Government of Canada's process, the Nuclear Waste Management Organization (NWMO), which is responsible for implementing Canada's current plan for nuclear fuel waste, has been asked to work with waste owners and engage Canadians to develop a comprehensive integrated strategy to address all forms of radioactive waste.
- The NWMO has been instructed to ensure the strategy takes into account any new direction set out by the Government of Canada's Radioactive Waste Policy review.
- The NWMO does not have a role in NRCAN's policy review, and cannot finalize its integrated strategy until that review is complete.

Labrador Waste

G:\O Strategic Comms\LCES\Issues\ERB\NED & URWD\Radioactive Waste\Reprocessing Used Nuclear Fuel

General Messages

- Protecting the health and safety of Canadians and the environment is the Government of Canada's top priority when it comes to nuclear energy. This includes ensuring that all radioactive waste in Canada is managed safely today and for generations to come.
- Canada has not contemplated, nor have we been consulted on any plans or entered into agreements with Japan or any country to take their radioactive waste for disposal at a deep geological repository in Labrador.
- Any proposed Deep Geological Repository project would need to undertake a rigorous impact assessment that is based on science, evidence and Indigenous knowledge.

If pressed on Canada's management of radioactive waste

- All radioactive waste in Canada is currently being safely managed according to international standards at facilities that are licensed and monitored by our world-class regulator - the Canadian Nuclear Safety Commission.
- But we must continue to modernize policies to promote long-term management solutions for Canada's radioactive waste.
- We want to build on our strong radioactive waste policy and ensure that it is based on the best available science, continues to meet international practices, and reflects the values and principles of Canadians.
- That is why we have launched a public engagement process to develop a modernized policy for Radioactive Waste Management.
- This commitment addresses international recommendations and national concerns, ensuring that Canadians can have confidence in the long-term solutions for all of Canada's nuclear waste.
- Between now and the fall of 2021 we will be reviewing our policy, including engaging with stakeholders and talking to Canadians to ensure that Canada has a strong policy framework and a clear plan in place for the safe, long-term management of all of our nuclear waste, including any future waste from SMRs.
- Protecting the health and safety of Canadians and the environment is our top priority. Our government is committed to ensuring that Canada has a robust framework in place to ensure the safety of nuclear energy, radiation, and radioactive waste.

Reprocessing Used Nuclear Fuel

General Messages

- Protecting the health and safety of Canadians and the environment is the government's top priority when it comes to nuclear energy.
- All activities related to nuclear energy in Canada are subject to the regulatory framework under the Nuclear Safety and Control Act, and all nuclear materials are subject to our international commitments on nuclear safety, security, and non-proliferation.
- There are currently no reprocessing activities in Canada as part of our nuclear fuel waste management, and it is not part of the current CANDU fuel cycle. However, some technology developers may propose future reprocessing activities in Canada, as some SMR technologies could operate on recycled used nuclear fuel.
- Canada manufactures nuclear fuel for its fleet of CANDU reactors and only uses it once through the fuel cycle.
- The nuclear industry has not deemed it necessary or cost-effective to reprocess and recycle used nuclear fuel from Canada's reactors given the domestic abundance of economical high-grade uranium.
- Technologies that recycle used nuclear fuel could potentially provide an option that can reduce the volume or long-term radioactivity of used nuclear fuel while producing low-carbon electricity.
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.
- The Government of Canada is exploring the science, technologies, benefits, and risks associated with any potential technologies that can recycle used nuclear fuel.

If pressed on the Policy review covering reprocessing as a topic

- Currently, there are no reprocessing activities in Canada as part of our nuclear fuel waste management, and it is not part of the current CANDU fuel cycle.
- The Government of Canada is exploring the science, technologies, benefits, and risks associated with any potential technologies that can recycle used nuclear fuel.

- The government is dedicated to ensuring the safe management of radioactive waste. We are committed to aligning our policy with international standards and practices, the best available science, and to having a policy that reflects the values and principles of Canadians.
- Our radioactive waste policy review process is open and transparent, and we welcome input on all aspects that stakeholders feel should be considered as elements of a modernized radioactive waste policy.

If pressed on if used nuclear fuel reprocessing is allowed/viable in Canada

- Nuclear reprocessing is considered a sensitive technology. The international community, including Canada, remains attentive to ensuring that reprocessing technologies do not negatively impact our shared nuclear non-proliferation priorities.
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act, as well as safeguards verification by the International Atomic Energy Agency.
- In addition, any resulting radioactive waste from future technologies must be managed in accordance with the Government of Canada's Radioactive Waste Policy and would also be subject to the regulatory framework under the Nuclear Safety and Control Act.
- The Government of Canada is exploring the science, technologies, benefits and risks associated with reprocessing activities in order to inform any needed future policy development in this area.

If pressed on the risk of proliferation of nuclear weapons

- Canada takes its international commitments seriously. Nuclear technology in Canada is, and will continue to be, used only for peaceful purposes, such as to combat climate change and produce life saving medical isotopes.
- All nuclear materials in Canada, including used nuclear fuel and nuclear waste, are subject to our Comprehensive Safeguards Agreement and Additional Protocol with the International Atomic Energy Agency (IAEA).
- Canada is fully implementing these safeguards, which allow for verification by the IAEA that materials are being used solely for peaceful purposes. To serve that objective, Canada also has in place a robust system of nuclear material accountancy and control as established by the CNSC in accordance with Canada's international obligations.
- Any export of controlled nuclear material, equipment and information must be carried out in accordance with regulatory requirements by the CNSC, Canadian export controls, and in

conformity with Canada's nuclear non-proliferation policy, which requires the application of IAEA safeguards on Canadian supplied nuclear items.

Moltex Energy Nuclear Fuel Recycling and Reprocessing

- Protecting the health and safety of Canadians and the environment is the government's top priority when it comes to nuclear energy.
- All activities related to nuclear energy in Canada are subject to the regulatory framework under the Nuclear Safety and Control Act, and all nuclear materials are subject to our international commitments on nuclear safety, security, and non-proliferation.
- There are currently no reprocessing activities in Canada as part of our nuclear fuel waste management, and it is not part of the current CANDU fuel cycle.
- However, several Small Modular Reactors (SMRs) companies around the world are working to develop technologies that could utilize recycled fuel, including Moltex Energy in Canada.
- Moltex Energy is exploring this technology further, and they, or other technology developers, may propose future reprocessing activities in Canada if the technology development is successful.
- The Government of Canada has provided funding to advance the development of the technology, which will enable a better understanding of it, including both benefits and risks.
- Recycling used CANDU fuel has the potential to power existing and future nuclear reactors while potentially reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository.
- Some SMRs under development in Canada could potentially operate on recycled CANDU fuel.
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

Governance

General Messages

- The Government of Canada places the highest priority on public safety and environmental protection in all nuclear activities. In doing so, Canada has established one of the most stringent and internationally recognized nuclear regulatory systems in the world.
- Our nuclear safety framework is administered by the Canadian Nuclear Safety Commission (CNSC) – an independent regulator that makes objective science and evidence-based decisions that are aligned with international requirements and guidance, and regularly undergoes peer-reviews from world-renowned organizations.
- These peer-reviews continue to reinforce what we already know: Canada has a comprehensive and robust regulatory framework for nuclear safety that aligns with international standards.
- The CNSC's regulatory activities, actions, recommendations and decisions are transparent, accessible, and consistently place public and environmental safety at their core.

Reporting Structure

- The CNSC was established in 2000 under the Nuclear Safety and Control Act to replace the former Atomic Energy Control Board and reports to Parliament through the Minister of Natural Resources on the Commission's activities under the Act.
- The CNSC's regulatory framework consists of laws passed by Parliament that govern the regulation of Canada's nuclear industry, and regulations, licences and documents that the CNSC uses to regulate the nuclear industry.
- While the regulator reports through the Minister of Natural Resources, the CNSC is independent from government. Its role is to regulate the operations of the nuclear industry to ensure public health and safety, and the protection of the environment.
- The Minister has no role to play in nuclear licensing decisions. The Commission has full authority to make decisions related to licensing of nuclear activities and these decisions may be reviewed only by the Federal Court of Canada.
- CNSC members commit to the highest standards of ethics and conflict-of-interest guidelines and carry out their duties impartially.

- The government is confident that the CNSC has the necessary capacity and expertise to review and make independent, science-based decisions, without bias.

Regulatory Oversight

- All final licencing decisions are made by the Independent Commission, an administrative tribunal set up at arm's length from the government.
- CNSC scientific, technical and professional staff review the applications for licences according to regulatory requirements before making final recommendations to the Commission.
- CNSC staff conducts full and transparent environmental and licensing assessments, including public and Indigenous consultation, and applies rigorous oversight throughout the lifecycle of a project.
- This oversight includes an environmental risk assessment for a project every five years, supplemented by the CNSC's own independent environment monitoring program.
- To ensure transparency during the decision-making process, the CNSC provides public opportunities for feedback before making any licensing decision.
- All Canadians, including Indigenous peoples, are encouraged to participate in webinars and public hearings, and provide feedback on key documentation such as Project Descriptions, Commission Member Documents and draft Environmental Impact Statements. These forums provide a detailed look at the requirements, the licensing and the environmental review process of a project.
- The Commission will only approve a project if it concludes that it will be safe for Canadians and the environment – both now and into the future.
- The CNSC is committed to ongoing improvement and periodic review of its regulatory requirements, including those on radioactive wastes and decommissioning activities.

CNSC's environmental assessment process

- Canada's environmental assessment processes were recently reviewed. The Impact Assessment Act 2019 replaced the Canadian Environmental Assessment Act, 2012, broadening the scope of assessments to include environmental, health, social and economic effects, both positive and negative, of a proposed project.

- Any designated project started prior to August 28, 2019 remains under the Canadian Environmental Assessment Act, 2012. Any designated project started after that date is subject to the IAA.
- Each project is unique and these principles are applied consistently and transparently.
- Projects are subject to a thorough regulatory review process that is based on science, evidence, Indigenous knowledge, meaningful consultation with potentially affected Indigenous peoples, public consultation, and that takes into account effects on the environment. During the review process, opportunities for public input are provided at key stages of the EA.

Indigenous Consultation

- The CNSC ensures that Indigenous groups have meaningful opportunities to participate in all aspects of the environmental review and licensing process, in order to meet the Crown's Duty to Consult and to accommodate.
- The CNSC engages local communities and Indigenous groups to provide information and answer questions about the environmental assessment process for proposed projects.
- The consultation approach is flexible and the depth of consultation activities is adjusted to each community based on the concerns and potential impacts on rights that are raised, and the level of interest.
- As a nuclear lifecycle regulator, the CNSC recognizes that consultation activities may continue beyond an environmental review or licensing process throughout the lifecycle of nuclear facilities.
- The objective is to ensure the consultation process is effective and meaningful and that it provides an opportunity to exchange information, explore solutions to avoid or mitigate impacts.
- The CNSC also offers a Participant Funding Program that awards funding to support Indigenous groups and the public participation in the Commission's regulatory review processes.

SMR Regulation

- Canada has a long history of safe and responsible development of nuclear energy and we know that SMRs are the next wave of nuclear innovation and the subject of significant interest across Canada and around the world.
- SMRs represent a new field of innovation and a potential tool to reduce emissions and create jobs and economic growth.
- As Canada's nuclear regulator, the CNSC's role is to regulate the nuclear industry regardless of the technology used. Any proposed project to build and operate an SMR facility will require licensing from the independent Commission.
- The CNSC has put significant effort in recent years into refining and building on its regulatory framework and expertise to effectively regulate SMRs, working with partners from around the world.

- The CNSC has established a Small Modular Reactor Steering Committee to ensure its regulatory framework is solid but flexible enough to address the different risk profiles that SMRs may present in their design and how they are used.
- The CNSC also expects that SMR proponents will engage early with key stakeholders and Indigenous communities. This engagement is an essential element to the regulatory process and a key consideration in the Commission's decision-making process for a licence.
- The Commission will only approve a project if it concludes that it will be safe for Canadians and the environment – both now and into the future.

Uranium

General Messages

- Canada will continue to seek ways to advance uranium cooperation with the U.S. through the Canada-U.S. Joint Action Plan and other fora. Both countries will re-engage following the conclusion of the U.S. policy review undertaken by the Nuclear Fuels Working Group.
- For over 75 years Canada has been a reliable and secure supplier of uranium for the U.S., providing 24 percent of the uranium purchased for U.S. reactors in 2018.
- Canada is the world's second largest producer of uranium and has the world's 3rd largest uranium resources, most of which is found in high-grade deposits in Saskatchewan.
- Canada also has the world's largest uranium refinery and one of the world's largest uranium conversion facilities, which provide nuclear fuel services for customers globally.

If pressed on uranium weaponization [Global Affairs Canada]:

- Canada is strongly committed to non-proliferation and requires peaceful-use assurances from governments before exporting uranium.
- Canada only exports uranium in keeping with our multilateral commitments under the Non-Proliferation Treaty, the Nuclear Suppliers Group and our domestic policy on nuclear non-proliferation.

Pressure Tubes

Pickering Nuclear Facility

- The Government of Canada places the highest priority on public safety and environmental protection in all nuclear activities, and is internationally recognized for having established one of the most stringent nuclear regulatory systems in the world.
- The Canadian Nuclear Safety Commission (CNSC) is recognized as a world-class nuclear regulator and we are confident that it has the necessary capacity and expertise to review and make independent, science-based decisions, without bias, while keeping safety at the core of its decisions.
- That is how we know that the Pickering Nuclear Generating Station (PNGS) is operating safely.
- During the public hearings to consider Ontario Power Generation's (OPG) application for continued operation of PNGS, the CNSC heard the scientific and expert evidence presented, including detailed information on the safety of the pressure tubes. The Commission also heard directly from stakeholders, Indigenous groups, and the public.
- The Commission concluded that OPG was fully qualified to conduct the PNGS operations until December 2024 in a manner that would adequately protect the health and safety of people and the environment and renewed its operating licence.
- The Commission will only approve a project if it concludes that it will be safe for Canadians and the environment – both now and into the future.
- CNSC staff continues to monitor and inspect PNGS operations to verify they remain compliant with license conditions and regulatory requirements. Its staff also regularly monitors the condition of pressure tubes to ensure they meet operational fitness standards.
- The CNSC invites the public to attend the Commission's public meetings, where the Commission receives and considers regular updates on the status of operating nuclear power plants, including the PNGS.

Bruce Power

- We were informed by Bruce Power that some pressure tube inspections of its reactor Units 3 and 6 that are currently shut down for maintenance and refurbishment are indicating higher measurements of hydrogen equivalent (Heq) than predicted, exceeding the limits set out in the power reactor operating licence conditions.
- At no time has there been any risk to the health of the public or the environment. All of the reactor operating and safety systems are designed to automatically and safely shut down if ever any reactor component were compromised. There are multiple layers of safety systems

built into the reactor design to ensure the reactor can always shut down safely and the public and environment remain protected.


- The CNSC has issued a notice to Bruce Power requiring it to review and report to the Commission no later than July 30, 2021 confirmation that its pressure tubes are operating within the licensing basis as established by the commission.
- Commission approval will be required before Bruce Power can return the affected reactor units to service. They will remain shut down until then.
- As part of the CNSC's regulatory oversight, all nuclear power plant licensees in Canada have been issued letters to complete further analysis on the continued safe operation of their pressure tubes and report to the Commission at an upcoming Commission meeting.
- The CNSC has informed the Commission of the pressure tube hydrogen content findings and will present the information at a public commission proceeding in the coming weeks as part of its continued commitment to transparency.
- We require licensees to conduct regular pressure tube inspections. While licensees have the primary responsibility for the safe operations of their reactors, CNSC ensures all regulatory requirements are met.

If pressed on the CNSC's reporting structure

- While the regulator reports to Parliament through the Minister of Natural Resources, the CNSC is independent from government. Its role is to regulate the operations of the nuclear industry to ensure the health and safety of Canadians and the protection of the environment.
- Nuclear licensing decisions are determined by the CNSC. The Commission has full authority to make decisions related to licensing of nuclear activities and these decisions may be reviewed only by the Federal Court of Canada.
- CNSC members commit to the highest standards of ethics and conflict-of-interest guidelines and carry out their duties impartially.
- The government is confident that the CNSC has the necessary capacity and expertise to review and make independent, science-based decisions, without bias, while keeping safety at the core of its decisions.

Fwd: As discussed

April 29, 2024 12:27 PM

Subject	Fwd: As discussed
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	November 15, 2023 5:26 PM
Attachments	 E-DOCS-#71 59942-v1-...

Sent from my iPhone
Begin forwarded message:

From: "Brunarski, Lee" <Lee.Brunarski@cnscccsn.gc.ca>
Date: November 15, 2023 at 4:53:23 PM EST
To: "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>, Tanya.Hinton@international.gc.ca,
"Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>
Cc: "McAllister, Andrew" <Andrew.McAllister@cnscccsn.gc.ca>, "Kanasewich, Elaine"
<Elaine.Kanasewich@cnscccsn.gc.ca>
Subject: RE: As discussed

Good afternoon.

Please find attached the CNSC's proposed responsive messaging for the upcoming meeting.

Thank you,

Lee

CNSC Messaging

CNSC / MOLTEX RELATIONSHIP

CNSC staff – Moltex interactions

- Since 2016, CNSC staff and Moltex Energy representatives have had communications and meetings to ensure the CNSC's processes, requirements and expectations are clear, in relation to a vendor design review of Moltex's reactor design, and, recently, on a proposed service agreement for Moltex's spent fuel recycling design.

Vendor Design Review (SSR-W300)

In May 2021, the CNSC completed a 42-month Phase 1 pre-licensing vendor design review of design information for Moltex Energy's proposed 300-megawatt electric molten salt reactor, the Stable Salt Reactor – Wasteburner, or SSR-W300.

- Overall, the review concluded that Moltex Energy understands and has correctly interpreted the high-level intent of the CNSC's regulatory requirements for the design of nuclear power plants.
- There were CNSC findings from the review, and additional work will be required of Moltex Energy to address them, but they are foreseen to be resolvable through future phases of the process.

Waste To Stable Salt (WATSS) process for recycling nuclear waste to produce SSR-W fuel

Moltex Energy announced on October 30th, 2023, that it has engaged in discussions with the CNSC to formalize a service agreement to help facilitate a bilateral dialogue on its spent fuel recycling design.

- These discussions are still in a preliminary phase and the parameters of the dialogue, including what elements of the process the CNSC might be asked to review, have not been confirmed.

Moltex has stated that its WATSS technology is "proliferation-resistant" and will significantly reduce waste stockpiles.

- The CNSC has not received or had an opportunity to review any technical information related to Moltex Energy's proposed WATSS process so is unable to comment on any public information or claims made about the process.

CNSC OVERSIGHT OF REPROCESSING FACILITIES

Status

- The CNSC has not received an application or any information for review related to a proposed reprocessing facility for used nuclear fuel in Canada.

CNSC Regulatory Framework

- The CNSC has a robust, performance-based and peer-reviewed nuclear regulatory framework under the *Nuclear Safety and Control Act* and is reviewing the framework to assess its readiness for a potential application for a reprocessing facility.
- If a reprocessing facility for used nuclear fuel was approved in Canada, CNSC staff would ensure that all licence conditions, regulatory requirements and international commitments and obligations are complied with.
- CNSC staff have considerable experience with regulating nuclear processing facilities – a reprocessing facility for used nuclear fuel would introduce novel variables, but CNSC staff would perform their duties as with any other nuclear facility, with a focus on safety at all times.

Learning from international experience

- As an organization committed to continuous learning and collaboration, the CNSC has and will continue to engage with international nuclear regulator counterparts on their experiences with regulating used nuclear fuel reprocessing facilities.

INTERNATIONAL OBLIGATIONS / IMPLICATIONS

Research and development

- Proposed or actual research and development activities related to research and development on the nuclear fuel cycle, including reprocessing of used nuclear fuel, would trigger safeguards obligations under safeguards agreements between Canada and the International Atomic Energy Agency, or IAEA, and measures arising from the Treaty on the Non-Proliferation of Nuclear Weapons.
 - The CNSC would work with the IAEA to ensure compliance with all related obligations and measures, including reporting requirements.

International concerns

- The CNSC is aware and has been monitoring letters to Prime Minister Trudeau in 2021 and most recently in September of this year, expressing concerns with the potential introduction of reprocessing of used nuclear fuel in Canada.
 - The CNSC has not received any regulatory or technical information related to a proposed reprocessing facility for used nuclear fuel in Canada so is not in a position to comment on anything raised in the 2021 or 2023 letters to Prime Minister Trudeau.

The 3 S's – safeguards, security and safety

- The CNSC would only approve an application based on meeting the requirements for the 3 S's – safeguards, security, and safety
- Safeguards are linked to our obligation to provide reporting of nuclear material and activities to the IAEA under the Treaty-level safeguards agreement and the additional protocol.
 - By providing the information and access for verification to the IAEA, the IAEA would be in a position to confirm all activities are peaceful.
- Security is implemented in Canada to international requirements or higher, in particular with respect to the Convention on the Physical Protection of Nuclear Material, which spells out security requirements for nuclear material and facilities.

Fwd: As discussed

April 29, 2024 12:25 PM

Subject	Fwd: As discussed
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	November 16, 2023 9:27 AM
Attachments	 Points for Roundtab...

FYI

Sent from my iPhone
Begin forwarded message:

From: Tanya.Hinton@international.gc.ca
Date: November 16, 2023 at 9:25:53 AM EST
To: Lee.Brunarski@cnscccsn.gc.ca, "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>, "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>
Cc: Andrew.McAllister@cnscccsn.gc.ca, Elaine.Kanasewich@cnscccsn.gc.ca
Subject: RE: As discussed

Colleagues,

Thank you to everyone for sharing your TPs. Attached are the responsive lines that we have prepared at GAC.

Tanya

From: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>
Sent: Wednesday, November 15, 2023 4:53 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: McAllister, Andrew <Andrew.McAllister@cnscccsn.gc.ca>; Kanasewich, Elaine <Elaine.Kanasewich@cnscccsn.gc.ca>
Subject: RE: As discussed

Good afternoon.

Please find attached the CNSC's proposed responsive messaging for the upcoming meeting.

Thank you,

Lee

UNCLASSIFIED

RESPONSIVE POINTS FOR ROUNDTABLE DISCUSSION OF REPROCESSING NUCLEAR FUEL WASTE

GAC's role

- The Non-Proliferation and Disarmament Division of Global Affairs Canada is responsible for Canada's non-proliferation, arms control, disarmament and space policy.
- My section focuses on nuclear non-proliferation, including bilateral nuclear cooperation and export controls.
- We manage Canada's overall engagement with the International Atomic Energy Agency – IAEA – through our permanent mission to the IAEA in Vienna and representing Canada on the IAEA Board of Governors.
- We also have a role in ensuring that Canada upholds our international legal obligations, including:
 - The Treaty on the Non-Proliferation of Nuclear Weapons;
 - IAEA Comprehensive Safeguards Agreement and Additional Protocol; and
 - International nuclear safety and security conventions.
- In this regard, we work closely with other departments and agencies, including those here today, who are responsible for implementing these obligations in Canada.

GAC's engagement with Moltex

- Over the past few years, GAC has engaged with representatives of Moltex to understand more about their work and to provide an overview of Canada's nuclear non-proliferation policy and import and export controls.

Non-Proliferation Policy

- As a party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), Canada has committed:
 - not to manufacture or acquire nuclear weapons;
 - to accept International Atomic Energy Agency (IAEA) safeguards on all nuclear activities in Canada; and
 - to facilitate nuclear cooperation, while ensuring that Canadian nuclear exports are used solely for peaceful purposes.
- To facilitate nuclear cooperation with other countries, in line with these obligations, Canada's nuclear non-proliferation policy requires that we conclude legally binding Nuclear Cooperation Agreements – or NCAs - that include a commitment to use Canadian nuclear exports only for peaceful purposes and require IAEA safeguards to be in place, before nuclear cooperation and trade can commence. All provisions and obligations in the NCAs are fully reciprocal.
- In addition, the agreements require consent prior to reprocessing nuclear material that is subject to the NCA. This would apply to Canadian nuclear material abroad and foreign obligated nuclear material in Canada.
- This is in part because we recognize that nuclear reprocessing is a sensitive technology that requires appropriate non-proliferation assurances to be in place.

- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework as well as safeguards verification by the IAEA.
- Canada remains committed to upholding the international nuclear non-proliferation regime, including the NPT and the full implementation of IAEA safeguards to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

IAEA Safeguards

- All nuclear materials in Canada, including used nuclear fuel and nuclear waste, are subject to our Comprehensive Safeguards Agreement and Additional Protocol with the International Atomic Energy Agency (IAEA).
- Canada remains committed to the full implementation of safeguards, which allows for verification by the IAEA that materials are being used solely for peaceful purposes. To serve that objective, Canada also has in place a robust system of nuclear material accountancy and control as established by the CNSC in accordance with international standards.

Four Letters from US experts

- While the government is not currently developing a reprocessing policy, it is monitoring closely the research and development of technologies related to reprocessing of used fuel in Canada, and it remains receptive to understanding the science, benefits, and risks associated with potential technologies.
- Reprocessing in Canada requires consideration of all relevant factors by the federal government – including safety, security, sustainability, and non-proliferation – prior to its deployment.
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework as well as safeguards verification by the IAEA.
- Canada remains committed to the NPT, including the full implementation of IAEA safeguards to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

FMCT

- Canada has played a leading role for many years in efforts towards a fissile material cut-off treaty, that would prohibit the production of fissionable material for nuclear weapons.
- Such a treaty would not apply to materials for civilian uses, as there are existing reprocessing facilities that produce fuel for civilian nuclear reactors.

RE: FOR ACTION: Media request (Rapid) // Moltex // John Woodside (National Observer)

April 29, 2024 11:21 AM

Subject	RE: FOR ACTION: Media request (Rapid) // Moltex // John Woodside (National Observer)
From	Adams, Emilie (she, her elle, elle)
To	Wilkinson, David
Cc	Brady, Daniel; Yuen, Pui Wai; Prosser, Kathleen
Sent	September 26, 2023 3:54 PM

UNCLASSIFIED - NON CLASSIFIÉ

Hi Dave,

It is far too old to refer people to it at this point. And Michael and team at MRU don't craft the messaging on media calls – they only review and share for approvals after you receive Sector DG approvals. However, if you believe the lines are still useful, please take from the Catalogue as you see fit to help with the response.

Thanks,
Emilie

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: Tuesday, September 26, 2023 3:46 PM
To: Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: FW: FOR ACTION: Media request (Rapid) // Moltex // John Woodside (National Observer)

UNCLASSIFIED - NON CLASSIFIÉ

Hi Emilie,

I'm linking the Nuclear Catalogue below that Kate shared with me, which I believe is your product. It has some lines on Moltex that may be useful. I'm not sure what level of approval the Catalogue passed through, so I would leave it to your discretion if you would like to refer Michael to it.

[Nuclear Catalogue.docx - Google Docs](#)

Thanks,

Dave

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Tuesday, September 26, 2023 2:47 PM
To: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Piercey, Christopher (he, him | il, lui) <christopher.piercey@NRCan-RNCan.gc.ca>

A0067715_1-000041

Cc: Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>
Subject: FOR ACTION: Media request (Rapid) // Moltex // John Woodside (National Observer)

UNCLASSIFIED - NON CLASSIFIÉ

Hello Chelsea and team,
 We have a new media call via MINO on the use of reprocessed nuclear fuel. Are you able to speak to this call?
 Best,
 Michael

REPORTER DEADLINE:
 2023/09/26 04:00 PM

SECTOR:
CALL TYPE: Written Response/ Réponse écrite
CODE: Rapid
OUTLET: National Observer
REPORTER: John Woodside

CONTEXT/QUESTIONS:

I'm hoping you can provide the latest info on a policy process with the CANDU Owners Group, Nuclear Safety Commission and Global Affairs relating to the use of reprocessed nuclear fuel. A [letter](#) sent to the PMO today says:

"Recently, however, we learned, through an Access to Information Act request by a Canadian academic, that, despite the strong opposition of Moltex, the Ministry of Natural Resources launched a policy-making process on reprocessing in collaboration with the international CANDU Owners Group and in consultation with the Ministry of Foreign Affairs and the Nuclear Safety Commission."

So my request is about any info the department can provide re: this process. Have there been any decisions? Any public documents you can share? And further, I'd appreciate a comment attributable to Minister Wilkinson about Moltex specifically. This company has received government support in the past, but with mounting concerns about the technology, I'd like to know how fully the federal government backs this project.

RESPONSE

Michael MacDonald (he, him, his / il, lui, son)
 Communications Advisor | Conseiller en communications
 Media Relations | Relations avec les médias

Natural Resources Canada | Ressources naturelles Canada

A0067715_2-000042

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Natural Resources
Canada

Ressources naturelles
Canada

NUCLEAR CATALOGUE

CONTENTS

General Messages	2
Nuclear Industry	2
AECL and CNL	3
If pressed about the GoCo model	3
Small Modular Reactors	4
Nuclear Energy and SMRs General Messaging	4
Alberta Joining Provincial SMR Memorandum of Understanding	5
Supplementary Messaging	5
Budget 2021 - Small Modular Reactor Program	6
Green Recovery Budget 2021 and SMRs	6
Supplementary Messaging	7
Nuclear Energy	7
If pressed on how the SMR Action Plan will be implemented with no funding for a specific SMR program?	7
SMR Action Plan	8
Supplementary Messaging	9
Claims of Government Suppressing Dissent on Nuclear Energy	9
Key Messages on SMR Action Plan Engagement	9
Radioactive Waste	10
General Key Messages	10
NRCAN Working with Industry to Develop the Policy	11
Clarification of NWMO's Role in the Policy Review	12
If pressed on NWMO's Role	12
Supplementary Messaging – Engagement	13
Stakeholder Expectations on Rad Waste Policy Review	13
If pressed on the NWMO's Strategy engagement process	14

Labrador Waste	14
General Messages	14
If pressed on Canada's management of radioactive waste	14
Reprocessing Used Nuclear Fuel	15
General Messages	15
If pressed on the Policy review covering reprocessing as a topic	16
If pressed on if used nuclear fuel reprocessing is allowed/viable in Canada	16
If pressed on the risk of proliferation of nuclear weapons	17
Moltex Energy Nuclear Fuel Recycling and Reprocessing	17
Governance	18
General Messages	18
Reporting Structure	19
Regulatory Oversight	19
CNSC's environmental assessment process	20
Indigenous Consultation	20
SMR Regulation	21
Uranium	22
General Messages	22
If pressed on uranium weaponization [Global Affairs Canada]:	22
Pressure Tubes	22
Pickering Nuclear Facility	22
Bruce Power	23
If pressed on the CNSC's reporting structure	24

General Messages

Nuclear Industry

- Canada places the highest priority on health, safety, and environmental protection in all aspects of the nuclear industry.
- Nuclear energy accounts for 15 percent of Canada's electricity supply, making it an important part of our zero-carbon energy mix now and in the future.
- Canada has a long history of leadership in nuclear energy, and is well positioned to be a leader in Small Modular Reactor technology as a potential tool to reduce emissions in Canada and abroad for multiple applications, including producing heat without emissions to support the decarbonization of heavy industry.
- It plays an important role in helping meet climate targets and can provide future jobs and economic growth through new innovations such as small modular reactors.

AECL and CNL

- AECL is making significant progress in fulfilling its mandate to enable Canadian nuclear science and technology, and address Canada's radioactive waste management and decommissioning responsibilities.
- Since 2015, it has been delivering on its mandate through a long-term contract with a private sector operator, CNL.
- CNL has effectively and efficiently been making advances in science, innovation and environmental remediation.
- These advances include working efficiently and safely to reduce Canada's radioactive waste liabilities; revitalize the Chalk River Laboratories; and leverage Canadian nuclear expertise and technology to benefit Canadians.

If pressed about the GoCo model

- Canadian Nuclear Laboratories (CNL) is under contract with AECL to manage our sites, including the Chalk River Laboratories in Ontario and the Whiteshell Laboratories in Manitoba, under a Government-owned, Contractor-operated model.

- Under this model, the land, facilities and liabilities are owned by AECL, a federal Crown corporation. CNL employs the workforce and manages the licences and all other aspects of the running of the sites.
- As part of the Government-owned, Contractor-operated model, CNL is meant to be an 'enduring entity', meaning that it will remain as the operator of the Chalk River site (including the NSDF) even after a new contractor is selected. AECL continues to own the site, including the NSDF.
- As part of its oversight role, AECL sets priorities for CNL, manages the contract and assesses CNL's performance to bring value for Canada.

Small Modular Reactors

<https://docs.google.com/document/d/1RtKcFzG3OtRgpUgbmgS3Ca4f6nTHOzrx/edit>

Nuclear Energy and SMRs General Messaging

- SMRs are a potential tool to reduce greenhouse gas emissions while delivering good, middle-class jobs for Canadians as Canada moves towards a low-emissions energy future.
- SMRs can provide a non-emitting source of energy that can support the integration of variable renewables such as wind and solar in regions without access to large scale hydro, and provide an opportunity for Canada to produce both heat and power that can enable us to reach our climate goals.
- As a global leader in nuclear energy and nuclear safety, Canada is well-positioned to be a leader in the safe and responsible development of this new technology.
- The safety of Canadians and the protection of our environment remain top priorities – both for our government and the industry's strong regulator, the Canadian Nuclear Safety Commission (CNSC).
- The CNSC has put significant effort in recent years into refining and building on its regulatory framework and expertise to effectively regulate SMRs, working with partners from around the world.
- SMRs are an opportunity for Canada to produce both heat and power that can enable Canada to reach our climate goals. The Government of Canada recognizes that it has a role to play in supporting this emerging innovative sub-sector, and in enabling Canada to seize these benefits.

- Under Canada's SMR Roadmap, the Government of Canada brought together utilities, provincial and territorial governments, industry and other stakeholders to chart a path forward for SMRs in Canada. It also included early engagement with Indigenous communities and civil society groups.
- Building on this momentum, Canada launched an SMR Action Plan in December 2020. The Plan outlines over 500 concrete actions being taken by over 100 partners from across Canada to advance the development, demonstration and deployment of SMRs for multiple applications at home and abroad.
- Our government has invested in the future of nuclear energy by advancing SMR innovation in Canada through two recent funding announcements:
 - In October 2020, Terrestrial Energy received \$20 million in funding to help the Oakville, Ontario-based company reach a new milestone in the exciting development of its Generation 4 reactor project.
 - In March 2021, Moltex Energy Canada Inc. received over \$50 million to support production of emissions-free energy through the Waste To Stable Salts (WATSS) process that recycles existing used nuclear fuel.
- We will continue working closely with provinces and territories to support their priorities in a responsible way.

Darlington SMR Announcement

- Our government has ambitious climate targets and one of the world's most detailed and concrete plans in the world to help us reach them.
- In the transition to a low-carbon economy and a net-zero future, we must consider all non-emitting technologies, including wind, solar, and nuclear energy.
- Ontario Power Generation has selected GE Hitachi as a partner for the Darlington project, and is progress towards its commitment under Canada's SMR Action Plan to engage in this first-of-a-kind SMR demonstration.
- As provinces, utilities, and their partners seek to develop and deploy SMRs in Canada, the safety of Canadians and the protection of our environment remain the top for the federal government and Canada's independent nuclear regulator, the Canadian Nuclear Safety Commission (CNSC).
- Nuclear energy is already an important part of Ontario's non-emitting energy mix and leverages Ontario's expert labour force and supply chains.

- Canada's nuclear industry is a leader in driving innovation, including in the development of small modular reactors, and our government will continue to work with Ontario, other provinces and territories, and stakeholders, in supporting this emerging sub-sector.

Regarding Small Modular Reactors and the SMR Action Plan:

- The Government of Ontario, Ontario Power Generation, and GE Hitachi are all partners in Canada's SMR Action Plan.
- Canada has a strong history in nuclear energy, much of that rooted in Ontario.
- As provinces, utilities, and their partners seek to develop and deploy SMRs in Canada, the safety of Canadians and the protection of our environment remain the top for the federal government and Canada's independent nuclear regulator, the Canadian Nuclear Safety Commission (CNSC).
- The CNSC has put significant effort in recent years into refining and enhancing its regulatory framework and expertise to effectively and safely regulate SMRs, working with partners from around the world.
- In December 2020, Natural Resources Canada introduced Canada's SMR Action Plan with over 100 partners from across Canada. It outlined over 500 concrete actions that partners are taking to advance the development, demonstration, and deployment of SMR technologies in Canada. This built on Canada's SMR Roadmap of 2018.

Regarding provincial role:

- The federal government understands that partnerships with Canada's provinces are critical to making progress on our shared goal to develop an achievable pathway to zero emissions in the electricity sector. Net-zero electricity is a critical component of economy-wide decarbonisation.
- The federal government recognizes that provinces and territories have jurisdiction over electricity generation, and will continue to engage in dialogue with them on their priorities in this sector.

Responsive Lines:

Will the federal government provide funding for the Darlington Project?

- The Government of Canada has invested in SMR technologies through the Strategic Innovation Fund and is also supporting work through regional development agencies.

- This technology selection is one step in the Darlington SMR demonstration project and we look forward to further conversations with Ontario about its priorities.

What is the federal government's view about the OPG technology selection?

- We acknowledge the leadership of the provincial utilities as they make their own decisions for the electricity generation technologies that align with their respective provincial frameworks.

Alberta Joining Provincial SMR Memorandum of Understanding

- The federal government welcomes the Government of Alberta's decision to formally join Ontario, New Brunswick and Saskatchewan in support of provincial SMR development of this technology.
- The signed MOU among Alberta, Ontario, New Brunswick, and Saskatchewan will contribute to the advancement of Canada's SMR Action Plan.
- It is an example of the type of collaboration that will be needed to make Small modular reactors (SMRs) a reality in Canada.
- SMRs are a potential game-changing technology that could help Canada meet and exceed its emissions targets while creating economic opportunities in a post-pandemic world.
- We look forward to engaging with all interested parties to discuss how we can support their ongoing efforts.

Supplementary Messaging

- The government also welcomes the publication of the provincial utilities' feasibility study, which concludes there is strong potential for SMRs to help us reach net-zero by 2050.
- We will continue to work with the utilities under the SMR Action Plan and look forward to understanding more about their plans to demonstrate and deploy SMR technology when they publish their Strategic Plan.

Budget 2022

- Over \$50 million to the Canadian Nuclear Safety Commission to build the capacity to regulate small modular reactors and work with international partners on global regulatory harmonization.
- Almost \$70 million for Natural Resources Canada to undertake research to minimize waste generated from these reactors; support the creation of a fuel supply chain; strengthen international nuclear cooperation agreements; and enhance domestic safety and security policies and practices.
- \$250 million over four years to Natural Resources Canada to support pre-development activities of clean electricity projects of national significance, including small modular reactors.
- And announcing a broadened role for the Canada Infrastructure Bank to allow it to invest in small modular reactors.

Budget 2021 - Small Modular Reactor Program

G:\0 Strategic Comms\ESS\Programs and Initiatives\ERB\Budget 2021\SMRs

Green Recovery Budget 2021 and SMRs

- Budget 2021 is a plan to fight climate change, help Canadians make their homes greener, build a net-zero economy by investing in world-leading technologies that make industry cleaner, and reduce pollution.
- This plan complements investments made in the Fall Economic Statement 2020 and the Strengthened Climate Plan. Taken together, these lay the foundation for a green recovery that will create opportunities for all Canadians and support our transformation to a low-emissions energy future.
- The Budget emphasized the importance of reducing Canada's greenhouse gas emissions by expediting decarbonization projects, scaling-up clean technology, and accelerating Canada's industrial transformation. That is why it included an additional \$5 billion for the Strategic Innovation Fund (SIF) through the Net Zero Accelerator.
- To date, nearly \$70 million for SMR technologies have already been announced through the SIF.
- Nuclear energy remains a part of Canada's current energy mix and will continue to play a key role in achieving Canada's low-emissions energy future.

- The Government is committed to nuclear innovation and enabling new SMR technologies in a safe and effective way.
- The Canadian Nuclear Safety Commission (CNSC) is recognized as a world-class nuclear regulator who is working, in collaboration with its international partners, to be ready for new technologies when SMR applications from proponents are submitted to the CNSC. The CNSC will never compromise the safety of Canadians and the environment.
- The government will continue to work with provincial and territorial governments, along with their utilities, as they make their own decisions about supplying energy within their jurisdiction that can help meet Canada's climate goals.
- This includes with the four provinces – Alberta, Saskatchewan, Ontario, New Brunswick – that recently formalized an MOU to advance the development and demonstration of SMRs in Canada.

Supplementary Messaging

Nuclear Energy

- The Government of Canada remains committed to nuclear innovation.
- That is why, in March 2021, we announced a \$50.5 million investment for Moltex Energy Canada Inc., including \$47.5 million from the Strategic Innovation Fund, to develop a technology that will produce emissions-free energy through recycling existing spent nuclear fuel.
- At the same time, we announced an investment of \$5 million to NB Power, and \$500,000 to the University of New Brunswick in support of SMR development and deployment in the province.
- We also announced an investment of \$20 million through the Strategic Innovation Fund in a next generation SMR technology by Terrestrial Energy in Ontario last October.
- These investments complement the \$1.2 billion that has gone to revitalize our nuclear laboratories at Chalk River, which will ensure that Canada remains at the cutting edge of nuclear research and development of SMR innovation.

If pressed on how the SMR Action Plan will be implemented with no funding for a specific SMR program?

- In December 2020, we launched Canada's SMR Action Plan with over 100 partners from across Canada to outline over 500 concrete actions that partners are taking to advance the development, demonstration and safe deployment of SMR technologies in Canada.

- The Government of Canada chapter of the SMR Action Plan outlined 27 actions from across government, including from Natural Resources Canada; Innovation, Science and Economic Development Canada; Environment and Climate Change Canada; and others.
 - We are already making progress on our actions in the SMR Action Plan, including:
 - A \$50.5 million investment in Moltex Energy, including \$47.5 million from the Strategic Innovation Fund, to develop a technology that will produce emissions-free energy through recycling existing spent nuclear fuel.
 - A \$20 million investment through the Strategic Innovation Fund in a next generation SMR technology by Terrestrial Energy in Ontario last October. Both investments are clear progress on federal support to cost share SMR projects.
 - A \$5 million investment to NB Power, and \$500,000 to the University of New Brunswick in support of SMR development and deployment in the province. These investments demonstrate strong support for SMR R&D in Atlantic Canada and supporting New Brunswick's Advanced SMR Nuclear Energy Research Cluster.
 - Continuing ongoing dialogue with Indigenous communities, with over a dozen meetings held since the launch of the Action Plan, and establishing a technical working group on nuclear under the Hydrogen Strategy. These actions were identified as federal actions in the SMR Action Plan.
 - An additional \$5 billion has been allocated for the Strategic Innovation Fund's Net Zero Accelerator, for a total program size of \$8 billion over seven years, to help reduce Canada's greenhouse gas emissions by expediting decarbonization projects, scaling-up clean technology, and accelerating Canada's industrial transformation.
 - This new Budget 2021 funding could result in additional support for SMR technologies. Natural Resources Canada will work closely with Innovation Science and Economic Development Canada to identify potential opportunities to help deliver on the federal government actions in the SMR Action Plan.
 - This progress is supported by the launch of a review of Canada's Radioactive Waste Policy Framework, as well as a review of the liability limit for power reactors under the Nuclear Liability and Compensation Act, both of which are distinct commitments in the SMR Action Plan.
-

SMR Action Plan

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\SMRs\SMR Action Plan

- SMRs are a potential game-changing technology that can help Canada meet and exceed its emissions targets while creating economic opportunities in a post-pandemic world.
- The SMR Action Plan outlines a series of concrete actions that partners are taking to advance the development, demonstration and deployment of new SMR technologies in Canada.
- The Plan is the product of consultations with over 100 partners, including provincial and territorial governments, municipalities, Indigenous groups, power utilities, industry, innovators, research institutions and civil society.

Supplementary Messaging

- As a global leader in nuclear energy and nuclear safety, Canada is well positioned to lead in the safe and responsible development and deployment of this new technology.
- The SMR Action Plan shows that Canada is ready to seize this opportunity; we are well positioned to lead the development of this technology.
- SMRs represent the next wave of nuclear innovation with the potential for exciting new applications to complement other sources of clean energy, including:
 - hydrogen economy;
 - industrial decarbonization such as oil sands and mining; and
 - nuclear–renewable (hybrid) energy systems.
- The Canadian Nuclear Safety Commission (CNSC) has put significant effort in recent years into refining and building its regulatory framework and expertise to effectively regulate SMRs, working with partners from around the world.

Claims of Government Suppressing Dissent on Nuclear Energy

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\General\ML - Suppressing Dissent on Nuclear Energy

Key Messages on SMR Action Plan Engagement

- The SMR Action Plan is Canada's plan for the development, demonstration and deployment of SMRs for multiple applications in Canada and abroad.
- The Action Plan will take stock of efforts underway by governments, Indigenous peoples, industry, and civil society organizations to outline our path forward in the development of small modular reactor technologies in Canada.
- The process to develop the Action Plan was open and transparent. It included a public-facing website inviting all stakeholders and Canadians to participate. No particular groups or individuals were excluded from doing so.
- The facilitated discussions brought together more than 100 organizations who have agreed to join the Action Plan, including federal and provincial governments, Indigenous groups, industry, academia, and civil society organizations.
- The safety of Canadians and the protection of our environment is always the government's top priority with regards to nuclear energy. Canadians expect that all radioactive waste in Canada is safely managed.
- That's why, in addition to the Action Plan, the government is also taking steps to modernize Canada's existing radioactive waste policy and to establish a strategy for the safe, long-term management of all our nuclear waste, including future waste from small modular reactors. This public consultation process began on November 16.
- All Canadians will have the opportunity to participate in this process and to make their voices heard.

Radioactive Waste

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\Radioactive Waste\~ National Rad Waste Strategy\Launch - November 2020\Comms Products

General Key Messages

(these are only the main messages. additional messages in the folder)

- Nuclear power is poised to provide the next wave of clean, affordable, safe and reliable power, playing a key role in Canada achieving its target of net zero emissions by 2050.

- To support the ongoing and safe use of nuclear energy today, as well as future nuclear development, it is time to look at our radioactive waste policies in Canada.
- All radioactive waste in Canada is currently being safely managed according to international standards at facilities that are licensed and monitored by our world-class regulator - the Canadian Nuclear Safety Commission.
- But we must continue to modernize policies to promote long-term management solutions for Canada's radioactive waste.
- We want to build on our strong radioactive waste policy and ensure that it is based on the best available science, continues to meet international practices, and reflects the values and principles of Canadians.
- That is why we have launched a public engagement process to develop a modernized policy for Radioactive Waste Management.
- This commitment addresses international recommendations and national concerns, ensuring that Canadians can have confidence in the long-term solutions for all of Canada's nuclear waste.
- We have been reviewing our policy since November 2020, including engaging with stakeholders and talking to Canadians to ensure that Canada has a strong policy framework and a clear plan in place for the safe, long-term management of all of our nuclear waste, including any future waste from SMRs.
- Protecting the health and safety of Canadians and the environment is our top priority. Our government is committed to ensuring that Canada has a robust framework in place to ensure the safety of nuclear energy, radiation, and radioactive waste.

NRCAN Working with Industry to Develop the Policy

G:\O Strategic Comms\LCES\Issues\ERB\ATIP\A-2020-00424 - Rad Waste Policy

- Natural Resources Canada (NRCAN) launched a broad public engagement process in November 2020 to modernize Canada's policy for the management of radioactive waste.
- NRCAN has held meetings with non-governmental organizations, Indigenous peoples, municipalities, industry, youth organizations, and academia to seek their input on the policy review. Our objective is to hear the views of a broad spectrum of stakeholders on these issues.

- Prior to the launch, the department met with waste owners, who potentially will be most impacted by this process, to provide them with general information about the engagement process because the current Radioactive Waste Policy clearly requires waste producers and owners to develop plans for their waste.
- The process is open and transparent and we encourage all Canadians, including Indigenous peoples, to provide comments by March 31, 2021, on what should be included in a modernized policy on radioactive waste.
- Following the engagement process, a What We Heard report will be available on our website outlining all feedback, and seeking further public comments. This report will also outline details and the next steps in modernizing the Policy.

Clarification of NWMO's Role in the Policy Review

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\Radioactive Waste\~ National Rad Waste Strategy\Letter to PM-MinORegan

- Protecting the health and safety of Canadians and the environment is the government's top priority when it comes to nuclear energy. This includes ensuring that all radioactive waste in Canada is managed safely for generations to come.
- Between now and fall 2021, the Government of Canada will be conducting a review of Canada's existing Radioactive Waste Policy.
- To be clear, the Minister of Natural Resources is responsible for the Policy Framework and Natural Resources Canada officials will be leading the policy review.
- As part of the process, officials will be engaging with stakeholders and talking to Canadians, including Indigenous peoples, to ensure that all voices are heard.
- Complementing this process, the Nuclear Waste Management Organization (NWMO), which is responsible for implementing Canada's current plan for nuclear fuel waste, has been asked to work with waste owners and engage Canadians to develop a comprehensive integrated strategy to address all forms of radioactive waste.
- The NWMO has been instructed to ensure the strategy takes into account any new direction set out by the Government of Canada's Radioactive Waste Policy review.
- The NWMO does not have a role in NRCan's policy review, and cannot finalize its integrated strategy until that review is complete.

If pressed on NWMO's Role

- Under our existing policy, waste owners are responsible for strategies and plans for the safe management of all waste they produce.
- The NWMO is a not-for-profit organization established under the Nuclear Fuel Waste Act. Since 2010, the NWMO has been implementing Canada's plan for the long-term management of nuclear fuel waste.
- NWMO has the expertise and engagement experience to lead the development of an integrated strategy that addresses all types of waste.
- We are confident that the NWMO will lead a successful dialogue through close collaboration with waste owners and producers, Indigenous peoples and interested Canadians to develop the Integrated Strategy for all waste based on the direction set out by the Government of Canada's Radioactive Waste Policy review.

Supplementary Messaging – Engagement

- Given the unprecedented times we are in and to protect the health and safety of all participants, officials will rely on online tools to ensure that all Canadians have an opportunity to have their voices heard. A virtual engagement hub is available to facilitate participation.
- In addition to the engagement hub, officials will be holding virtual meetings, roundtables, and workshops to solicit feedback. Officials are contacting Indigenous peoples, non-governmental groups, waste producers and owners, and other stakeholders to determine how best to engage.

Stakeholder Expectations on Rad Waste Policy Review

G:\0 Strategic Comms\LCES\Issues\ERB\NED & URWD\Radioactive Waste\~ National Rad Waste Strategy\Letter to PM-MinORegan\NWW - Feb 8, 2021

- Protecting the health and safety of Canadians and the environment is the government's top priority when it comes to nuclear energy. This includes ensuring that all radioactive waste in Canada is managed safely for generations to come.
- Natural Resources Canada (NRCan) launched an open and transparent public engagement process in November 2020 to modernize Canada's policy for the management of radioactive

waste and is committed to hearing Canadians' views on what should be included in a modernized Radioactive Waste Policy.

- While we encourage all Canadians, including Indigenous peoples, to provide comments by March 31, 2021, on what should be included in a modernized policy on radioactive waste, we are flexible if more time is needed to hear a broad spectrum of views to inform the policy review.
- NRCAN has already held meetings with non-governmental organizations, Indigenous peoples, municipalities, provinces, industry, youth organizations, and academia to seek their input, and will continue to do so.
- Steps have also been taken to incorporate feedback received to date, including ensuring that NRCAN work in close collaboration with other government departments who also play a leadership role in the management of radioactive waste.
- Following the engagement process, a What We Heard Report will be available on our website for further public comment.

If pressed on the NWMO's Strategy engagement process

- Complementing the Government of Canada's process, the Nuclear Waste Management Organization (NWMO), which is responsible for implementing Canada's current plan for nuclear fuel waste, has been asked to work with waste owners and engage Canadians to develop a comprehensive integrated strategy to address all forms of radioactive waste.
- The NWMO has been instructed to ensure the strategy takes into account any new direction set out by the Government of Canada's Radioactive Waste Policy review.
- The NWMO does not have a role in NRCAN's policy review, and cannot finalize its integrated strategy until that review is complete.

Labrador Waste

G:\O Strategic Comms\LCES\Issues\ERB\NED & URWD\Radioactive Waste\Reprocessing Used Nuclear Fuel

General Messages

- Protecting the health and safety of Canadians and the environment is the Government of Canada's top priority when it comes to nuclear energy. This includes ensuring that all radioactive waste in Canada is managed safely today and for generations to come.
- Canada has not contemplated, nor have we been consulted on any plans or entered into agreements with Japan or any country to take their radioactive waste for disposal at a deep geological repository in Labrador.
- Any proposed Deep Geological Repository project would need to undertake a rigorous impact assessment that is based on science, evidence and Indigenous knowledge.

If pressed on Canada's management of radioactive waste

- All radioactive waste in Canada is currently being safely managed according to international standards at facilities that are licensed and monitored by our world-class regulator - the Canadian Nuclear Safety Commission.
- But we must continue to modernize policies to promote long-term management solutions for Canada's radioactive waste.
- We want to build on our strong radioactive waste policy and ensure that it is based on the best available science, continues to meet international practices, and reflects the values and principles of Canadians.
- That is why we have launched a public engagement process to develop a modernized policy for Radioactive Waste Management.
- This commitment addresses international recommendations and national concerns, ensuring that Canadians can have confidence in the long-term solutions for all of Canada's nuclear waste.
- Between now and the fall of 2021 we will be reviewing our policy, including engaging with stakeholders and talking to Canadians to ensure that Canada has a strong policy framework and a clear plan in place for the safe, long-term management of all of our nuclear waste, including any future waste from SMRs.
- Protecting the health and safety of Canadians and the environment is our top priority. Our government is committed to ensuring that Canada has a robust framework in place to ensure the safety of nuclear energy, radiation, and radioactive waste.

Reprocessing Used Nuclear Fuel

General Messages

- Protecting the health and safety of Canadians and the environment is the government's top priority when it comes to nuclear energy.
- All activities related to nuclear energy in Canada are subject to the regulatory framework under the Nuclear Safety and Control Act, and all nuclear materials are subject to our international commitments on nuclear safety, security, and non-proliferation.
- There are currently no reprocessing activities in Canada as part of our nuclear fuel waste management, and it is not part of the current CANDU fuel cycle. However, some technology developers may propose future reprocessing activities in Canada, as some SMR technologies could operate on recycled used nuclear fuel.
- Canada manufactures nuclear fuel for its fleet of CANDU reactors and only uses it once through the fuel cycle.
- The nuclear industry has not deemed it necessary or cost-effective to reprocess and recycle used nuclear fuel from Canada's reactors given the domestic abundance of economical high-grade uranium.
- Technologies that recycle used nuclear fuel could potentially provide an option that can reduce the volume or long-term radioactivity of used nuclear fuel while producing low-carbon electricity.
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.
- The Government of Canada is exploring the science, technologies, benefits, and risks associated with any potential technologies that can recycle used nuclear fuel.

If pressed on the Policy review covering reprocessing as a topic

- Currently, there are no reprocessing activities in Canada as part of our nuclear fuel waste management, and it is not part of the current CANDU fuel cycle.
- The Government of Canada is exploring the science, technologies, benefits, and risks associated with any potential technologies that can recycle used nuclear fuel.

- The government is dedicated to ensuring the safe management of radioactive waste. We are committed to aligning our policy with international standards and practices, the best available science, and to having a policy that reflects the values and principles of Canadians.
- Our radioactive waste policy review process is open and transparent, and we welcome input on all aspects that stakeholders feel should be considered as elements of a modernized radioactive waste policy.

If pressed on if used nuclear fuel reprocessing is allowed/viable in Canada

- Nuclear reprocessing is considered a sensitive technology. The international community, including Canada, remains attentive to ensuring that reprocessing technologies do not negatively impact our shared nuclear non-proliferation priorities.
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act, as well as safeguards verification by the International Atomic Energy Agency.
- In addition, any resulting radioactive waste from future technologies must be managed in accordance with the Government of Canada's Radioactive Waste Policy and would also be subject to the regulatory framework under the Nuclear Safety and Control Act.
- The Government of Canada is exploring the science, technologies, benefits and risks associated with reprocessing activities in order to inform any needed future policy development in this area.

If pressed on the risk of proliferation of nuclear weapons

- Canada takes its international commitments seriously. Nuclear technology in Canada is, and will continue to be, used only for peaceful purposes, such as to combat climate change and produce life saving medical isotopes.
- All nuclear materials in Canada, including used nuclear fuel and nuclear waste, are subject to our Comprehensive Safeguards Agreement and Additional Protocol with the International Atomic Energy Agency (IAEA).
- Canada is fully implementing these safeguards, which allow for verification by the IAEA that materials are being used solely for peaceful purposes. To serve that objective, Canada also has in place a robust system of nuclear material accountancy and control as established by the CNSC in accordance with Canada's international obligations.
- Any export of controlled nuclear material, equipment and information must be carried out in accordance with regulatory requirements by the CNSC, Canadian export controls, and in

conformity with Canada's nuclear non-proliferation policy, which requires the application of IAEA safeguards on Canadian supplied nuclear items.

Moltex Energy Nuclear Fuel Recycling and Reprocessing

- Protecting the health and safety of Canadians and the environment is the government's top priority when it comes to nuclear energy.
- All activities related to nuclear energy in Canada are subject to the regulatory framework under the Nuclear Safety and Control Act, and all nuclear materials are subject to our international commitments on nuclear safety, security, and non-proliferation.
- There are currently no reprocessing activities in Canada as part of our nuclear fuel waste management, and it is not part of the current CANDU fuel cycle.
- However, several Small Modular Reactors (SMRs) companies around the world are working to develop technologies that could utilize recycled fuel, including Moltex Energy in Canada.
- Moltex Energy is exploring this technology further, and they, or other technology developers, may propose future reprocessing activities in Canada if the technology development is successful.
- The Government of Canada has provided funding to advance the development of the technology, which will enable a better understanding of it, including both benefits and risks.
- Recycling used CANDU fuel has the potential to power existing and future nuclear reactors while potentially reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository.
- Some SMRs under development in Canada could potentially operate on recycled CANDU fuel.
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

Governance

General Messages

- The Government of Canada places the highest priority on public safety and environmental protection in all nuclear activities. In doing so, Canada has established one of the most stringent and internationally recognized nuclear regulatory systems in the world.
- Our nuclear safety framework is administered by the Canadian Nuclear Safety Commission (CNSC) – an independent regulator that makes objective science and evidence-based decisions that are aligned with international requirements and guidance, and regularly undergoes peer-reviews from world-renowned organizations.
- These peer-reviews continue to reinforce what we already know: Canada has a comprehensive and robust regulatory framework for nuclear safety that aligns with international standards.
- The CNSC's regulatory activities, actions, recommendations and decisions are transparent, accessible, and consistently place public and environmental safety at their core.

Reporting Structure

- The CNSC was established in 2000 under the Nuclear Safety and Control Act to replace the former Atomic Energy Control Board and reports to Parliament through the Minister of Natural Resources on the Commission's activities under the Act.
- The CNSC's regulatory framework consists of laws passed by Parliament that govern the regulation of Canada's nuclear industry, and regulations, licences and documents that the CNSC uses to regulate the nuclear industry.
- While the regulator reports through the Minister of Natural Resources, the CNSC is independent from government. Its role is to regulate the operations of the nuclear industry to ensure public health and safety, and the protection of the environment.
- The Minister has no role to play in nuclear licensing decisions. The Commission has full authority to make decisions related to licensing of nuclear activities and these decisions may be reviewed only by the Federal Court of Canada.
- CNSC members commit to the highest standards of ethics and conflict-of-interest guidelines and carry out their duties impartially.

- The government is confident that the CNSC has the necessary capacity and expertise to review and make independent, science-based decisions, without bias.

Regulatory Oversight

- All final licencing decisions are made by the Independent Commission, an administrative tribunal set up at arm's length from the government.
- CNSC scientific, technical and professional staff review the applications for licences according to regulatory requirements before making final recommendations to the Commission.
- CNSC staff conducts full and transparent environmental and licensing assessments, including public and Indigenous consultation, and applies rigorous oversight throughout the lifecycle of a project.
- This oversight includes an environmental risk assessment for a project every five years, supplemented by the CNSC's own independent environment monitoring program.
- To ensure transparency during the decision-making process, the CNSC provides public opportunities for feedback before making any licensing decision.
- All Canadians, including Indigenous peoples, are encouraged to participate in webinars and public hearings, and provide feedback on key documentation such as Project Descriptions, Commission Member Documents and draft Environmental Impact Statements. These forums provide a detailed look at the requirements, the licensing and the environmental review process of a project.
- The Commission will only approve a project if it concludes that it will be safe for Canadians and the environment – both now and into the future.
- The CNSC is committed to ongoing improvement and periodic review of its regulatory requirements, including those on radioactive wastes and decommissioning activities.

CNSC's environmental assessment process

- Canada's environmental assessment processes were recently reviewed. The Impact Assessment Act 2019 replaced the Canadian Environmental Assessment Act, 2012, broadening the scope of assessments to include environmental, health, social and economic effects, both positive and negative, of a proposed project.

- Any designated project started prior to August 28, 2019 remains under the Canadian Environmental Assessment Act, 2012. Any designated project started after that date is subject to the IAA.
- Each project is unique and these principles are applied consistently and transparently.
- Projects are subject to a thorough regulatory review process that is based on science, evidence, Indigenous knowledge, meaningful consultation with potentially affected Indigenous peoples, public consultation, and that takes into account effects on the environment. During the review process, opportunities for public input are provided at key stages of the EA.

Indigenous Consultation

- The CNSC ensures that Indigenous groups have meaningful opportunities to participate in all aspects of the environmental review and licensing process, in order to meet the Crown's Duty to Consult and to accommodate.
- The CNSC engages local communities and Indigenous groups to provide information and answer questions about the environmental assessment process for proposed projects.
- The consultation approach is flexible and the depth of consultation activities is adjusted to each community based on the concerns and potential impacts on rights that are raised, and the level of interest.
- As a nuclear lifecycle regulator, the CNSC recognizes that consultation activities may continue beyond an environmental review or licensing process throughout the lifecycle of nuclear facilities.
- The objective is to ensure the consultation process is effective and meaningful and that it provides an opportunity to exchange information, explore solutions to avoid or mitigate impacts.
- The CNSC also offers a Participant Funding Program that awards funding to support Indigenous groups and the public participation in the Commission's regulatory review processes.

SMR Regulation

- Canada has a long history of safe and responsible development of nuclear energy and we know that SMRs are the next wave of nuclear innovation and the subject of significant interest across Canada and around the world.
- SMRs represent a new field of innovation and a potential tool to reduce emissions and create jobs and economic growth.
- As Canada's nuclear regulator, the CNSC's role is to regulate the nuclear industry regardless of the technology used. Any proposed project to build and operate an SMR facility will require licensing from the independent Commission.
- The CNSC has put significant effort in recent years into refining and building on its regulatory framework and expertise to effectively regulate SMRs, working with partners from around the world.

- The CNSC has established a Small Modular Reactor Steering Committee to ensure its regulatory framework is solid but flexible enough to address the different risk profiles that SMRs may present in their design and how they are used.
- The CNSC also expects that SMR proponents will engage early with key stakeholders and Indigenous communities. This engagement is an essential element to the regulatory process and a key consideration in the Commission's decision-making process for a licence.
- The Commission will only approve a project if it concludes that it will be safe for Canadians and the environment – both now and into the future.

Uranium

General Messages

- Canada will continue to seek ways to advance uranium cooperation with the U.S. through the Canada-U.S. Joint Action Plan and other fora. Both countries will re-engage following the conclusion of the U.S. policy review undertaken by the Nuclear Fuels Working Group.
- For over 75 years Canada has been a reliable and secure supplier of uranium for the U.S., providing 24 percent of the uranium purchased for U.S. reactors in 2018.
- Canada is the world's second largest producer of uranium and has the world's 3rd largest uranium resources, most of which is found in high-grade deposits in Saskatchewan.
- Canada also has the world's largest uranium refinery and one of the world's largest uranium conversion facilities, which provide nuclear fuel services for customers globally.

If pressed on uranium weaponization [Global Affairs Canada]:

- Canada is strongly committed to non-proliferation and requires peaceful-use assurances from governments before exporting uranium.
- Canada only exports uranium in keeping with our multilateral commitments under the Non-Proliferation Treaty, the Nuclear Suppliers Group and our domestic policy on nuclear non-proliferation.

Pressure Tubes

Pickering Nuclear Facility

- The Government of Canada places the highest priority on public safety and environmental protection in all nuclear activities, and is internationally recognized for having established one of the most stringent nuclear regulatory systems in the world.
- The Canadian Nuclear Safety Commission (CNSC) is recognized as a world-class nuclear regulator and we are confident that it has the necessary capacity and expertise to review and make independent, science-based decisions, without bias, while keeping safety at the core of its decisions.
- That is how we know that the Pickering Nuclear Generating Station (PNGS) is operating safely.
- During the public hearings to consider Ontario Power Generation's (OPG) application for continued operation of PNGS, the CNSC heard the scientific and expert evidence presented, including detailed information on the safety of the pressure tubes. The Commission also heard directly from stakeholders, Indigenous groups, and the public.
- The Commission concluded that OPG was fully qualified to conduct the PNGS operations until December 2024 in a manner that would adequately protect the health and safety of people and the environment and renewed its operating licence.
- The Commission will only approve a project if it concludes that it will be safe for Canadians and the environment – both now and into the future.
- CNSC staff continues to monitor and inspect PNGS operations to verify they remain compliant with license conditions and regulatory requirements. Its staff also regularly monitors the condition of pressure tubes to ensure they meet operational fitness standards.
- The CNSC invites the public to attend the Commission's public meetings, where the Commission receives and considers regular updates on the status of operating nuclear power plants, including the PNGS.

Bruce Power

- We were informed by Bruce Power that some pressure tube inspections of its reactor Units 3 and 6 that are currently shut down for maintenance and refurbishment are indicating higher measurements of hydrogen equivalent (Heq) than predicted, exceeding the limits set out in the power reactor operating licence conditions.
- At no time has there been any risk to the health of the public or the environment. All of the reactor operating and safety systems are designed to automatically and safely shut down if ever any reactor component were compromised. There are multiple layers of safety systems

built into the reactor design to ensure the reactor can always shut down safely and the public and environment remain protected.

- The CNSC has issued a notice to Bruce Power requiring it to review and report to the Commission no later than July 30, 2021 confirmation that its pressure tubes are operating within the licensing basis as established by the commission.
- Commission approval will be required before Bruce Power can return the affected reactor units to service. They will remain shut down until then.
- As part of the CNSC's regulatory oversight, all nuclear power plant licensees in Canada have been issued letters to complete further analysis on the continued safe operation of their pressure tubes and report to the Commission at an upcoming Commission meeting.
- The CNSC has informed the Commission of the pressure tube hydrogen content findings and will present the information at a public commission proceeding in the coming weeks as part of its continued commitment to transparency.
- We require licensees to conduct regular pressure tube inspections. While licensees have the primary responsibility for the safe operations of their reactors, CNSC ensures all regulatory requirements are met.

If pressed on the CNSC's reporting structure

- While the regulator reports to Parliament through the Minister of Natural Resources, the CNSC is independent from government. Its role is to regulate the operations of the nuclear industry to ensure the health and safety of Canadians and the protection of the environment.
- Nuclear licensing decisions are determined by the CNSC. The Commission has full authority to make decisions related to licensing of nuclear activities and these decisions may be reviewed only by the Federal Court of Canada.
- CNSC members commit to the highest standards of ethics and conflict-of-interest guidelines and carry out their duties impartially.
- The government is confident that the CNSC has the necessary capacity and expertise to review and make independent, science-based decisions, without bias, while keeping safety at the core of its decisions.

OPEN LETTER TO PRIME MINISTER JUSTIN TRUDEAU

22 September 2023

To: Prime Minister Justin Trudeau
Jonathan Wilkinson, Minister of Natural Resources
Rumina Velshi, President, Nuclear Safety Commission
Mélanie Joly, Minister of Foreign Affairs
Chrystia Freeland, Deputy Prime Minister and Minister of Finance
Steven Guilbeault, Minister of Environment and Climate Change
John Hannaford, Clerk of the Privy Council and Secretary to the Cabinet

Re: Our Request for a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate plutonium from CANDU spent fuel

Dear Prime Minister Trudeau and other concerned senior officials of the Government of Canada,
In 2021, a number of us sent three letters to you regarding our nuclear weapons proliferation concerns about your government's funding of a proposal by a nuclear startup, Moltex, to reprocess CANDU spent fuel. Moltex proposes to use the recovered plutonium to fuel a molten-salt reactor to be built on the site of the 40-year-old Point Lepreau Nuclear Generating Station in New Brunswick. We were even more concerned about Moltex's proposal to use Canada as an export hub for those technologies.¹

The Prime Minister's office informed us on 23 June 2021 that the matter had been referred to the Minister of Foreign Affairs and the Minister of Natural Resources. We have received no response from either.

Recently, however, we learned, through an Access to Information Act request by a Canadian academic, that, despite the strong opposition of Moltex,² the Ministry of Natural Resources launched a policy-making process on reprocessing in collaboration with the international CANDU Owners Group and in consultation with the Ministry of Foreign Affairs and the Nuclear Safety Commission.³

We are gratified to learn of this development. We also were gratified to see you join with the other leaders of the G7 countries in Hiroshima on 19 May 2023 in stating that, "We also commit to prioritizing efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world."⁴

Moltex has claimed that it does not intend to separate out pure plutonium and hence its product will be "proliferation resistant," i.e. not usable to make nuclear weapons. This was argued in the US two decades ago for a very similar process, pyroprocessing, but a 2009 review by experts from six US national nuclear laboratories concluded,⁵

"the additional proliferation resistance of these alternative processes...over PUREX [the technology used by the US and other weapon states to separate pure plutonium for weapons] in particular is small. The reason is the ease, given the resources available to a state, with which the various

plutonium-bearing materials or the reprocessing process itself could be converted to produce separated plutonium.”

A recent review by a US National Academy of Sciences committee, on which two of us served, reached the same conclusion after hearing a presentation from Moltex’s CEO:⁶

“While these technologies may provide some benefit in delaying direct use of the materials, there was consensus among the committee members that none provided significant proliferation resistance at this time.”

We doubt Moltex’s reprocessing project will be commercially successful. Commercial reprocessing has failed economically over and over again. In the US, a small commercial reprocessing plant, subsidized by the federal government and the State of New York, operated from 1966 and 1972. It was shut down for safety improvements in 1972, but rather than spend the funds for upgrading the plant, the owner abandoned the project, and the site became a multi-billion-dollar federally-funded radioactive cleanup project that continues today.⁷ In the UK, government-owned British Nuclear Fuels Limited built and operated larger plants into bankruptcy, resulting in a hundred billion pound government-funded radioactive cleanup project.⁸

The processing technology used in these earlier plants was developed in the US nuclear-weapons program and is quite simple. The technology proposed by Moltex appears to be based on the more complex pyroprocessing technology developed by the Idaho National Laboratory, which has spent hundreds of millions of dollars over two decades thus far in its attempts to use it to reprocess a mere two tons of spent fuel.⁹

There is likewise every reason to be skeptical of Moltex’s reactor technology.¹⁰

How the funds of Canada’s taxpayers are spent is not our affair, however. Our concern is that that Canada’s government, while pledging to “efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world,” is actually funding a project to *increase* the production and accumulation of weapons-usable plutonium for civil purposes around the world.

We have been equally critical of U.S. programs to promote reprocessing. The Biden Administration has failed to rein in a Trump Administration-launched program to promote reprocessing in the Department of Energy.¹¹

It is especially distressing that Canada and the United States should have forgotten the painful lessons from their partnership in facilitating India’s program to separate plutonium ostensibly for nuclear power. Some of the plutonium India produced and separated with that assistance was used in the plutonium-fueled prototype bomb India tested in 1974, precipitating the South Asian nuclear arms race.¹²

An undated internal briefing memo for the Deputy Minister of Natural Resources, included in that Ministry’s Access to Information Act release, claimed,

“reprocessing is currently being carried out internationally by several nations using processes similar to the Moltex WATSS process, but which more completely separate plutonium from the other materials and contaminants in the fuel, and do so successfully while following international safeguards protocols, and under the purview of the IAEA.”

This is false. Only Japan has plans to carry out reprocessing under international safeguards. The other states that conduct commercial-scale reprocessing (China, France, India, Russia) are nuclear-armed states that are not obligated to accept IAEA safeguards. But as the examples of India and North Korea show, states can claim peaceful purposes but then use the plutonium for nuclear weapons.

As the G7 statement recognized, reprocessing is not necessary for nuclear energy and nonproliferation policy should focus on “efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world,” not increase it.

If invited, some of us would be happy to provide a detailed briefing on these issues as input to your government’s policymaking process.

Given the gravity of the issues involved, this is a public letter as were our previous letters to you.

Sincerely,

Peter Bradford, former chair of New York and Maine utility regulatory commissions and former U.S. Nuclear Regulatory Commissioner (1977-82)

Thomas M. Countryman, Chairman, Arms Control Association, Assistant Secretary of State for International Security and Nonproliferation (2011-2017)

Steve Fetter, Professor of Public Policy, University of Maryland,* former principal assistant director, Office of Science and Technology Policy, the White House (2009-12, 2015-17)

Robert Gallucci, Professor, Georgetown University,* former Ambassador at Large and Assistant Secretary of State for Political-Military Affairs

Richard L. Garwin, IBM Fellow Emeritus, IBM Thomas J. Watson Research Center,* member U.S. President's Science Advisory Committee (1962–65, 1969–72)

Victor Gilinsky, Nonproliferation Policy Education Center; Nuclear Regulatory Commissioner (1975-79)

Alan J. Kuperman, Associate Professor, and Coordinator of the Nuclear Proliferation Prevention Project, University of Texas at Austin

Edwin Lyman, Director of Nuclear Power Safety, Union of Concerned Scientists

Allison M Macfarlane, Director, School of Public Policy and Global Affairs, University of British Columbia*; Chair, US Nuclear Regulatory Commission (2012-13) |

Henry Sokolski, Executive Director, Nonproliferation Policy Education Center; Deputy for Nonproliferation Policy, Office of the Secretary of Defense (1989-93)

Sharon Squassoni, Research Professor of the Practice of International Affairs, George Washington University, former State Department and Arms Control and Disarmament Agency official.

Frank N. von Hippel, Professor of Public and International Affairs, emeritus
Program on Science and Global Security, Princeton University* and contact for communications,
fvhippel@princeton.edu

* For identification only.

Notes

¹ Our previous letters were sent on 25 May, 27 July and 24 November 2021.

² “Moltex would likely not have come to Canada if a reprocessing policy had been mandated at the time,” Rory O’Sullivan, CEO, Moltex Energy, Comment “Re: Natural Resources Canada’s Draft Policy on Radioactive Waste Management and Decommissioning,” 24 March 2022, Access to Information Act release, Natural Resources Canada, 8 August 2023.

³ *Policy Development on Reprocessing* (Ministry of Natural Resources Canada, 2021), Access to Information Act release, Natural Resources Canada, 8 August 2023.

⁴ https://www.international.gc.ca/world-monde/international_relations-relations_internationales/g7/documents/2023-05-19-g7_leaders_vision-g7_vision_dirigeants.aspx?lang=eng.

⁵ *Proliferation Risk Reduction Study of Alternative Spent Fuel Processing* (Brookhaven National Laboratory, 2009), <https://www.bnl.gov/isd/documents/70289.pdf>.

⁶ *Merits and Viability of Different Nuclear Fuel Cycles and Technology Options and the Waste Aspects of Advanced Nuclear Reactors* (National Academy Press, 2023) p. 211, <https://www.nationalacademies.org/our-work/merits-and-viability-of-different-nuclear-fuel-cycles-and-technology-options-and-the-waste-aspects-of-advanced-nuclear-reactors>.

⁷ https://en.wikipedia.org/wiki/West_Valley_Demonstration_Project, <https://www.chbwv.com>, <https://www.energy.gov/em/articles/doe-issues-draft-request-proposal-west-valley-demonstration-project-phase-1b-contract>.

⁸ <https://www.nao.org.uk/reports/the-nuclear-decommissioning-authority-progress-with-reducing-risk-at-sellafield/>.

⁹ <https://blog.ucsusa.org/edwin-lyman/the-pyroprocessing-files/>.

¹⁰ <https://thebulletin.org/2022/06/molten-salt-reactors-were-trouble-in-the-1960s-and-they-remain-trouble-today/>.

¹¹ Letter to the Biden Administration, “13 US Nonproliferation Experts Request a Review of the Department of Energy’s Promotion of Civilian Plutonium Separation,” 20 June 2021, see also Jungmin Kang, Masafumi Takubo, Frank von Hippel, “Some fuels never learn. US Energy Department returns to costly and risky plutonium separation technologies,” *Bulletin of the Atomic Scientists*, 14 Sept. 2023, <https://thebulletin.org/2022/09/some-fuels-never-learn-us-energy-department-returns-to-costly-and-risky-plutonium-separation-technologies/>.

¹² George Perkovich, *India’s Nuclear Bomb: The Impact on Global Proliferation* (University of California Press, 1999).

FOR MINO AWARENESS: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)

April 29, 2024 11:13 AM

Subject	FOR MINO AWARENESS: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)
From	Media (NRCan/RNCan)
To	Svonkin, Carolyn
Cc	Roush, Melanie; Adams, Emilie (she, her elle, elle); Reda, Sarah; Yuen, Pui Wai; Ottaway, Chelsea; NEISB DGO Correspondence / Correspondance BDG DENSE (NRCan/RNCan); Hilborn, Jade (she, her elle, elle); Prosser, Kathleen; Piercey, Christopher (he, him il, lui); Wilkinson, David; Media (NRCan/RNCan); Harrietha, Kyle; Forman, Jared; Pierce, Auston; Steede, Kieran; Kim, Sabrina
Sent	September 25, 2023 3:30 PM

UNCLASSIFIED - NON CLASSIFIÉ

Hi Carolyn.

For MinO's awareness, we received a followup media call today from the Globe and Mail concerning spent nuclear fuel reprocessing.

You may recall that we responded to the Globe's original media call on this topic, on Sept. 14.

The Globe came back to us today with a followup question, with the reporter saying he will be writing on the topic today and needs a response by 4 pm.

We have consulted sector about it and come to the understanding that there is no new information for a response to the followup question.

As such, we will be responding to the Globe by 4 pm to let them know that we have no new information to add, beyond our Sept. 14 response.

Please let me know if you have any questions.

Thank you

bruce

Bruce Blackie

Media Relations / Relations avec les médias

Natural Resources Canada / Ressources naturelles Canada

media@nrcan-rncan.gc.ca

(343) 598-7019

REPORTER DEADLINE:

2023/09/25 04:00 PM

APPROVALS:

SECTOR:

CALL TYPE: Written Response/ Réponse écrite

CODE: Rapid

OUTLET: Globe and Mail

REPORTER: Matt McClearn

A0067719_1-000075

CONTEXT/QUESTIONS:

Reporter is writing to a 4 pm deadline today, Monday, Sept 25.

He has submitted a followup question to NRCan's response to his earlier media call re policy on spent nuclear fuel reprocessing: [Nuclear fuel reprocessing](#).

His followup question for response asap today is:

Why is the government not undertaking efforts to establish a policy?

CONTEXT:

Reporter says "in light of the letter published by Frank von Hippel et al today

([https://www.ccnr.org/Trudeau letter Sept 22 2023.pdf](https://www.ccnr.org/Trudeau_letter_Sept_22_2023.pdf)), I am going to write about this.

The authors of that letter are under the impression that there is an effort underway to draw up policy on this. Moreover, the CNSC has said that reprocessing spent fuel "requires a policy decision from the federal government" and has called on the government to begin dialogue around that. Also, the Access to Information docs cited in this e-mail show that Moltex told the government it also believed there was an effort in progress to establish a policy on reprocessing. Moltex indicated that this was a matter of urgency, as the uncertainty around the policy would make it difficult for the company to attract investment. Given all this, why is the government not undertaking efforts to establish a policy?"

RESPONSE

FW: FOR ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)

April 29, 2024 11:17 AM

Subject	FW: FOR ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)
From	Yuen, Pui Wai
To	Wilkinson, David
Cc	Prosser, Kathleen
Sent	September 13, 2023 9:53 AM

UNCLASSIFIED - NON CLASSIFIÉ

fyi

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 13 septembre 2023 08:56
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Fickes, Kristina <kristina.fickes@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>
Subject: RE: FOR ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Good morning,

Please see below for NEISB DG approved responses. If possible, our DG has suggested sharing with GAC comms as they are they other most implicated department for issues related to nuclear non-proliferation.

Cheers,
 Kate

- **What is the status of NRCan's efforts to establish a policy on used nuclear fuel reprocessing?**
 - NRCan is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada’s non proliferation obligations.
 - There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel

cycle. In the past, the nuclear industry has not deemed it necessary or cost-effective to reprocess and recycle used nuclear fuel from Canada's reactors given the domestic abundance of economical high-grade uranium. However, some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.

- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.
- NRCan is aware of the draft document prepared by the CANDU Owners Group through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- **Why has the policy not been released yet?**
 - The Government of Canada does not have a policy specifically in favor of, or banning, spent fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government—including safety, security, sustainability, and peaceful use—prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.
- **When does NRCan intend to release the policy?**
 - Please see above response.
- **When did NRCan ask the COG for input on this policy?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCan therefore did not solicit input from COG, the document was shared with NRCan subject matter experts for discussion and consideration. It does not in any way represent a policy of or by the federal government.
- **Other than the COG, who else has NRCan consulted on establishing a policy on used nuclear fuel reprocessing?**
 - This document was generated by the CANDU Owners Group and is,

in its entirety, an industry led and owned document. NRCan therefore did not consult anyone on a used nuclear fuel reprocessing policy. During the course of the engagement on the modernization of Canada's Policy on Radioactive Waste Management and Decommissioning, reprocessing was raised through a number of submissions and engagement sessions, in which other federal government departments participated.

- **What input did these other parties offer?**

- NRCan is not aware of who COG has consulted on their draft spent fuel reprocessing document.

Key Message:

Reprocessing in Canada would require consideration of all relevant factors by the federal government prior to its deployment, including ensuring the health, safety and security of people in Canada, and compliance with non-proliferation safeguards and international treaties. The government of Canada remains deeply committed to the 1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science. Our independent regulator—the Canadian Nuclear Safety Commission—ensures that all licensed nuclear facilities that manage radioactive material do so safely according to the regulatory framework under the *Nuclear Safety and Control Act*.

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>

Sent: Tuesday, September 12, 2023 1:49 PM

To: Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Fickes, Kristina <kristina.fickes@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>

Cc: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>

Subject: FOR ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Hi Melanie.

We've received a new media call from the Globe and Mail regarding nuclear fuel reprocessing.

Please let us know if you can speak to this call.

Thank you

bruce

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s.19(1)

Bruce Blackie

Media Relations / Relations avec les médias
Natural Resources Canada / Ressources naturelles Canada
media@nrcan-rncan.gc.ca
(343) 598-7019

REPORTER DEADLINE:

2023/09/13 03:00 PM

APPROVALS:

SECTOR: ESS
CALL TYPE: Written Response/ Réponse écrite
CODE: Rapid
OUTLET: Globe and Mail
REPORTER: Matt McClearn

CONTEXT/QUESTIONS:

Reporter has a number of questions for NRCan regarding nuclear fuel reprocessing.

[REDACTED] The documents reveal that NRCan has been studying nuclear fuel reprocessing, including the potential for increased proliferation risk. The documents also reveal that the CANDU Operators Group provided NRCan with a "strategy to establish a policy on used nuclear fuel reprocessing" in September 2022. The documents indicate that Moltex has made a submission on the draft policy. It is evident from the documents that certain members of Canada's nuclear industry are eager to see the government release such a policy promptly. The COG had wanted it to be issued this spring, but as far as the reporter is aware, no policy has been released yet.

QUESTIONS FOR NRCan:

- What is the status of NRCan's efforts to establish a policy on used nuclear fuel reprocessing?
 - Why has the policy not been released yet?
 - When does NRCan intend to release the policy?
 - When did NRCan ask the COG for input on this policy?
 - Other than the COG, who else has NRCan consulted on establishing a policy on used nuclear fuel reprocessing?
 - What input did these other parties offer?
-

RESPONSE

A0067723_4-000080

FW: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

April 29, 2024 11:16 AM

Subject	FW: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	September 13, 2023 10:24 PM

UNCLASSIFIED - NON CLASSIFIÉ

Final text from MINO

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: 13 septembre 2023 22:11
To: Svonkin, Carolyn <carolyn.svonkin@nrcan-rncan.gc.ca>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Fickes, Kristina <kristina.fickes@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Montgomery, James (he, him | il, lui) <james.montgomery@NRCan-RNCan.gc.ca>; Harrietha, Kyle <Kyle.Harrietha@nrcan-rncan.gc.ca>; Forman, Jared <jared.forman@nrcan-rncan.gc.ca>; Pierce, Auston <Auston.Pierce@nrcan-rncan.gc.ca>; Steede, Kieran <Kieran.Steede@nrcan-rncan.gc.ca>; Kim, Sabrina <sabrina.kim@nrcan-rncan.gc.ca>
Subject: RE: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Carolyn,

I'll close this call right now on Bruce's behalf.

Best,
Michael

Michael MacDonald (he, him, his / il, lui, son)
Communications Advisor | Conseiller en communications
Media Relations | Relations avec les médias

Natural Resources Canada | Ressources naturelles Canada

media@nrcan-rncan.gc.ca

A0067724_1-000081



Natural Resources
Canada

Ressources naturelles
Canada

From: Svonkin, Carolyn <carolyn.svonkin@nrcan-rncan.gc.ca>
Sent: Wednesday, September 13, 2023 10:02 PM
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Fickes, Kristina <kristina.fickes@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Montgomery, James (he, him | il, lui) <james.montgomery@NRCan-RNCan.gc.ca>; Harrietha, Kyle <Kyle.Harrietha@nrcan-rncan.gc.ca>; Forman, Jared <jared.forman@nrcan-rncan.gc.ca>; Pierce, Auston <Auston.Pierce@nrcan-rncan.gc.ca>; Steede, Kieran <Kieran.Steede@nrcan-rncan.gc.ca>; Kim, Sabrina <sabrina.kim@nrcan-rncan.gc.ca>
Subject: RE: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Hi Bruce!

The below is approached. Thanks for your work on this one!

- **What is the status of NRCan's efforts to establish a policy on used nuclear fuel reprocessing?**
 - The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations.
 - There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.
 - All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are

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based on the best available science.

- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.
- NRCAN is aware of the draft document prepared by the CANDU Owners Group through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- **Why has the policy not been released yet?**
 - The Government of Canada does not have a policy specifically in favor of, or banning, spent fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.
- **When does NRCAN intend to release the policy?**
 - Please see above response.
- **When did NRCAN ask the COG for input on this policy?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCAN therefore did not solicit input from COG, the document was shared with NRCAN subject matter experts for discussion and consideration. It does not in any way represent a policy of or by the federal government.
- **Other than the COG, who else has NRCAN consulted on establishing a policy on used nuclear fuel reprocessing?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCAN therefore did not consult anyone on a used nuclear fuel reprocessing policy. During the course of the engagement on the modernization of Canada's Policy on Radioactive Waste Management and Decommissioning, reprocessing was

raised through a number of submissions and engagement sessions, in which other federal government departments participated.

- **What input did these other parties offer?**
 - NRCAN is not aware of who COG has consulted on their draft spent fuel reprocessing document.

Carolyn Svonkin (she/her/elle)

Press Secretary / Attachée de presse
Office of the Minister of Energy and Natural Resources Canada /
Cabinet du ministre de l'Énergie et des Ressources naturelles
343-597-1725

From: Media (NRCAN/RNCan) <media@nrcan-rncan.gc.ca>

Sent: Wednesday, September 13, 2023 11:35 AM

To: Svonkin, Carolyn <carolyn.svonkin@nrcan-rncan.gc.ca>; Media (NRCAN/RNCan) <media@nrcan-rncan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCAN-RNCan.gc.ca>; Fickes, Kristina <kristina.fickes@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCAN-RNCan.gc.ca>; Reda, Sarah <Sarah.Redda@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCAN-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCAN-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCAN/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Montgomery, James (he, him | il, lui) <james.montgomery@NRCAN-RNCan.gc.ca>; Harrietha, Kyle <Kyle.Harrietha@nrcan-rncan.gc.ca>; Forman, Jared <jared.forman@nrcan-rncan.gc.ca>; Pierce, Auston <Auston.Pierce@nrcan-rncan.gc.ca>; Steede, Kieran <Kieran.Steede@nrcan-rncan.gc.ca>; Kim, Sabrina <sabrina.kim@nrcan-rncan.gc.ca>

Subject: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Hi Carolyn.

We've received a media call from the Globe and Mail regarding nuclear fuel reprocessing. For MinO's review, we are sending along the written response that sector has provided. Please let us know if MinO approves the response.

Thank you
bruce

Bruce Blackie

Media Relations / Relations avec les médias
Natural Resources Canada / Ressources naturelles Canada
media@nrcan-rncan.gc.ca
(343) 598-7019

REPORTER DEADLINE:

2023/09/15 12:00 PM

APPROVALS:

Frédéric Beauregard-Tellier, DG, NEISB - approved
Melanie Rousch, Manager, CPS - approved
James Montgomery, A/Director, CPS - approved

A0067724_4-000084

Lorraine McKenzie Presley, ADM - FYI
MinO - pending

SECTOR: ESS
CALL TYPE: Written Response/ Réponse écrite
CODE: Yellow
OUTLET: Globe and Mail
REPORTER: Matt McClearn

CONTEXT/QUESTIONS:

Reporter has a number of questions for NRCAN regarding nuclear fuel reprocessing.

[REDACTED] The documents reveal that NRCAN has been studying nuclear fuel reprocessing, including the potential for increased proliferation risk. The documents also reveal that the CANDU Operators Group provided NRCAN with a "strategy to establish a policy on used nuclear fuel reprocessing" in September 2022. The documents indicate that Moltex has made a submission on the draft policy. It is evident from the documents that certain members of Canada's nuclear industry are eager to see the government release such a policy promptly. The COG had wanted it to be issued this spring, but as far as the reporter is aware, no policy has been released yet.

QUESTIONS FOR NRCAN:

- What is the status of NRCAN's efforts to establish a policy on used nuclear fuel reprocessing?
- Why has the policy not been released yet?
- When does NRCAN intend to release the policy?
- When did NRCAN ask the COG for input on this policy?
- Other than the COG, who else has NRCAN consulted on establishing a policy on used nuclear fuel reprocessing?
- What input did these other parties offer?

RESPONSE

- **What is the status of NRCAN's efforts to establish a policy on used nuclear fuel reprocessing?**
 - NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations.
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- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.
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- **Why has the policy not been released yet?**
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- **When does NRCAN intend to release the policy?**
 - Please see above response.
- **When did NRCAN ask the COG for input on this policy?**
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other federal government departments participated.

- **What input did these other parties offer?**
 - NRCAN is not aware of who COG has consulted on their draft spent fuel reprocessing document.

Key messages:

Reprocessing in Canada would require consideration of all relevant factors by the federal government prior to its deployment, including ensuring the health, safety and security of people in Canada, and compliance with non-proliferation safeguards and international treaties. The government of Canada remains deeply committed to the 1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science. Our independent regulator – the Canadian Nuclear Safety Commission – ensures that all licensed nuclear facilities that manage radioactive material do so safely according to the regulatory framework under the *Nuclear Safety and Control Act*.

FW: Reprocessing Working Group Kick-Off Meeting

April 29, 2024 12:58 PM

Subject	FW: Reprocessing Working Group Kick-Off Meeting
From	Yuen, Pui Wai
To	Prosser, Kathleen
Cc	Wittmann, Tess (she, her elle, elle)
Sent	February 16, 2024 12:37 PM

UNCLASSIFIED - NON CLASSIFIÉ

fyi

From: Naina.Thoppil@international.gc.ca <Naina.Thoppil@international.gc.ca>
Sent: Friday, February 16, 2024 12:36 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Tanya.Hinton@international.gc.ca
Subject: RE: Reprocessing Working Group Kick-Off Meeting

Dear Pui Wai,

My apologies if I had earlier indicated that I would be available on that day. In any event, Tanya should be able to attend and can debrief me after.

Naina

-----Original Appointment-----

From: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrca-rnca.gc.ca> **On Behalf Of** Yuen, Pui Wai
Sent: Friday, February 16, 2024 12:20 PM
To: Hinton, Tanya -IGN; Thoppil, Naina -IGN; duck.kim@ec.gc.ca; Elizabeth.White-Senack@ised-isde.gc.ca; laura.nourallah@ised-isde.gc.ca; david.reinholz@cnscccsn.gc.ca; michael.kent@cnscccsn.gc.ca; tessa.henley@cnscccsn.gc.ca; julian.amalraj@cnscccsn.gc.ca; marc.desrosiers@hc-sc.gc.ca; Daniel.Daigle@tc.gc.ca; Rector, Brianna (she, her | elle, la); Poupore, Jessica; Wittmann, Tess (she, her | elle, elle); Prosser, Kathleen; Beauregard-Tellier, Frédéric; Brady, Daniel; Hoult, Colin; Wilkinson, David; Fairchild, Jamie
Cc: Edwards, Geoff; Obreja,Catalin (ECCC)
Subject: Reprocessing Working Group Kick-Off Meeting
When: February 23, 2024 10:00 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Dear colleagues,

Thank you for your timely response on availability to determine the date for the kick-off meeting for the working level working group on used fuel reprocessing.

Based on the feedback we received, the first meeting will take place Friday, February 23, 2024, from 11:00am-12:00pm on Microsoft Teams. You are welcome to pass this meeting invite along to anyone

we may have missed. Tentative agenda is as follows:

Welcome
Introductions
Recap of Planned Work and Proposed Outcomes
Work Plan Discussion
Action Items and Next Meeting Date

Additional details to follow in the coming weeks as materials are further developed.

Thank you again for your support and expertise on the matter. For any questions, please contact the Advisor leading this work, Kate Prosser at kathleen.prosser@nrcan-rncan.gc.ca.

Kind regards,
Pui Wai Yuen
Director, Uranium and Radioactive Waste Division

Microsoft Teams meeting

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Meeting ID: [REDACTED]

Passcode: [REDACTED]

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Join with a video conferencing device

teams@nrcan-rncan.video.canada.ca

Video Conference ID: [REDACTED]

[Alternate VTC instructions](#)

Or call in (audio only)

+1 613-699-2160, [REDACTED] Canada, Ottawa-Hull

Phone Conference ID: [REDACTED]

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[Learn More](#) | [Meeting options](#)

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ID de la réunion : [REDACTED]

Code secret : [REDACTED]

[Téléchargez Teams](#) | [Participez sur le web](#)

Rejoindre avec un appareil de vidéoconférence

teams@nrcan-rncan.video.canada.ca

No de vidéoconférence : [REDACTED]

[Autres instructions VTC](#)

Ou composez le numéro de téléphone (audio seulement)

+1 613-699-2160, [REDACTED] Canada, Ottawa-Hull

No de conférence téléphonique : [REDACTED]

[Recherchez un numéro local](#) | [Réinitialisez le NIP](#)

[Pour en savoir plus](#) | [Options de réunion](#)

Fwd: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

April 29, 2024 11:18 AM

Subject	Fwd: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)
From	Yuen, Pui Wai
To	Beauregard-Tellier, Frédéric
Cc	Wilkinson, David; Prosser, Kathleen; Ottaway, Chelsea
Sent	September 14, 2023 5:49 PM

FYI

Sent from my iPhone
Begin forwarded message:

From: "Svonkin, Carolyn" <carolyn.svonkin@nrcan-rncan.gc.ca>
Date: September 14, 2023 at 5:16:05 PM EDT
To: "Media (NRCan/RNCan)" <media@nrcan-rncan.gc.ca>, "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>
Cc: "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>, "Fickes, Kristina" <kristina.fickes@nrcan-rncan.gc.ca>, "Adams, Emilie (she, her | elle, elle)" <emilie.adams@nrcan-rncan.gc.ca>, "Reda, Sarah" <Sarah.Red@nrcan-rncan.gc.ca>, "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>, "Ottaway, Chelsea" <chelsea.ottaway@nrcan-rncan.gc.ca>, "NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)" <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>, "Hilborn, Jade (she, her | elle, elle)" <jade.hilborn@nrcan-rncan.gc.ca>, "Roush, Melanie" <melanie.roush@nrcan-rncan.gc.ca>, "Montgomery, James (he, him | il, lui)" <james.montgomery@nrcan-rncan.gc.ca>, "Harrietha, Kyle" <Kyle.Harrietha@nrcan-rncan.gc.ca>, "Forman, Jared" <jared.forman@nrcan-rncan.gc.ca>, "Pierce, Auston" <Auston.Pierce@nrcan-rncan.gc.ca>, "Steede, Kieran" <Kieran.Steede@nrcan-rncan.gc.ca>, "Kim, Sabrina" <sabrina.kim@nrcan-rncan.gc.ca>
Subject: RE: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Hi Bruce,

That line is accurate and can be shared.

Thanks,
Carolyn

Carolyn Svonkin (she/her/elle)
 Press Secretary / Attachée de presse
 Office of the Minister of Energy and Natural Resources Canada /
 Cabinet du ministre de l'Énergie et des Ressources naturelles

343-597-1725

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Thursday, September 14, 2023 5:11 PM
To: Svonkin, Carolyn <carolyn.svonkin@nrcan-rncan.gc.ca>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Fickes, Kristina <kristina.fickes@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Montgomery, James (he, him | il, lui) <james.montgomery@NRCan-RNCan.gc.ca>; Harrietha, Kyle <Kyle.Harrietha@nrcan-rncan.gc.ca>; Forman, Jared <jared.forman@nrcan-rncan.gc.ca>; Pierce, Auston <Auston.Pierce@nrcan-rncan.gc.ca>; Steede, Kieran <Kieran.Steede@nrcan-rncan.gc.ca>; Kim, Sabrina <sabrina.kim@nrcan-rncan.gc.ca>
Subject: RE: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Hi Carolyn and Kathleen.

We shared the approved response with the reporter and he came back with this question:

Based on these responses, I take it the Government of Canada is not developing a policy on used nuclear fuel reprocessing at this time. Can you confirm?

In the draft response, the first line read as follows: NRCan is not undertaking efforts to establish a policy on used nuclear fuel reprocessing.

This line was removed in the final approved version, which might have left the reporter uncertain about whether we're working on such a policy.

Is this line accurate? And if it is, would it be okay for us to share the line with the reporter to remove any uncertainty?

Please let us know – thanks!

bruce

From: Svonkin, Carolyn <carolyn.svonkin@nrcan-rncan.gc.ca>
Sent: Wednesday, September 13, 2023 10:02 PM
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Fickes, Kristina <kristina.fickes@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Montgomery, James (he, him | il, lui) <james.montgomery@NRCan-RNCan.gc.ca>; Harrietha, Kyle <Kyle.Harrietha@nrcan-rncan.gc.ca>; Forman, Jared <jared.forman@nrcan-rncan.gc.ca>; Pierce, Auston <Auston.Pierce@nrcan-rncan.gc.ca>; Steede, Kieran <Kieran.Steede@nrcan-rncan.gc.ca>; Kim, Sabrina <sabrina.kim@nrcan-rncan.gc.ca>
Subject: RE: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

A0067739_2-000091

Hi Bruce!

The below is approached. Thanks for your work on this one!

- **What is the status of NRCan's efforts to establish a policy on used nuclear fuel reprocessing?**
 - The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations.
 - There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.
 - All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.
 - Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.
 - NRCan is aware of the draft document prepared by the CANDU Owners Group through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- **Why has the policy not been released yet?**
 - The Government of Canada does not have a policy specifically in favor of, or banning, spent fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel.

A0067739_3-000092

Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

- **When does NRCan intend to release the policy?**
 - Please see above response.
- **When did NRCan ask the COG for input on this policy?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCan therefore did not solicit input from COG, the document was shared with NRCan subject matter experts for discussion and consideration. It does not in any way represent a policy of or by the federal government.
- **Other than the COG, who else has NRCan consulted on establishing a policy on used nuclear fuel reprocessing?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCan therefore did not consult anyone on a used nuclear fuel reprocessing policy. During the course of the engagement on the modernization of Canada's Policy on Radioactive Waste Management and Decommissioning, reprocessing was raised through a number of submissions and engagement sessions, in which other federal government departments participated.
- **What input did these other parties offer?**
 - NRCan is not aware of who COG has consulted on their draft spent fuel reprocessing document.

Carolyn Svonkin (she/her/elle)

Press Secretary / Attachée de presse

Office of the Minister of Energy and Natural Resources Canada /

Cabinet du ministre de l'Énergie et des Ressources naturelles

343-597-1725

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>

Sent: Wednesday, September 13, 2023 11:35 AM

To: Svonkin, Carolyn <carolyn.svonkin@nrcan-rncan.gc.ca>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Fickes, Kristina <kristina.fickes@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Montgomery, James (he, him | il, lui) <james.montgomery@NRCan-RNCan.gc.ca>; Harrietha, Kyle <Kyle.Harrietha@nrcan-rncan.gc.ca>; Forman, Jared <jared.forman@nrcan-rncan.gc.ca>; Pierce, Auston <Auston.Pierce@nrcan-rncan.gc.ca>; Steede, Kieran <Kieran.Steede@nrcan-rncan.gc.ca>; Kim, Sabrina <sabrina.kim@nrcan-rncan.gc.ca>

A0067739_4-000093

nrcan.gc.ca>

Subject: FOR MINO APPROVAL: Media request (Yellow) // Nuclear fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Hi Carolyn.

We've received a media call from the Globe and Mail regarding nuclear fuel reprocessing. For MinO's review, we are sending along the written response that sector has provided. Please let us know if MinO approves the response.

Thank you
bruce

Bruce Blackie

Media Relations / Relations avec les médias
Natural Resources Canada / Ressources naturelles Canada
media@nrcan-nrcan.gc.ca
(343) 598-7019

REPORTER DEADLINE:

2023/09/15 12:00 PM

APPROVALS:

Frédéric Beauregard-Tellier, DG, NEISB - approved
Melanie Rousch, Manager, CPS - approved
James Montgomery, A/Director, CPS - approved
Lorraine McKenzie Presley, ADM - FYI
MinO - pending

SECTOR: ESS
CALL TYPE: Written Response/ Réponse écrite
CODE: Yellow
OUTLET: Globe and Mail
REPORTER: Matt McClearn

CONTEXT/QUESTIONS:

Reporter has a number of questions for NRCan regarding nuclear fuel reprocessing.

[REDACTED] The documents reveal that NRCan has been studying nuclear fuel reprocessing, including the potential for increased proliferation risk. The documents also reveal that the CANDU Operators Group provided NRCan with a "strategy to establish a policy on used nuclear fuel reprocessing" in September 2022. The documents indicate that Moltex has made a submission on the draft policy. It is evident from the documents that certain members of Canada's nuclear industry are eager to see the government release such a policy promptly. The COG had wanted it to be issued this spring, but as far as the reporter is aware, no policy has been released yet.

QUESTIONS FOR NRCan:

- What is the status of NRCan's efforts to establish a policy on used nuclear fuel reprocessing?

A0067739_5-000094

- Why has the policy not been released yet?
- When does NRCAN intend to release the policy?
- When did NRCAN ask the COG for input on this policy?
- Other than the COG, who else has NRCAN consulted on establishing a policy on used nuclear fuel reprocessing?
- What input did these other parties offer?

RESPONSE

- **What is the status of NRCAN's efforts to establish a policy on used nuclear fuel reprocessing?**
 - NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations.
 - There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. In the past, the nuclear industry has not deemed it necessary or cost-effective to reprocess and recycle used nuclear fuel from Canada's reactors given the domestic abundance of economical high-grade uranium. However, some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.
 - Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.
 - NRCAN is aware of the draft document prepared by the CANDU Owners Group through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- **Why has the policy not been released yet?**
 - The Government of Canada does not have a policy specifically in favor of, or banning, spent fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and is receptive to exploring the science, benefits,

and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

- **When does NRCan intend to release the policy?**
 - Please see above response.
- **When did NRCan ask the COG for input on this policy?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCan therefore did not solicit input from COG, the document was shared with NRCan subject matter experts for discussion and consideration. It does not in any way represent a policy of or by the federal government.
- **Other than the COG, who else has NRCan consulted on establishing a policy on used nuclear fuel reprocessing?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCan therefore did not consult anyone on a used nuclear fuel reprocessing policy. During the course of the engagement on the modernization of Canada's Policy on Radioactive Waste Management and Decommissioning, reprocessing was raised through a number of submissions and engagement sessions, in which other federal government departments participated.
- **What input did these other parties offer?**
 - NRCan is not aware of who COG has consulted on their draft spent fuel reprocessing document.

Key messages:

Reprocessing in Canada would require consideration of all relevant factors by the federal government prior to its deployment, including ensuring the health, safety and security of people in Canada, and compliance with non-proliferation safeguards and international treaties. The government of Canada remains deeply committed to the 1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science. Our independent regulator – the Canadian Nuclear Safety Commission – ensures that all licensed nuclear facilities that manage radioactive material do so safely according to the regulatory framework under the *Nuclear Safety and Control Act*.

Fwd: FOR URGENT ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)

April 29, 2024 11:13 AM

Subject	Fwd: FOR URGENT ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	September 12, 2023 9:40 PM

Sent from my iPhone
Begin forwarded message:

From: "Beauregard-Tellier, Frédéric" <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Date: September 12, 2023 at 9:12:43 PM EDT
To: "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>, "Ottaway, Chelsea" <chelsea.ottaway@nrcan-rncan.gc.ca>
Cc: "NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)" <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>, "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>
Subject: RE: FOR URGENT ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)

PROTECTED B - PROTÉGÉ B

Thanks Kate. This is very good. I approve. This can go to comms (not sure of process; defer to you, Chelsea), with suggestion that we get green light from GAC on these responses (ideally via comms channels I think).

Fred

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Tuesday, September 12, 2023 5:11 PM
To: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: FW: FOR URGENT ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)

PROTECTED B - PROTÉGÉ B

Hi,

Please see below for the director approved input. To Fred for consideration. As Pui Wai mentioned, we'll be sharing these draft responses with GAC, along with the ATIP package, so that they are aware of this issue and can be ready in case there are any questions related to

A0067740_1-000097

non-pro heading their way.

Happy to discuss if there are questions.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

- **What is the status of NRC's efforts to establish a policy on used nuclear fuel reprocessing?**
 - NRC is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations.
 - There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. In the past, the nuclear industry has not deemed it necessary or cost-effective to reprocess and recycle used nuclear fuel from Canada's reactors given the domestic abundance of economical high-grade uranium. However, some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.
 - Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.
 - NRC is aware of the draft document prepared by the CANDU Owners Group through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

A0067740_2-000098

- **Why has the policy not been released yet?**
 - The Government of Canada does not have a policy specifically in favor of, or banning, spent fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government—including safety, security, sustainability, and peaceful use—prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.
- **When does NRCAN intend to release the policy?**
 - Please see above response.
- **When did NRCAN ask the COG for input on this policy?**
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- **Other than the COG, who else has NRCAN consulted on establishing a policy on used nuclear fuel reprocessing?**
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- **What input did these other parties offer?**
 - NRCAN is not aware of who COG has consulted on their draft spent fuel reprocessing document.

Key Message:

Reprocessing in Canada would require consideration of all relevant factors by the federal government prior to its deployment, including ensuring the health, safety and security of people in Canada, and compliance with non-proliferation safeguards and international treaties. The government of Canada remains deeply committed to the 1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT),

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science. Our independent

regulator—the Canadian Nuclear Safety Commission—ensures that all licensed nuclear facilities that manage radioactive material do so safely according to the regulatory framework under the *Nuclear Safety and Control Act*.

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>
Sent: Tuesday, September 12, 2023 2:13 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Subject: FOR URGENT ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)
Importance: High

UNCLASSIFIED - NON CLASSIFIÉ

FOR ACTION

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Tuesday, September 12, 2023 2:11 PM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Subject: FOR URGENT ACTION: Media request (Rapid) // Nuke fuel reprocessing // Matt McClearn (Globe and Mail)
Importance: High

UNCLASSIFIED - NON CLASSIFIÉ

Hi Frédéric.
We've received an urgent media call from the Globe and Mail regarding nuclear fuel reprocessing.
Please let us know if you can speak to this call.
Thank you
bruce

Bruce Blackie
Media Relations / Relations avec les médias
Natural Resources Canada / Ressources naturelles Canada
media@nrcan-rncan.gc.ca
(343) 598-7019

A0067740_4-000100

REPORTER DEADLINE:

2023/09/13 03:00 PM

APPROVALS:

SECTOR: ESS
CALL TYPE: Written Response/ Réponse écrite
CODE: Rapid
OUTLET: Globe and Mail
REPORTER: Matt McClearn

CONTEXT/QUESTIONS:

Reporter has a number of questions for NRCAN regarding nuclear fuel reprocessing.

The documents reveal that NRCAN has been studying nuclear fuel reprocessing, including the potential for increased proliferation risk. The documents also reveal that the CANDU Operators Group provided NRCAN with a "strategy to establish a policy on used nuclear fuel reprocessing" in September 2022. The documents indicate that Moltex has made a submission on the draft policy. It is evident from the documents that certain members of Canada's nuclear industry are eager to see the government release such a policy promptly. The COG had wanted it to be issued this spring, but as far as the reporter is aware, no policy has been released yet.

QUESTIONS FOR NRCAN:

- What is the status of NRCAN's efforts to establish a policy on used nuclear fuel reprocessing?
- Why has the policy not been released yet?
- When does NRCAN intend to release the policy?
- When did NRCAN ask the COG for input on this policy?
- Other than the COG, who else has NRCAN consulted on establishing a policy on used nuclear fuel reprocessing?
- What input did these other parties offer?

RESPONSE

RE: 2nd NWW roundtable prep meeting

April 29, 2024 12:31 PM

Subject	RE: 2nd NWW roundtable prep meeting
From	Brady, Daniel
To	Tanya.Hinton@international.gc.ca; Elaine.Kanasewich@cnscccsn.gc.ca; Wilkinson, David; Lee.Brunarski@cnscccsn.gc.ca; Genevieve.Boudrias@cnscccsn.gc.ca; Andrew.McAllister@cnscccsn.gc.ca; Pascale.Bourassa@cnscccsn.gc.ca; Nadia.Petseva@cnscccsn.gc.ca; Yuen, Pui Wai; Prosser, Kathleen
Cc	Hilborn, Jade (she, her elle, elle)
Sent	October 31, 2023 1:56 PM

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Tanya – I expect the conversation with NWW will be moved to the next level.

Dan

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Tuesday, October 31, 2023 1:47 PM
To: Elaine.Kanasewich@cnscccsn.gc.ca; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Lee.Brunarski@cnscccsn.gc.ca; Genevieve.Boudrias@cnscccsn.gc.ca; Andrew.McAllister@cnscccsn.gc.ca; Pascale.Bourassa@cnscccsn.gc.ca; Nadia.Petseva@cnscccsn.gc.ca; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrccan-rnccan.gc.ca>
Subject: RE: 2nd NWW roundtable prep meeting

UNCLASSIFIED - NON CLASSIFIÉ

Moltex announces waste recycling breakthrough : Waste & Recycling - World Nuclear News (world-nuclear-news.org)

From: Kanasewich, Elaine <Elaine.Kanasewich@cnscccsn.gc.ca>
Sent: Tuesday, October 31, 2023 1:06 PM
To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>; Boudrias, Geneviève <Genevieve.Boudrias@cnscccsn.gc.ca>; McAllister, Andrew <Andrew.McAllister@cnscccsn.gc.ca>; Bourassa, Pascale <Pascale.Bourassa@cnscccsn.gc.ca>; Petseva, Nadia <Nadia.Petseva@cnscccsn.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrccan-rnccan.gc.ca>
Subject: RE: 2nd NWW roundtable prep meeting

Hello, Lee and colleagues.

I am available, but just a quick not that I believe we mean November 14th form 12-1 ☺.

Many thanks,

Elaine

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

A0067741_1-000102

Sent: October 31, 2023 12:58 PM

To: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>; Boudrias, Geneviève <Genevieve.Boudrias@cnscccsn.gc.ca>; McAllister, Andrew <Andrew.McAllister@cnscccsn.gc.ca>; Bourassa, Pascale <Pascale.Bourassa@cnscccsn.gc.ca>; Kanasewich, Elaine <Elaine.Kanasewich@cnscccsn.gc.ca>; Petseva, Nadia <Nadia.Petseva@cnscccsn.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>

Subject: RE: 2nd NWW roundtable prep meeting

EXTERNAL EMAIL – USE CAUTION / COURRIEL EXTERNE – FAITES PREUVE DE PRUDENCE

UNCLASSIFIED - NON CLASSIFIÉ

Hi Lee,

I believe NRCan is agreeable to Tuesday, Oct 14, at noon. Please go ahead and book it and if anything changes we will let you know ASAP.

Thanks,

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>

Sent: Tuesday, October 31, 2023 11:18 AM

To: Boudrias, Geneviève <Genevieve.Boudrias@cnscccsn.gc.ca>; McAllister, Andrew <Andrew.McAllister@cnscccsn.gc.ca>; Bourassa, Pascale <Pascale.Bourassa@cnscccsn.gc.ca>; Kanasewich, Elaine <Elaine.Kanasewich@cnscccsn.gc.ca>; Petseva, Nadia <Nadia.Petseva@cnscccsn.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: RE: 2nd NWW roundtable prep meeting

Hello.

Following up on the meeting earlier this morning, there doesn't appear to be any good opportunities for a follow-up prep the week of October 13th – 17th other than over lunch.

Please let me know if you are agreeable to Tuesday, October 14th from 12:00 – 1:00 (using as much or little of the hour as needed).

Apologies in advance for the inconvenience.

Thank you,

Lee

A0067741_2-000103

RE: 2nd NWW roundtable prep meeting

April 29, 2024 12:30 PM

Subject	RE: 2nd NWW roundtable prep meeting
From	Hilborn, Jade (she, her elle, elle)
To	Wilkinson, David
Cc	Yuen, Pui Wai; Prosser, Kathleen; Brady, Daniel
Sent	October 31, 2023 12:17 PM

UNCLASSIFIED - NON CLASSIFIÉ

Hi Dave,

All good for 12-1 on Nov 14. That block is for lunch hour.

Thanks,
Jade

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: Tuesday, October 31, 2023 11:52 AM
To: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrca-rnca.gc.ca>
Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen
 <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: RE: 2nd NWW roundtable prep meeting

UNCLASSIFIED - NON CLASSIFIÉ

Hello,

Looping in Jade in case something can be shifted in PW's calendar.

Thanks,

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
 Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
 Natural Resources Canada / Ressources naturelles Canada

From: Wilkinson, David
Sent: Tuesday, October 31, 2023 11:39 AM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen
 <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: FW: 2nd NWW roundtable prep meeting

Hello,

It looks like Pui Wai and Dan both have something scheduled from 12-1pm on Nov 14. Not sure if you're able to move things. Any preference on how we respond to Lee?

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs

A0067743_1-000104

Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>

Sent: Tuesday, October 31, 2023 11:18 AM

To: Boudrias, Geneviève <Genevieve.Boudrias@cnscccsn.gc.ca>; McAllister, Andrew <Andrew.McAllister@cnscccsn.gc.ca>; Bourassa, Pascale <Pascale.Bourassa@cnscccsn.gc.ca>; Kanasewich, Elaine <Elaine.Kanasewich@cnscccsn.gc.ca>; Petseva, Nadia <Nadia.Petseva@cnscccsn.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: RE: 2nd NWW roundtable prep meeting

Hello.

Following up on the meeting earlier this morning, there doesn't appear to be any good opportunities for a follow-up prep the week of October 13th – 17th other than over lunch.

Please let me know if you are agreeable to Tuesday, October 14th from 12:00 – 1:00 (using as much or little of the hour as needed).

Apologies in advance for the inconvenience.

Thank you,

Lee

RE: FOR ACTION BY 4 PM TODAY IF POSSIBLE: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)

April 29, 2024 11:25 AM

Subject	RE: FOR ACTION BY 4 PM TODAY IF POSSIBLE: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)
From	Media (NRCan/RNCan)
To	Wilkinson, David; Media (NRCan/RNCan)
Cc	Roush, Melanie; Adams, Emilie (she, her elle, elle); Reda, Sarah; Yuen, Pui Wai; Ottaway, Chelsea; NEISB DGO Correspondence / Correspondance BDG DENSE (NRCan/RNCan); Hilborn, Jade (she, her elle, elle); Prosser, Kathleen; Piercey, Christopher (he, him il, lui)
Sent	September 25, 2023 3:00 PM

UNCLASSIFIED - NON CLASSIFIÉ

Thanks David.
 These lines appear to mirror the messaging in our response to the Globe’s original inquiry on this topic. See below for Qs and As that we shared with the reporter.
 Given that there are no new points to be made, we can respond to the Globe that we have no additional information to pass along at this time.
 Do you agree with this approach?
 Thanks!
 bruce

- **What is the status of NRCan's efforts to establish a policy on used nuclear fuel reprocessing?**
 - NRCan is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada’s non proliferation obligations.
 - There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.
 - All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.

- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.
- NRCAN is aware of the draft document prepared by the CANDU Owners Group through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- **Why has the policy not been released yet?**
 - The Government of Canada does not have a policy specifically in favor of, or banning, spent fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.
- **When does NRCAN intend to release the policy?**
 - Please see above response.
- **When did NRCAN ask the COG for input on this policy?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCAN therefore did not solicit input from COG, the document was shared with NRCAN subject matter experts for discussion and consideration. It does not in any way represent a policy of or by the federal government.
- **Other than the COG, who else has NRCAN consulted on establishing a policy on used nuclear fuel reprocessing?**
 - This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCAN therefore did not consult anyone on a used nuclear fuel reprocessing policy. During the course of the engagement on the modernization of Canada's Policy on Radioactive Waste Management and Decommissioning, reprocessing was raised through a number of submissions and engagement sessions, in which

other federal government departments participated.

- **What input did these other parties offer?**
 - NRCAN is not aware of who COG has consulted on their draft spent fuel reprocessing document.

From: Wilkinson, David <david.wilkinson@NRCAN-RNCAN.gc.ca>
Sent: Monday, September 25, 2023 2:29 PM
To: Media (NRCAN/RNCAN) <media@nrcan-rncan.gc.ca>
Cc: Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCAN-RNCAN.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCAN-RNCAN.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCAN-RNCAN.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCAN/RNCAN) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCAN-RNCAN.gc.ca>; Piercey, Christopher (he, him | il, lui) <christopher.piercey@NRCAN-RNCAN.gc.ca>
Subject: RE: FOR ACTION BY 4 PM TODAY IF POSSIBLE: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)

UNCLASSIFIED - NON CLASSIFIÉ

Hello Bruce,

We would not have much to add beyond the lines that were already approved by MINO. I would recommend highlighting the following pre-approved lines. The second sentence and middle parts address the “Why is the government not undertaking efforts to establish a policy?” A/director approved for URWD.

The Government of Canada does not have a policy specifically in favor of, or banning, spent fuel reprocessing, nor is it undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel.

All radioactive material in Canada, including any potential future deployment of reprocessing technologies, is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada’s Policy for Radioactive Waste Management and Decommissioning.

NRCAN did not consult anyone on a used nuclear fuel reprocessing policy. During the course of the engagement on the modernization of Canada's Policy on Radioactive Waste Management and Decommissioning, reprocessing was raised through a number of submissions and engagement sessions, in which other federal government departments participated. NRCAN is aware of the draft document prepared by the CANDU Owners Group through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. NRCAN did not solicit input from CANDU Owner's Group; the document was shared with NRCAN subject matter experts for discussion and consideration. It does not in any way represent a policy of or by the federal government.

Happy to discuss. In terms of approvals, please make sure Chris Piercey has an opportunity to review as per Chelsea's email.

Dave

From: Media (NRCAN/RNCAN) <media@nrcan-rncan.gc.ca>
Sent: Monday, September 25, 2023 1:38 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCAN-RNCAN.gc.ca>; Wilkinson, David <david.wilkinson@NRCAN-RNCAN.gc.ca>
Cc: Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCAN-RNCAN.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCAN-RNCAN.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCAN-RNCAN.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCAN/RNCAN) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>
Subject: FOR ACTION BY 4 PM TODAY IF POSSIBLE: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)
Importance: High

UNCLASSIFIED - NON CLASSIFIÉ

Hi Kathleen and David.

We've received an urgent media call from the Globe and Mail concerning spent nuclear fuel reprocessing.

This is a followup to a media call we responded to earlier this month.

Please let us know if you can speak to this call.

Thanks!

bruce

Bruce Blackie

Media Relations / Relations avec les médias
 Natural Resources Canada / Ressources naturelles Canada
media@nrcan-rncan.gc.ca
 (343) 598-7019

REPORTER DEADLINE:

2023/09/25 04:00 PM

APPROVALS:

A0067744_4-000109

SECTOR:

CALL TYPE: Written Response/ Réponse écrite

CODE: Rapid

OUTLET: Globe and Mail

REPORTER: Matt McClearn

CONTEXT/QUESTIONS:

Reporter is writing to a 4 pm deadline today, Monday, Sept 25.

He has submitted a followup question to NRCan's response to his earlier media call re policy on spent nuclear fuel reprocessing: [Nuclear fuel reprocessing](#).

His followup question for response asap today is:

Why is the government not undertaking efforts to establish a policy?

CONTEXT:

Reporter says "in light of the letter published by Frank von Hippel et al today (https://www.ccnr.org/Trudeau_letter_Sept_22_2023.pdf), I am going to write about this. The authors of that letter are under the impression that there is an effort underway to draw up policy on this. Moreover, the CNSC has said that reprocessing spent fuel "requires a policy decision from the federal government" and has called on the government to begin dialogue around that. Also, the Access to Information docs cited in this e-mail show that Moltex told the government it also believed there was an effort in progress to establish a policy on reprocessing. Moltex indicated that this was a matter of urgency, as the uncertainty around the policy would make it difficult for the company to attract investment. Given all this, why is the government not undertaking efforts to establish a policy?"

RESPONSE

RE: FOR ACTION BY 4 PM TODAY IF POSSIBLE: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)

April 29, 2024 11:24 AM

Subject	RE: FOR ACTION BY 4 PM TODAY IF POSSIBLE: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)
From	Ottaway, Chelsea
To	Media (NRCan/RNCan); Prosser, Kathleen; Wilkinson, David; Piercey, Christopher (he, him il, lui)
Cc	Roush, Melanie; Adams, Emilie (she, her elle, elle); Reda, Sarah; Yuen, Pui Wai; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan); Hilborn, Jade (she, her elle, elle)
Sent	September 25, 2023 2:17 PM

UNCLASSIFIED - NON CLASSIFIÉ

Looping in @Piercey, Christopher (he, him | il, lui)A/DG for NEISB from Sept. 25-29, please ensure he is part of the chain of approvals.

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Monday, September 25, 2023 1:38 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Cc: Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>
Subject: FOR ACTION BY 4 PM TODAY IF POSSIBLE: Media request (Rapid) // FOLLOWUP: Nuclear - spent fuel reprocessing // Matt McClearn (Globe and Mail)
Importance: High

UNCLASSIFIED - NON CLASSIFIÉ

Hi Kathleen and David.
We've received an urgent media call from the Globe and Mail concerning spent nuclear fuel reprocessing.
This is a followup to a media call we responded to earlier this month.
Please let us know if you can speak to this call.
Thanks!
bruce

Bruce Blackie
Media Relations / Relations avec les médias
Natural Resources Canada / Ressources naturelles Canada
media@nrcan-rncan.gc.ca
(343) 598-7019

REPORTER DEADLINE:

A0067748_1-000111

2023/09/25 04:00 PM

APPROVALS:

SECTOR:

CALL TYPE: Written Response/ Réponse écrite

CODE: Rapid

OUTLET: Globe and Mail

REPORTER: Matt McClearn

CONTEXT/QUESTIONS:

Reporter is writing to a 4 pm deadline today, Monday, Sept 25.

He has submitted a followup question to NRCAN's response to his earlier media call re policy on spent nuclear fuel reprocessing: [Nuclear fuel reprocessing](#).

His followup question for response asap today is:

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CONTEXT:

Reporter says "in light of the letter published by Frank von Hippel et al today (https://www.ccnr.org/Trudeau_letter_Sept_22_2023.pdf), I am going to write about this. The authors of that letter are under the impression that there is an effort underway to draw up policy on this. Moreover, the CNSC has said that reprocessing spent fuel "requires a policy decision from the federal government" and has called on the government to begin dialogue around that. Also, the Access to Information docs cited in this e-mail show that Moltex told the government it also believed there was an effort in progress to establish a policy on reprocessing. Moltex indicated that this was a matter of urgency, as the uncertainty around the policy would make it difficult for the company to attract investment. Given all this, why is the government not undertaking efforts to establish a policy?"

RESPONSE

A0067748_2-000112

RE: FOR ACTION: Media request (Rapid) // Moltex // John Woodside (National Observer)

April 29, 2024 11:20 AM

Subject	RE: FOR ACTION: Media request (Rapid) // Moltex // John Woodside (National Observer)
From	Brady, Daniel
To	Wilkinson, David; Media (NRCan/RNCan); Ottaway, Chelsea; Prosser, Kathleen; Piercey, Christopher (he, him il, lui)
Cc	Roush, Melanie; Adams, Emilie (she, her elle, elle); Reda, Sarah; Yuen, Pui Wai; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan); Hilborn, Jade (she, her elle, elle)
Sent	September 26, 2023 4:15 PM

UNCLASSIFIED - NON CLASSIFIÉ

Dave

Further to the lines provided in the attached, if pushed to have something on Moltex given the reference. The focus seems to be the idea that Canada is developing a reprocessing.

- Several Small Modular Reactors (SMRs) companies around the world are working to develop technologies that could utilize recycled fuel, including Moltex Energy in Canada.
- Moltex Energy is exploring this technology further, and they, or other technology developers, may propose future reprocessing activities in Canada if the technology development is successful.
- The Government of Canada has provided some funding to advance the development of the technology, which will enable a better understanding of it, including both benefits and risks.
- All activities related to nuclear energy in Canada are subject to the regulatory framework under the Nuclear Safety and Control Act, and all nuclear materials are subject to our international commitments on nuclear safety, security, and non-proliferation

Dan

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: Tuesday, September 26, 2023 2:54 PM
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Piercey, Christopher (he, him | il, lui) <christopher.piercey@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Cc: Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>
Subject: RE: FOR ACTION: Media request (Rapid) // Moltex // John Woodside (National Observer)

A0067751_1-000113

UNCLASSIFIED - NON CLASSIFIÉ

Hello,

From a URWD perspective, recommend using the same lines as September 14 (attached). I'm looping in Dan in NED to see if he has anything he would add specifically on Moltex.

Dave

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Tuesday, September 26, 2023 2:47 PM
To: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Piercey, Christopher (he, him | il, lui) <christopher.piercey@NRCan-RNCan.gc.ca>
Cc: Roush, Melanie <melanie.roush@nrcan-rncan.gc.ca>; Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Reda, Sarah <Sarah.Red@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>
Subject: FOR ACTION: Media request (Rapid) // Moltex // John Woodside (National Observer)

UNCLASSIFIED - NON CLASSIFIÉ

Hello Chelsea and team,

We have a new media call via MINO on the use of reprocessed nuclear fuel. Are you able to speak to this call?

Best,
Michael

REPORTER DEADLINE:

2023/09/26 04:00 PM

SECTOR:

CALL TYPE: Written Response/ Réponse écrite

CODE: Rapid

OUTLET: National Observer

REPORTER: John Woodside

CONTEXT/QUESTIONS:

I'm hoping you can provide the latest info on a policy process with the CANDU Owners Group, Nuclear Safety Commission and Global Affairs relating to the use of reprocessed nuclear fuel. A [letter](#) sent to the PMO today says:

"Recently, however, we learned, through an Access to Information Act request by a Canadian academic, that, despite the strong opposition of Moltex, the Ministry of Natural Resources launched a policy-making process on reprocessing in collaboration with the international CANDU Owners Group and in consultation with the Ministry of Foreign Affairs and the Nuclear Safety Commission."

A0067751_2-000114

So my request is about any info the department can provide re: this process. Have there been any decisions? Any public documents you can share? And further, I'd appreciate a comment attributable to Minister Wilkinson about Moltex specifically. This company has received government support in the past, but with mounting concerns about the technology, I'd like to know how fully the federal government backs this project.

RESPONSE

Michael MacDonald (he, him, his / il, lui, son)
Communications Advisor | Conseiller en communications
Media Relations | Relations avec les médias

Natural Resources Canada | Ressources naturelles Canada

+1-343-292-6100 | MichaelD.MacDonald@nrcan-rncan.gc.ca



Natural Resources
Canada

Ressources naturelles
Canada

RE: NWW roundtable chat

April 29, 2024 10:39 AM

Subject	RE: NWW roundtable chat
From	Yuen, Pui Wai
To	Prosser, Kathleen
Cc	Wilkinson, David; Fairchild, Jamie
Sent	January 10, 2024 12:07 PM

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Kate!

I took a quick glance and concurs. I'll get back to Andrew now.

Thanks for reviewing in detail!
PW

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 10 janvier 2024 08:28
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Subject: RE: NWW roundtable chat

UNCLASSIFIED - NON CLASSIFIÉ

Morning Pui Wai,

I took a look through and agree with Andrew's assessment, the summary reflects well the discussion and honestly reads quite like the notes we prepared.

I propose you reach back out to Andrew and let him know we're comfortable with their edits and that we're happy for them to share back.

I can also confirm that I have the email in my junk mail from the 22nd of December.

Cheers,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
 Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

A0067760_1-000116

Sent: Tuesday, January 9, 2024 5:13 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Subject: FW: NWW roundtable chat

UNCLASSIFIED - NON CLASSIFIÉ

Hi Kate,

Could you please take a look to see if we have any comments to add? We could always send it to [REDACTED] separately as well to give us more time.

I think it went into our junk mail as well since I don't see it in my inbox.

Thanks!
 PW

From: McAllister, Andrew <Andrew.McAllister@cnscccsn.gc.ca>
Sent: 9 janvier 2024 13:50
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>; Kanasewich, Elaine <Elaine.Kanasewich@cnscccsn.gc.ca>
Subject: RE: NWW roundtable chat

Good afternoon colleagues,

Not sure that NRCan and GAC are in the same situation as us, but the meeting summary from the NGO roundtable on reprocessing ended up in our junk email folder.

I've attached CNSC's suggested edits to the meeting summary which we thought was overall well done. We will be passing these on to [REDACTED] by tomorrow.

Cheers,

Andrew

-----Original Appointment-----

From: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>
Sent: November 14, 2023 1:55 PM
To: Yuen, Pui Wai; Kanasewich, Elaine; McAllister, Andrew; Tanya.Hinton@international.gc.ca; Prosser, Kathleen
Cc: Bourassa, Pascale; Wilkinson, David
Subject: NWW roundtable chat
When: November 17, 2023 9:45 AM-11:45 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Good afternoon.

As discussed, this will hopefully be useful to share relevant information on the margins of the NWW roundtable.

Thanks,

Lee

A0067760_2-000117

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RE: Questions regarding re-processing

April 29, 2024 9:24 AM

Subject	RE: Questions regarding re-processing
From	Prosser, Kathleen
To	Anderson, Emma (she, her elle, la); Wilkinson, David
Cc	Yuen, Pui Wai
Sent	August 3, 2023 1:15 PM

UNCLASSIFIED - NON CLASSIFIÉ

Yep – just opened the recent ones, looks like the “exploring” was in NED standard lines, the URWD more recent one says: Canada is closely monitoring research developments

The Government of Canada is closely monitoring research developments in reprocessing CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government—including safety, security, sustainability, and peaceful use—prior to its deployment. Canada remains committed to the [Treaty on the Non-Proliferation of Nuclear Weapons](#), including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Anderson, Emma (she, her | elle, la) <Emma.Anderson@nrcan-rncan.gc.ca>
Sent: Thursday, August 3, 2023 12:59 PM
To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: RE: Questions regarding re-processing

UNCLASSIFIED - NON CLASSIFIÉ

Let's discuss response in radwaste touchbase at 2:30.

Emma

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: Thursday, August 3, 2023 12:53 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Anderson, Emma (she, her | elle, la)

A0067761_1-000119

<Emma.Anderson@nrcan-rncan.gc.ca>

Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: RE: Questions regarding re-processing

UNCLASSIFIED - NON CLASSIFIÉ

My concern was with saying *The Government of Canada is responsible for exploring...* There were three dockets (202030, 200864 and 201413/201555) you shared with me of previously approved materials and none of them say that the government is responsible for exploring. Also, some of the dockets include reference to the NSCA framework that I think would be useful.

It's also not clear what we mean by: *Reprocessing in Canada would require consideration of all relevant factors by the federal government prior to its deployment.*

Dave

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Thursday, August 3, 2023 12:11 PM

To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Anderson, Emma (she, her | elle, la) <Emma.Anderson@nrcan-rncan.gc.ca>

Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: RE: Questions regarding re-processing

UNCLASSIFIED - NON CLASSIFIÉ

The language included below is an excerpt from the standard reply developed and approved up to DMO. Would not recommend changing.

-Kate

Thank you for your correspondence about the reprocessing of spent nuclear fuel.

All radioactive waste generated in Canada is safely managed, according to international best practices that are based on the best available science, and there is a comprehensive legislative framework for nuclear energy and technologies, including radioactive waste, that focuses on protecting health, safety, security and the environment. Our independent regulator – the Canadian Nuclear Safety Commission (CNSC) – ensures that all licensed nuclear facilities who manage radioactive waste do so safely according to the regulatory framework under the Nuclear Safety and Control Act.

The Government of Canada is responsible for exploring the science, benefits, and risks associated with technologies that could reprocess nuclear fuel in a safe, secure and environmentally sustainable way while ensuring the peaceful use of nuclear technologies. Reprocessing in Canada would require consideration of all relevant factors by the federal government prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency (IAEA) to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

We appreciate hearing the perspectives of all Canadians on this important issue.

Again, thank you for writing on this important matter.

Yours sincerely,

A0067761_2-000120

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: Thursday, August 3, 2023 12:09 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Anderson, Emma (she, her | elle, la) <Emma.Anderson@nrcan-rncan.gc.ca>
Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: RE: Questions regarding re-processing

UNCLASSIFIED - NON CLASSIFIÉ

Hello,

Some adjustments below for consideration and discussion later:

The Government of Canada is open to the responsible exploration of the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel. Under any scenario, Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes. The Government of Canada does not intend to issue a policy statement on the reprocessing of spent fuel while research into the technologies is ongoing. Reprocessing in Canada would require consideration of all relevant factors prior to its deployment, including ensuring the health, safety, and security of people in Canada, and compliance with non-proliferation safeguards and international treaties as per the *Nuclear Safety and Control Act*.

Dave

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Thursday, August 3, 2023 11:41 AM
To: Anderson, Emma (she, her | elle, la) <Emma.Anderson@nrcan-rncan.gc.ca>
Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: RE: Questions regarding re-processing

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Emma,

We do not have a policy that addresses reprocessing. Standard response on reprocessing:

The Government of Canada is responsible for exploring the science, benefits, and risks associated with technologies that could reprocess nuclear fuel in a safe, secure and environmentally sustainable way while ensuring the peaceful use of nuclear technologies. Reprocessing in Canada would require

A0067761_3-000121

consideration of all relevant factors by the federal government prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency (IAEA) to provide assurances that nuclear materials are used solely for peaceful purposes in Canada

Beyond that, we don't have much that we share publicly. Generally speaking, we would consider recycling to be the whole closed fuel cycle, and the **reprocessing/processing is specific to the step that input spent fuel and outputs fresh fuel**. The IAEA definition is: **Reprocessing**. The separation of nuclear material from fission products in irradiated nuclear material. That is a very broad definition, we would likely want to refine/be specific to nuclear fuel if we were to use it or reference it.

Happy to chat at your convenience.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Anderson, Emma (she, her | elle, la) <Emma.Anderson@nrcan-rncan.gc.ca>
Sent: Thursday, August 3, 2023 11:17 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: FW: Questions regarding re-processing

UNCLASSIFIED - NON CLASSIFIÉ

Hi Kate,

Can you help prepare a response to [REDACTED]

We can discuss today at the Radwaste debrief also.

Thank 😊

Emma

From: [REDACTED]
Sent: Thursday, August 3, 2023 11:10 AM
To: Anderson, Emma (she, her | elle, la) <Emma.Anderson@nrcan-rncan.gc.ca>
Subject: Questions regarding re-processing

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Hi Emma,
It was nice seeing and chatting with you yesterday.

s.19(1)

I have couple of questions regarding re-processing vs. re-cycling of used fuel. I know that the latest Rad Waste Policy states this for reprocessing:

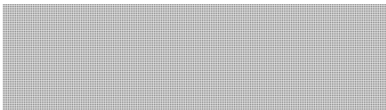
"Reprocessing, the purpose of which would be to extract fissile material from nuclear fuel waste for further use, is not presently employed in Canada, and so is outside the scope of this Policy; if ever brought forward, the radioactive waste from such a project would fall within the scope of this Policy. Reprocessing in Canada would require consideration of all relevant factors by the federal government prior to its deployment, including ensuring the health, safety and security of people in Canada, and compliance with non-proliferation safeguards and international treaties. The government of Canada remains deeply committed to the 1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which remains the only legally binding global treaty promoting nuclear non-proliferation and disarmament. "

But are you aware of any policy that specifically mentions re-cycling of the fuel. Is there any governance for or against recycling used fuel in Canada?

Also, is there an official definition for reprocessing vs. recycling that NRCAN uses?

Thanks,
Sara

Regards,



Nuclear Waste Management Organization / Société de gestion des déchets nucléaires
22 St. Clair Ave. East, 4th Floor | Toronto, ON, Canada | M4T 2S3
Cell phone: [REDACTED]
Email: [REDACTED]

Website / Site Web: www.nwmo.ca
Toll-Free: 1.866.249.NWMO (6966) – Extension 3027

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A0067761_5-000123

des courriels d'hameçonnages dans l'intranet des RNCan.

RE: reprocessing working group

April 29, 2024 9:11 AM

Subject	RE: reprocessing working group
From	Beauregard-Tellier, Frédéric
To	Prosser, Kathleen
Cc	Wilkinson, David; Fairchild, Jamie; Ottaway, Chelsea; Ravary, Liz
Sent	December 15, 2023 9:23 AM

UNCLASSIFIED - NON CLASSIFIÉ

Ok that's great. Liz, please send out the flip friendly that Kate prepared on my behalf.

We'll field questions if/as they come and won't proactively set up a meeting.

Fred

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Friday, December 15, 2023 9:19 AM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Ravary, Liz <liz.ravary@nrcan-rncan.gc.ca>
Subject: RE: reprocessing working group

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Morning Fred,

I've has discussions with all of the different departments at the working level, so they have a good sense of what the objectives and desired outcomes of the project are. I also suggested that they brief up accordingly so that you sending out these materials would not come as a surprise to any of them. If you'd like to use this as an opportunity to have a broader discussion at your level, then I think that would certainly be an interesting idea, but as I said, none of them should be blindsided by your correspondence based on past discussions their teams have had with me.

Happy to chat in 3D if you have further questions.

-Kate

Kathleen Prosser, PhD.
 (she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
 Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>

A0067764_1-000125

Sent: Friday, December 15, 2023 9:08 AM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Fairchild, Jamie
<jamie.fairchild@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>;
Ravary, Liz <liz.ravary@nrcan-rncan.gc.ca>

Subject: reprocessing working group

UNCLASSIFIED - NON CLASSIFIÉ

Hi Kate,

The materials you developed for me to send out are excellent. Just one question – do you think I should organize a meeting with the folks in question to further contextualize and manage the temperature?

Thx

Fred

A0067764_2-000126

RE: [External/Externe]: Reprocessing Working Group Kick-Off Meeting

April 26, 2024 3:02 PM

Subject	RE: [External/Externe]: Reprocessing Working Group Kick-Off Meeting
From	Wittmann, Tess (she, her elle, elle)
To	Yuen, Pui Wai
Cc	Fairchild, Jamie; Hilborn, Jade (she, her elle, elle); Temnikov, Dimitri; Wilkinson, David
Sent	April 11, 2024 1:32 PM


UNCLASSIFIED - NON CLASSIFIÉ

Hey!

Sure thing. [redacted] from 2-4pm otherwise I'd join.

I have attached the two slides that Kate scoped out for the criteria brought up by TC, domestic regulatory environment and supply and demand.

I definitely think TC would add value for the regulatory environment [redacted] I'm less certain for supply and demand [redacted] but happy to keep them in the loop if others think this is beneficial. This is the draft we worked on with NED prior to Kate's departure:

 [2 - Supply and demand for uranium and the implications of a clos.docx](#).

Happy to chat [redacted] or tomorrow if we want to discuss further.

Tess

Domestic Regulatory environment


- What parts of the current regulatory framework impact reprocessing
 - NSCA
 - IAA
 - Reg docs
 - CSAs
- What are the key gaps in Canada's regulatory frameworks for reprocessing?
- What additional capacity would we anticipate being needed at implicated departments and agencies to support this technology in Canada


Participants

Lead: CNSC

Support: NRCan

Stay in the loop:

 Ministère des Ressources
Canada

 Canada

PROTECTED B - PROTÉGÉ B

Supply and demand for uranium and the implications of different fuel cycles

- Domestic uranium supply
- Domestic fuel supply
- Current domestic uranium and fuel demand
- Future domestic uranium and fuel demand


Participants

Lead: NRCAN


Support: GAC + RDAs

Stay in the loop:

- Current global reprocessed uranium supply
- Uses of reprocessed uranium (current global utilization)
- Future global utilization of uranium, and potential demand for alternative uranium sources (RepU)



Innovation, Science and
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From: Yuen, Pui Wai <puiwai.yuen@NRCAN-RNCAN.gc.ca>
Sent: Thursday, April 11, 2024 1:05 PM
To: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>
Cc: Fairchild, Jamie <jamie.fairchild@NRCAN-RNCAN.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Temnikov, Dimitri <dimitri.temnikov@NRCAN-RNCAN.gc.ca>; Wilkinson, David <david.wilkinson@NRCAN-RNCAN.gc.ca>
Subject: RE: [External/Externe]: Reprocessing Working Group Kick-Off Meeting

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Tess, since you're not able to join the radwaste team meeting this afternoon to discuss, could you let me know if TC would add value in any of the topics being considered?

Happy to take 15 min to discuss so that we can get back to Daniel/ I see that Dimitri has created a chat and we can discuss there too.

Thanks!
PW

From: Yuen, Pui Wai
Sent: Tuesday, April 9, 2024 11:13 AM
To: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>
Cc: Fairchild, Jamie <jamie.fairchild@NRCAN-RNCAN.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>
Subject: FW: [External/Externe]: Reprocessing Working Group Kick-Off Meeting

Let's discuss when you get back Tess.

I can't recall if I forwarded you the email below from February – I may have missed it. Sorry about that.

Thanks,
PW

From: Daigle, Daniel (TC/TC) <Daniel.Daigle@tc.gc.ca>
Sent: Tuesday, April 9, 2024 11:00 AM
To: Yuen, Pui Wai <puiwai.yuen@NRCAN-RNCAN.gc.ca>
Subject: RE: [External/Externe]: Reprocessing Working Group Kick-Off Meeting

A0067766_2-000128

Good morning,

I did not hear from you following my email below, and I noticed the work plan discussion table (item 4) of the kick-off meeting summary does not show TC anywhere. Could you confirm whether this is because transport is out of the scope for each of these topics? Do you think my participation could be valuable for any of the topics, such as “Domestic Regulatory Environment”?

Thank you

Daniel Daigle, B.Sc.A.

Analyst - Approvals and Special Regulatory Projects, Transportation of Dangerous Goods Directorate
Transport Canada / Government of Canada
daniel.daigle@tc.gc.ca

Analyste - Approbations et projets réglementaires spéciaux, Direction générale du transport des marchandises dangereuses
Transports Canada / Gouvernement du Canada
daniel.daigle@tc.gc.ca



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From: Daigle, Daniel (TC/TC)

Sent: Friday, February 23, 2024 2:38 PM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: RE: [External/Externe]: Reprocessing Working Group Kick-Off Meeting

Good afternoon Pui Wai,

I is very unclear to me if any of the suggested topics for discussion encompass transport... this is why I refrained from suggesting TC participation in any of them this morning.
However, you may keep me in the loop for any topic you believe I can contribute to, such as “supply/demand” or “regulatory environment”.

Thank you and have a nice weekend!

Daniel Daigle, B.Sc.A.

Analyst - Approvals and Special Regulatory Projects, Transportation of Dangerous Goods Directorate
Transport Canada / Government of Canada
daniel.daigle@tc.gc.ca

Analyste - Approbations et projets réglementaires spéciaux, Direction générale du transport des marchandises dangereuses
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-----Original Appointment-----

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Sent: Monday, January 8, 2024 2:05 PM

To: Yuen, Pui Wai; tanya.hinton@international.gc.ca; naina.thoppil@international.gc.ca; duck.kim@ec.gc.ca; Elizabeth.White-Senack@ised-isde.gc.ca; laura.nourallah@ised-isde.gc.ca; david.reinholz@cnscccsn.gc.ca; michael.kent@cnscccsn.gc.ca; tessa.henley@cnscccsn.gc.ca; julian.amalraj@cnscccsn.gc.ca; marc.desrosiers@hc-sc.gc.ca; Daigle, Daniel (TC/TC); Rector, Brianna (she, her | elle, la); Poupore, Jessica; Wittmann, Tess (she, her | elle, elle); Prosser, Kathleen; Beauregard-Tellier, Frédéric; Brady, Daniel; Hoult, Colin; Wilkinson, David; Fairchild, Jamie

Cc: Edwards, Geoff; Obreja, Catalin (ECCC)

Subject: [External/Externe]: Reprocessing Working Group Kick-Off Meeting

When: vendredi, février 23, 2024 10:00-11:30 (UTC-05:00) Est (É.-U. et Canada).

Where: Microsoft Teams Meeting

Dear colleagues,

Thank you for your timely response on availability to determine the date for the kick-off meeting for the working level working group on used fuel reprocessing.

Based on the feedback we received, the first meeting will take place Friday, February 23, 2024, from 10:00am – 11:30am on Microsoft Teams. You are welcome to pass this meeting invite along to anyone we may have missed. Tentative agenda is as follows:

- Welcome
- Introductions
- Recap of Planned Work and Proposed Outcomes
- Work Plan Discussion
- Action Items and Next Meeting Date

Additional details to follow in the coming weeks as materials are further developed.

Thank you again for your support and expertise on the matter. For any questions, please contact the Advisor leading this work, Kate Prosser at kathleen.prosser@nrcan-rncan.gc.ca.

Kind regards,

Pui Wai Yuen

Director, Uranium and Radioactive Waste Division

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Supply And Demand for Uranium and the Implications of Different Fuel Cycles

LEAD DEPARTMENT: Natural Resources Canada

SUPPORTING DEPARTMENT: Global Affairs Canada

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

Canada is a leader in uranium production, fuel supply (refinement/ conversion/ fabrication), and nuclear energy and technology, and has considerable existing uranium mining and milling capacity.

Canada's nuclear power industry has been self-reliant for decades by virtue of its vertically integrated domestic fuel and technology supply chain. This was most evident during the COVID pandemic and recently following the invasion of Ukraine. Most operating nuclear power reactors in the world and most prospective small modular reactors (SMRs) are/will be fueled by enriched uranium. Canadian CANDU nuclear reactors are an exception as they are fueled by unenriched “natural” uranium.

Globally, there are reactors that utilize reprocessed used nuclear fuel as fuel. These can serve as secondary supplies and offset the demand for fresh fuel – be it natural or enriched uranium products. In general, reprocessing can be beneficial for countries with limited uranium supplies, as they are able to make use of unspent energy in nuclear fuels that have already been used once in nuclear reactors. This can provide security of supply and is generally built into national policy frameworks.

The invasion of Ukraine has raised concerns about the security of the global nuclear fuel supply and put significant upward pressure on prices, which have increased 50% (highest since 2011).

CANADIAN URANIUM AND FUEL SUPPLY

Canada has historically held ample supply of domestic uranium resources, and so reprocessing was never deemed necessary nor cost-effective as a means of providing fuel for the reactor fleet. In 2021, 10% of the world's uranium was mined in Canada. Canada is the second largest uranium producer in the world, with production worth \$500M (2021). Of the uranium mined in Canada in 2021, 69% was exported for use in foreign nuclear power reactors and 31% used to fuel Canadian nuclear power reactors .¹

At the current levels of production and price, Canadian uranium deposits will last for another forty years.² There are known uranium resources of 694,000 tonnes of U3O8 (588,500 tU), but this is estimated to be higher with continuing exploration.³ Estimates indicate that Canadian uranium yield rates are 10 to 100 times superior to those in other uranium producing countries.⁴

¹ From Energy Fact Book 2022-2023.

² [Canadian Energy Security - Canada.ca](https://www.canada.ca/en/natural-resources/canadian-energy-security)

³ [Uranium in Canada | Canadian Uranium Production - World Nuclear Association \(world-nuclear.org\)](https://world-nuclear.org/information-library/uranium-in-canada)

⁴ [Canadian Energy Security - Canada.ca](https://www.canada.ca/en/natural-resources/canadian-energy-security)

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Canada can expand uranium mining, but uranium refining and conversion facilities are nearing capacity and require capital investments and lengthy regulatory approvals to expand, with some site-specific limitations.

At this time, all operating uranium mines and mills in Canada are located in northern Saskatchewan. Orano Canada (formerly Areva Resources Canada) and Cameco Corporation are the licensees of the active mining and milling facilities.

The active mining and milling facilities include:⁵

- Cigar Lake Mine
- Key Lake Mill
- McArthur River Mine
- McClean Lake Mill
- Rabbit Lake Mine and Mill

Table 1. Annual uranium production in Canada (tonnes U)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
McArthur River	7744	7356	7354	6928	6193	76	0	0	0	423
Cigar Lake	0	132	4345	6666	6925	6925	6925	3885	4693	6928
McClean Lake	0	43	0	0	0	0	0	0	0	0
Rabbit Lake	1587	1602	1621	428	0	0	0	0	0	0
Total	9331	9134	13,320	14,022	13,116	7001	6925	3885	4693	7351
cf. World	59,331	56,041	60,304	63,207	60,514	54,154	54,742	47,731	48,332	48,888

Source: World Nuclear Association⁶

Proposed uranium mining and milling projects:

- Wheeler River, Denison Mines Corporation
 - Proposing to develop an operation that would produce up to 5,400 tonnes of uranium oxide annually for 20 years.
- Rook I, NexGen Energy Ltd.
 - The proposed Rook I project includes underground and surface facilities to support the mining and processing of uranium ore. The main components include an underground mine, an onsite mill to process an average of 1,400 tonnes of ore per day, surface facilities to support the short- and long-term storage of waste rock and ore, an underground tailings management facility, water-handling infrastructure and an effluent treatment circuit, and additional infrastructure to support mining activities.

Currently, there are 5 licensed uranium processing and fuel fabrication facilities operating in Canada:⁷

- Blind River Uranium Facility (Canada's only refining facility)

⁵ [Uranium mines and mills \(cncs-ccsn.gc.ca\)](https://cncs-ccsn.gc.ca/uranium-mines-and-mills)

⁶ [Uranium in Canada | Canadian Uranium Production - World Nuclear Association \(world-nuclear.org\)](https://world-nuclear.org/uranium-in-canada)

⁷ [Uranium processing and fuel fabrication \(cncs-ccsn.gc.ca\)](https://cncs-ccsn.gc.ca/uranium-processing-and-fuel-fabrication)

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- Port Hope Conversion Facility (Canada’s only conversion facility)
- Cameco Fuel Manufacturing Inc.
- BWXT Nuclear Energy Canada Inc. - Toronto
- BWXT Nuclear Energy Canada Inc. - Peterborough

CANADIAN URANIUM AND FUEL DEMAND

To date, given Canada’s large high-grade uranium deposits, the low price of uranium, and the high cost of reprocessing spent fuel, the nuclear industry has not deemed it necessary nor cost-effective to reprocess spent fuel for Canada’s reactors.

To better understand future uranium needs, Natural Resources Canada solicited projections from SMR vendors and utilities on their anticipated deployments, [REDACTED] based on the IAEA SMR Booklet 2022 with technical specifications.



Table 2. Reactor deployments that underpin the fuel projections

Province, Reactor type, Location	Operation	Date (estimated)	Fuel Required
[REDACTED]			

s.13(1)(c)
s.21(1)(a)
s.21(1)(b)

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Table 3. Fuel Composition by Reactor Type, indicating Previously or Currently Used Fuels (o), and Proposed or Theoretical Fuels (x).

Reactor Type	Natural U	Enriched U*	Reprocessed U**	MOX	Other Fuels†
PWR		o	o	o	
PHWR	o	o	o	x	x
BWR		o	x	x	
HTGR		o		x	o
MSR		o	x	x	o
SFR		o		o	x
GCR/AGR	o	o			
Heat Pipe Microreactor		x			x

*Enriched uranium: including LEU (Low-Enriched Uranium, up to 5%), LEU+ (Low-Enriched Uranium Plus, between 5 – 10%), and HALEU (High-Assay Low-Enriched Uranium, between 5% and 20%)

**Reprocessed Uranium fuels may include down blended natural uranium equivalents or re-enriched fuels. Reprocessed uranium composition depends on initial enrichment, but frequently has less than 1% U-235. Reprocessed uranium may be contaminated with traces of fission products and transuranics.

† Other fuels describe fuels not included in Natural U, Enriched U, Reprocessed U, or MOX categories, and fuels using non-standard materials, such as thorium-based fuels, composite fuels, metal alloy fuels, etc.

Pressurized Water Reactor (PWR) technologies typically make use of uranium dioxide UO_2 powder that is sintered into hard ceramic pellets typically enriched between 3 and 5% U-235. Some reactors can make use of reprocessed uranium or MOX fuels.

Pressurized Heavy Water Reactors (PHWR) of the CANDU type (large-scale nuclear currently deployed in Canada) typically use natural uranium (0.7% U-235) based sintered pellets. Studies have demonstrated that CANDU type reactors could use reprocessed U from LWRs or slightly enriched U (e.g., low-void reactivity fuel, LVRF). MOX-type fuel has been tested in research reactors. The design for the AWHR-300 in India is proposed to use thorium-based fuels, such as Th/U and Th/Pu MOX-type.

Boiling Water Reactor (BWR) technologies use fuels similar to PWRs, with fuels typically enriched to near 2.4% U-235.

High Temperature Gas Reactors (HTGR) are currently expected to use uranium-based oxides or carbides with HALEU at <20% U-235, but could make use of other alternative and recycled fuels, including U-Pu, Pu, MOX, and U-Th.

Molten Salt Reactors (MSR) can use a wide range of fuels, although the reference fuel salt is typically a molten mixture of lithium and beryllium fluoride (FLiBe) with dissolved low-enriched uranium (U-235)

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fluoride (UF4). MSRs may make use of spent fuel from other reactors, mixed uranium/plutonium oxide fuels, or other fuels including Th and U-233.

Sodium Fast Reactors (SFR) are currently expected to use uranium-based fuels, either in a mixed oxide form (MOX), U fuels with U-235 between 5 – 20%, or mixed metal alloys. Operational SFR in Russia have used enriched U or reprocessed U in their fuels.

Gas Cooled Reactors (GCR) can use UO₂ fuel with U-235 typically between 2.5% – 3.5%. The Magnox reactors (UK) used natural uranium.

Heat Pipe Microreactors (HPR) are microreactor designs which could use HALEU up to 19.75% U-235 in some designs, or Ceramic metal composite (CERMET) fuel with dispersed UOX, UN, or UC kernels dispersed, e.g., W-UC CERMET fuel.

Table 4. Projected Canadian Demand for Enriched Fuel

TIMELINE		ENRICHED FUEL* (in tonnes)						
		HALEU		LEU+		LEU		
Until 2030								
Until 2035								
*HALEU:	High-Assay	Low-Enriched	Uranium,	enriched	between	5%	and	20%.
LEU+:	Low-Enriched	Uranium	Plus,	enriched	between	5	–	10 %.
		LEU: Low-Enriched Uranium, enriched up to 5%.						

GLOBAL URANIUM SUPPLY AND DEMAND

Currently, some 60,000 tonnes of uranium are required annually to fuel the world's 410 operating nuclear power reactors. However, with countries increasingly expected to turn to nuclear power to address climate change, energy security and sustainable development, demand could be as high as 100,000 tonnes of uranium per year by 2040. That would require a near doubling of uranium mining and processing from current levels.⁸

Mines in 2021 supplied some 56,961 tonnes of uranium oxide concentrate (U3O8) containing 48,303 tU, 77% of the utilities' annual requirements. The balance is made up from secondary sources including stockpiled uranium held by utilities, and in the last few years of low prices those civil stockpiles have been built up again following their depletion over 1990-2005. Nuclear fuel supply may be from secondary sources including recycled uranium and plutonium from used fuel, as mixed oxide (MOX) fuel.⁹

In December 2023, at the 28th Conference of the Parties (COP28) to the United Nations Framework Convention in Dubai, 22 countries, including Canada, agreed to triple global nuclear power capacity by 2050 to help reach global net-zero emissions.

⁸ [IAEA Symposium Examines Uranium Production Cycle for Sustainable Nuclear Power | IAEA](#)
⁹ [Uranium Markets: World Nuclear Association - World Nuclear Association \(world-nuclear.org\)](#)

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Russian Impacts

Close allies, including the U.S., U.K., E.U., and France, rely on nuclear to power their economies, and view nuclear as key to advancing their climate plans.

Table 5. Global nuclear supply and Russian supply

	<i>% of electricity supplied by nuclear power</i>	<i>% of nuclear fuel supplied by Russia</i>
<i>E.U.</i>	25%	~25%
<i>U.S.</i>	20%	~20%
<i>France</i>	69%	~20%
<i>U.K.</i>	15%	?
<i>Canada</i>	15%	0%

GLOBAL REPROCESSING

Used nuclear fuel has long been reprocessed to extract fissile materials for recycling and to reduce the volume of high-level wastes. Several European countries, Russia, China and Japan have policies to reprocess used nuclear fuel, although government policies in many other countries do not see used fuel as a resource but rather a waste.¹⁰

Table 6. Key commercial reprocessing facilities globally

Facility	Country	Company	Method	Reprocessing Capacity (tonnes/year)
La Hague	France	Orano	PUREX	1600
RT-1 (Mayak)	Russia	Rosatom	PUREX	400
PREFRE (Tarapur)	India	NPCIL	PUREX	200
Kalpakkam	India	NPCIL	PUREX	100
Rokkasho	Japan	JNFL	PUREX	800

¹⁰ [Processing of Used Nuclear Fuel - World Nuclear Association \(world-nuclear.org\)](https://www.world-nuclear.org/Processing-of-Used-Nuclear-Fuel/)

FW: For Review - Reprocessing Brief - Documents for Debbie

April 26, 2024 1:54 PM

Subject	FW: For Review - Reprocessing Brief - Documents for Debbie
From	Prosser, Kathleen
To	Wilkinson, David
Sent	July 19, 2023 9:35 AM

Declassified by ATIP/
PROTÉGÉ B - PRO
Declassifié par ATIP

Let me know if you have access issues.

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Prosser, Kathleen
Sent: Tuesday, July 18, 2023 12:29 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade <jade.hilborn@nrcan-rncan.gc.ca>
Subject: For Review - Reprocessing Brief - Documents for Debbie

Hi Pui Wai –

You requested documents be prepared for a reprocessing brief for Debbie, which I have included in the folder below. This includes a 2-pager issue/proposed approach brief, along with 3 Annexes that have the elaborated criteria, the timelines and detailed approach, and lastly the 1973 enrichment policy statement for reference.

Happy to discuss.

-Kate



ADM Reprocessing Briefing Aug2023

Kathleen Prosser, PhD.
(she/her/elle)

Policy Advisor | Uranium and Radioactive Waste Division

A0067767_1-000138

Natural Resources Canada | Government of Canada

Conseiller en politique | Division de l'uranium et des déchets radioactifs
Ressources naturelles Canada | Gouvernement du Canada

kathleen.prosser@nrcan-rncan.gc.ca

Reprocessing Brief – August 2023

A Policy Framework for Reprocessing: developing an analysis to support future decisions related to Canada's nuclear fuel cycle.

ISSUE: Canada does not have a public policy or a formal internal position on commercial reprocessing, including spent fuel processing, despite a series of public statements qualifying spent fuel processing under a variety of funding sources (investment tax credits, strategic innovation fund contribution). **As we look to build out the next generation of nuclear, it is important that the Government of Canada is well positioned to make informed decisions related to all aspects of nuclear energy, including advanced nuclear fuel cycles. This workplan will generate a thorough and well documented analysis, in contrast to a disjointed collection of informal positions shared off the record.**

A documented internal policy framework for reprocessing will be particularly important if Canada realizes its full nuclear ambitions, as these installations will have a significant impact on the volumes of extracted resources and the corresponding spent nuclear fuel waste, influencing the value of a closed vs. open nuclear fuel cycle in the decades to come. Work done today in the development of a policy framework for reprocessing will enable future sound and rational choices about this evolving technology and its role in the nuclear energy landscape.

An advanced nuclear fuel cycle in Canada – considerations for an open or a closed fuel cycle.

The question on if to reprocess used nuclear fuel is that of an open or closed fuel cycle – a once through utilization of fuel [current status quo for CANDU reactors] or a cycle that implements recycling of fuel [advanced fuel cycle – requires reprocessing]. The consideration of a closed fuel cycle is one of the long term –

- This exercise should not be considered as the Government of Canada taking any initiative towards the implementation of reprocessing, or a closed fuel cycle. This is an exercise in due diligence for long-term planning of therein in Canada's nuclear sector.
- The deployment of used nuclear fuel reprocessing is a sensitive topic of discussion due in large part to the proliferation risks and associated safeguards, and the novel, poorly understood, and likely complex, radioactive waste streams.

What are the objectives around having a reprocessing policy?

- In Canada, matters that relate to nuclear activities and substances are under the jurisdiction of the Government of Canada. NRCAN is responsible for determining Canada's nuclear energy policies, including those that concern radioactive waste. This would also include reprocessing.
- Current policies that relate to reprocessing include:
 - Radioactive Waste Policy

- Policy on Enrichment
- Nuclear Non-Proliferation Policy [GAC lead]

By establishing an internal policy framework for reprocessing, NRCAN, when appropriate and required, will be able to articulate its position with clarity, providing guidance to researchers, operators, regulators, other government departments, and the public, on the views and perspectives of the Government of Canada with respect to the reprocessing of nuclear fuel. This is one element of Canada's enabling policy framework for a nuclear energy and technology sector that prioritizes the health and safety of people and the environment, and Canada's nuclear non-proliferation commitments.

Proposed approach for development of a policy framework for reprocessing:

In the 1973 uranium enrichment policy (Annex B), the Government of Canada issued a policy statement that sets out its "attitude towards the establishment of uranium enrichment facilities in Canada", and was based on a study that concluded in 1971. The statement indicates that if an enrichment plant proposal was shown to be in the national interest, the government would consider such proposals against a set of factors. Considering a proposal in the mid-1970s, an MC was prepared that outlines that these factors were assessed by an interdepartmental committee of the day, concluding that "the construction of an enrichment plant in Canada for the export market is less attractive in 1976 than in 1971. **However, there is potential for a Canadian enrichment plant in future.**" This analysis demonstrated the utility of the technology agnostic, proposal specific, uranium enrichment policy.

Ongoing work proposes the use of a similar approach for developing a policy framework for reprocessing in Canada. This utilizes the factors set out in the uranium enrichment policy as a baseline, updating them to generate a set of criteria that are more relevant to Canada's modern policy frameworks and standards. Initial work will assess these criteria, outlined below, developing a corresponding set of discussion papers to lay the groundwork for any future policy statements on reprocessing. This will provide NRCAN with the detail and information necessary to make informed decisions related to reprocessing in Canada and determine strategies and paths forwards for any future public facing policy initiatives in the space. Details on the proposed approach are in Annex C.

The short list of criteria for consideration under the policy framework for reprocessing in Canada (elaborated in Annex A):

- Energy Security - Supply and demand for uranium and the implications of different fuel cycles
- Reprocessing technologies
- Power supply requirements [Grid]
- Environmental effect
- Economic and cost-benefit analysis for a plant
- Regulatory situation
- Incentives for investors
- Resource and industrial development
- Import and Exports
- International and regional relations on reprocessing
 - Includes indigenous and host communities

Next steps and summary of approach

Short term (1-2 months):

- Reach out to OGD colleagues (GAC, ECCC, CNSC) to establish working level working group, commitment to participate and contribute.
- Kick-off meeting seeking consensus and comment on proposed workplan and criteria, establishing clear scope of work.
- Finalize criteria for analysis within the internal policy framework.

Medium term (3-6 months):

- Draft papers and analysis undertaken for each criterion.
- Consult and collaborate with relevant departments for each analysis – for example – GAC and non-proliferation.

Long term (6-10 months)

- Finalize analysis, develop executive summary document outlining conclusions.
- Consolidate findings into policy framework mirroring 1970s policy.
- Assessment of current internal and external conditions to determine if a public process is desired/needed:
 - If yes, proceed with planning for public facing policy.
 - If no, circulate internal analysis with OGD colleagues and create formal note to file for NRCAN that articulates internal conclusion and policy.

Outcome at 10-12 months: informed internal position on commercial reprocessing in Canada over the short, medium, and long term, with a well supported policy framework that, should the need arise, can be used to develop a public facing position for the broader Government of Canada. Work to this point is maintained exclusively within the federal family, and remains consistent with, and cognizant of, other domestic and international objectives within the nuclear fuel cycle (accessing enriched materials to meet the immediate needs of SMR deployments).

Additional materials:

- ANNEX A: Elaborated Criteria for consideration under the draft policy framework for reprocessing
- ANNEX B: Canada's Uranium Enrichment Policy
- ANNEX C: Elaborated proposed approach and timelines for policy development

ANNEX A: ELABORATED CRITERIA FOR THE DEVELOPMENT OF A POLICY FRAMEWORK FOR REPROCESSING IN CANADA.

IAEA Definition of Reprocessing: The separation of nuclear material from fission products in irradiated nuclear material.

Elaborated criteria for consideration

- Supply and demand for uranium and the implications of a closed fuel cycle on fuel supply in Canada, for Canadian reactors
 - Current use domestically and international of recycled fuel
 - Projected use and deployment timeline for the use of recycled fuel in Canada (Utilization of reprocessed material in Canadian reactors)
- Reprocessing technologies
 - Purex reprocessing
 - Molten salt electro-refining
 - Oxide electrowinning process
 - Fluoride volatility process
 - Technologies will dictate dual use list implications
- Power supply requirements
 - Industrial energy support
 - Forecasts
 - Cost of electricity
- Environmental effects
 - What waste forms would need to be managed from these projects?
 - Are any of them novel?
 - High level liquid waste in large volumes for example, would be problematic under current framework [NWMO DGR for CANDU bundles]
 - Do we currently have [proposed] solutions in place for any of the waste forms?
 - Wastes are almost certainly not going to be below the detection limit – still HLW
 - International waste situation [France]
 - Impacts of a closed, domestic, fuel cycle vs:
 - Once through
 - Closed
 - What are international examples?
 - Do these projects contribute to sustainable development goals?
- Economic and cost-benefit analysis for a plant
 - Macro-economics
 - Labor force requirements
 - Costs of inspections, sector costs
 - Major costs associated with:
 - Capital
 - Electricity
 - Op EX – benchmark with international examples
 - Taxation
 - IP payments

- Offsets: Sale price of material (current market price? – market price of enriched materials and of reprocessed materials)
 - Potential Canadian economic impact of
 - Domestic deployment only
 - Domestic deployment and export
 - No reprocessing
- Regulatory situation
 - Does the CNSC already have the expertise to regulate?
 - What additional capacity would the CNSC need?
 - NRCAN?
 - GAC?
 - IAAC?
 - International regulator
- Incentives for investors
 - What assurances do investors need from the GOC in order to consider funding to the needed level to develop the technology?
 - Do the needs of the nuclear industry require/suggest that there exists a demand for these government assurances? Is there a reason the government should consider providing incentives to investors of such a project?
- Resource and industrial development
 - Energy security
 - Long term energy supply
- International and regional relations on reprocessing [geopolitical]
 - Impact on other areas of international importance?
 - What do the provinces want/need from the GOC?
 - Implications for the joint convention
 - Implications within the broader G7 community
 - Japans contracts with the UK to reprocess fuel in the UK have been terminated
 - Japans plant is not yet running
 - UK has stopped reprocessing
 - France still has active contracts
 - Evaluate implications for the list of nuclear dual use items [nuclear suppliers group]
 - Safeguards and NPT:
 - NPT: To further the goal of non-proliferation and as a confidence-building measure between States parties, the Treaty establishes a safeguards system under the responsibility of the International Atomic Energy Agency (IAEA). Safeguards are used to verify compliance with the Treaty through inspections conducted by the IAEA. The Treaty promotes cooperation in the field of peaceful nuclear technology and equal access to this technology for all States parties, while safeguards prevent the diversion of fissile material for weapons use.

STATEMENT OF URANIUM ENRICHMENT

OTTAWA - The Minister of Energy, Mines and Resources, Donald S. Macdonald, issued today the following statement on the government's attitude towards the establishment of uranium enrichment facilities in Canada.

The statement is a result of several enquiries received concerning the government's attitude towards construction of uranium enrichment facilities in Canada by private industry.

The Canadian nuclear power programme uses natural uranium as its basic fuel and an industry manufacturing enriched uranium would rely primarily on export markets. An enrichment project could not be considered an essential national project in Canada requiring government ownership or subsidization as it might in many other countries dependent for a substantial fraction of their future energy needs on enriched uranium fuel. Its value would be measured by the extent of Canadian participation through the machinery and equipment industry, the involvement and development of engineering and technology, the employment of Canadians in both the construction and operating process, the possible advantage to our uranium industry, the taxation revenues to the country and overall benefit.

It would be in essence a secondary industry in which a raw material of either domestic or foreign origin would be further processed, and its economic worth would depend on the fraction of the sales revenue which would accrue as income to Canadians.

Any Canadian uranium enrichment project would be subject to control by the federal government through the Atomic Energy Control Act to ensure that Canada's obligations regarding the peaceful uses of atomic energy were fulfilled, and to ensure safety of workers and the public.

In view of the uncertainties and expense in developing independent enrichment technology, any company entering such a business would probably wish to use the technology which has already been developed in other countries. Such technology is highly classified and under close control of foreign governments.

As a result, a private company could not obtain access to foreign enrichment technology without a government-to-government agreement ensuring the protection of the information. Government officials are investigating the form of intergovernmental agreements which might be necessary. If an enrichment plant proposal is shown to be in the national interest and provided the terms are considered to be reasonable the federal government is prepared to negotiate such agreements.

Factors which the government will consider when assessing a proposal include:

- 1) The optimum use of Canadian energy resources;
- 2) The extent to which Canadian uranium producers would have access to the enrichment plant both for processing services and for the supply of uranium feed material;
- 3) The extent to which Canadians would participate in the financing, engineering, construction, operation, supply of materials and equipment, ownership and management of the facility;
- 4) The timing of the project in relation to other major construction projects in Canada;

- 5) The details of financing; the government would likely monitor the movement of funds in and out of Canada in respect of the project;
- 6) The contractual arrangements with any foreign participants and with the supplier of the enrichment technology;
- 7) Effects on the environment;
- 8) National and regional economic impact, both short and long-term.

It is expected that interested firms will discuss with government officials at appropriate stages any proposals for uranium enrichment which they might be developing.

August 1, 1973

Annex C - Reprocessing Brief – August 2023

Annex C: Planning documents related to the development of a Policy Framework for Reprocessing.

Contents of Annex C:

- [REDACTED]
- Detailed analysis of timelines and high-level objectives
- High-level budgets of initiative

Page 148

**is withheld pursuant to sections
est retenue en vertu des articles**

69(1)(g) re (a), 21(1)(a)

**of the Access to Information Act
de la Loi sur l'accès à l'information**

Page 149

**is withheld pursuant to sections
est retenue en vertu des articles**

69(1)(g) re (a), 69(1)(g) re (c), 21(1)(a)

**of the Access to Information Act
de la Loi sur l'accès à l'information**

Page 150

**is withheld pursuant to sections
est retenue en vertu des articles**

21(1)(d), 21(1)(a)

**of the Access to Information Act
de la Loi sur l'accès à l'information**

FW: Reprocessing package

April 26, 2024 1:42 PM

Subject	FW: Reprocessing package
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	August 2, 2023 12:50 PM

PROTECTED A - PROTÉGÉ A

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 2 août 2023 11:34
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: RE: Reprocessing package

PROTECTED A - PROTÉGÉ A

Thanks Fred.

Have updated the primary document to reflect your comments. Happy to discuss and available at your convenience to provide required briefs.

Cheers,
 Kate

Kathleen Prosser, PhD.
 (she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
 Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Sent: Wednesday, August 2, 2023 10:35 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: RE: Reprocessing package

PROTECTED A - PROTÉGÉ A

Thanks Kate for the very clear briefing yesterday and for these materials. I have reviewed the cover note and Annex C.

s.21(1)(a)

s.21(1)(b)

I think we should have a discussion about this with Debbie. I suggest we begin by raising it at a forthcoming NEISB weekly meeting with her, get her initial reaction, and depending on her level of interest then move on to a more in-depth discussion (separate meeting).



Chelsea, Pui Wai – let's add this topic to our next NEISB weekly agenda (or at a time that suits your availability, Pui Wai and Kate)

Thanks

Fred

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Tuesday, August 1, 2023 4:01 PM

To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>

Cc: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: Reprocessing package

Declassified by ATIP/
Déclassifié par l'ATIP
PROTÉGÉ A - PROTÉGÉ A

Hi Fred,

Please see at the link below the complete proposed briefing package for Debbie. To reiterate, what we are looking for from the ADM brief is:

- 1) Signal check on the proposed workplan
- 2) Her support in reaching out to OGDs to set up a working-level working group

Thanks,
Kate



ADM Reprocessing Briefing Aug2023

Kathleen Prosser, PhD.
(she/her/elle)

A0067768_2-000152

Policy Advisor | Uranium and Radioactive Waste Division
Natural Resources Canada | Government of Canada


Conseiller en politique | Division de l'uranium et des déchets radioactifs
Ressources naturelles Canada | Gouvernement du Canada

kathleen.prosser@nrcan-rncan.gc.ca

s.19(1)
s.20(1)(b)

Fwd: Moltex funding situation

April 26, 2024 1:59 PM

Subject	Fwd: Moltex funding situation
From	Yuen, Pui Wai
To	Prosser, Kathleen; Wilkinson, David
Sent	September 15, 2023 8:41 AM
Attachments	 Moltex_federal_ask S...

Sorry, thought I included this attachment in my previous email on this.

Sent from my iPhone
Begin forwarded message:

From: Rory O'Sullivan <[REDACTED]>
Date: September 7, 2023 at 3:36:44 PM EDT
To: "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>
Subject: Fw: Moltex funding situation

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Hi Pui,
I wanted to share this with you as things have progressed for us. I have kept Justin and his team broadly in the loop but perhaps it would be helpful for us to connect.

[REDACTED] If Moltex doesn't get to the point of demonstrating that technology, that question will still need answering.
Rory

From: Rory O'Sullivan
Sent: 07 September 2023 16:32
To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; [REDACTED]
<[REDACTED]>
Subject: Moltex funding situation

Hi Justin,
Here is a 2 pager of our issues, answering some of the questions you asked. I didn't follow up directly after the call with this as there wasn't much point putting time into the bigger picture ideas when there is a near term crunch.
Can you please pass this on to the DMA or ADM to discuss? Happy to have a call first if helpful.
Note that we do have a \$3m ask into ACOA.
Thanks and regards,

Rory O'Sullivan
Chief Executive Officer
+1 437 778 4232
[REDACTED]

A0067769_1-000154

Moltex Energy
75 Prince William Street | Unit 102 | Saint John | New Brunswick | Canada | E2L 2B2
+1 506 214 8551 | info@moltexenergy.com | www.moltexenergy.com

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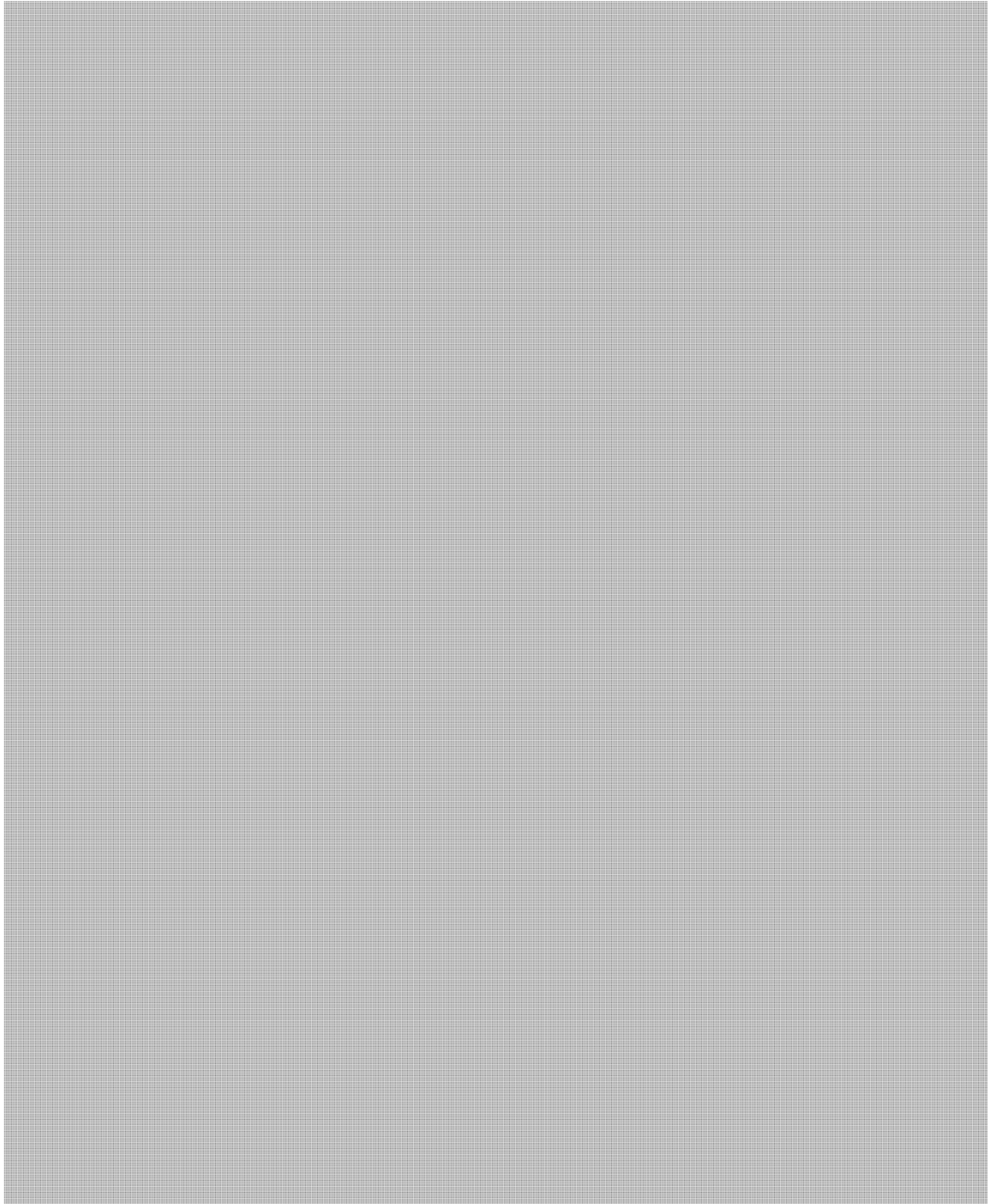
Pour de plus amples renseignements, veuillez consulter [Comment identifier des courriels d'hameçonnages](#) dans l'intranet des RNCan.

s.20(1)(b)

s.20(1)(c)



Federal government support to demonstrate waste recycling technology





Returns for Federal Government

Moltex will also help Canada and the world affordably, safely decarbonize, meet NB's 2035 electricity targets and Canada's 2050 targets. This benefits all Canadian past and future nuclear utilities.

Maintain the technology, IP and jobs in NB and Canada, and export the technology instead of importing it later.

Ensure existing investment is not wasted and avoid political fallout.

Canada can verify if recycling is – or is not – a real alternative or complement to direct disposal. Without this research, that question will always be asked by DGR intervenors.

Technology Benefits

Significant reduction, and ultimately close to elimination, of all long-lived, man-made transuranic radioactive elements from nuclear waste.

Reduction of size and cost of the Deep Geological Repository, saving between \$8 and \$20 billion, and ensuring the DGR has enough space for spent fuel from new reactors.

Safe, low-cost, on-demand energy.

Energy security – using the value of the spent fuel assets already in Canada.

Increased value of CANDU technology by demonstrating it can be first in the world to fully close the fuel cycle – while maintaining international proliferation commitments.

Ask


\$7.5m funding, in two tranches subject to milestones, to demonstrate the primary extraction stage of the WATSS process with spent CANDU fuel at the Chalk River lab. This assumes matched funding per current SIF contract. Moltex will streamline its activities to focus on WATSS and get to a higher TRL, unlocking private investment.

Commitment to discuss longer term partnership to ensure technology is deployed in Canada – provided it continues to show techno-economic promise. Examples include a Joint Venture with Canada, the DOE and multiple utilities all sharing the risk.

s.21(1)(a)
 s.21(1)(b)

RE: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

April 26, 2024 2:03 PM

Subject	RE: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern
From	Yuen, Pui Wai
To	Prosser, Kathleen
Cc	Wilkinson, David; Hilborn, Jade (she, her elle, elle); Fairchild, Jamie; Wittmann, Tess (she, her elle, elle)
Sent	November 14, 2023 11:13 AM
Attachments	 RE Follow-up...

PROTECTED B - PROTÉGÉ B

Thanks Kate and Tess! This looks good.

I've provided some edits and a comment. Also, in addition, there are some questions for consideration per Dave's readout (attached) from the last meeting that we may want to contemplate on having backpocket responses to – some of it ties to item#3 of the agenda that I understand you have reached out to NED about. Let's discuss more at our 'reprocessing' meeting later this week.

[REDACTED] as we explore the risks and benefits, that they are welcome to continue sharing with the government on their views.

Thanks and if you could please clean up the document, and share with the pre-meeting folks before noon, that would be much appreciated!

Pui Wai

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 9 novembre 2023 11:28
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>
Subject: FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

PROTECTED B - PROTÉGÉ B

Meeting note you were looking for, big thanks to Tess for drafting!



MEETING NOTE - NWW November 2023 .docx

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Nuclear Waste Watch <nuclearwastewatch@gmail.com>

Sent: Thursday, October 26, 2023 3:27 PM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen
<Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

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dessous***



October 26, 2023

Pui Wai Yuen Director
Uranium and Radioactive Waste Division
Kathleen Prosser Advisor
Small modular reactors and radioactive waste
Natural Resources Canada

Dear Pui Wai and Kathleen,

Earlier this month an email was sent from Nuclear Waste Watch to yourselves and others, inviting you to participate in a roundtable discussion of approximately 20 civil society and government representatives about reprocessing nuclear fuel waste. We understand from your followup with Susan O'Donnel that you did not receive these invitations, and for that we are profoundly sorry.

Due to those communication difficulties and to the non-availability of some key participants, we have shifted the date by two weeks to Friday, November 17th. Our apologies for any inconvenience, especially to those who have already confirmed for the earlier date. We were very pleased to receive your

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confirmation that you will be available on November 17th.

The roundtable discussion will share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. Civil society groups and nuclear weapons proliferation experts have raised concerns about the potential of reprocessing in Canada. The roundtable session objective is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The revised meeting details are:

Date / Time: Friday, November 17, 10 a.m. to 11:30 a.m Eastern

Connection: Virtual Meeting via ZOOM (details to follow)

Invited participants include a range of civil society organizations and academics interested in the security, disarmament and nuclear weapons proliferation and / or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission

We are requesting confirmation of your participation by November 10th. If you cannot attend, please respond as soon as possible with the name of a colleague from your organization who can participate. A list of confirmed participants will be sent with the zoom link a week prior to the meeting.

The meeting will be 90 minutes with the opportunity for followup email communications. The agenda is:

- Very brief introductions and Meeting Objectives
- Reprocessing Nuclear Fuel Waste and Government Policy in Canada
- Nuclear Fuel Waste Reprocessing and Radioactive Wastes
- Reprocessing and Proliferation and Security Concerns
- Meeting wrap-up

We look forward to hearing confirmation of your engagement in this important discussion. If you have any questions or comments in advance, please don't hesitate to be in touch.

Sincerely,

Dr. Susan O'Donnell
Coalition for Responsible Energy
Development in New Brunswick

s.19(1)

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A0067778_4-000161

**MEETING NOTE TO THE URWD DIRECTOR****URWD DIRECTOR SPEAKING ENGAGEMENT WITH
NUCLEAR WASTE WATCH****MEETING DETAILS**

- **DATE/TIME:** Friday, November 17, 2023, 10:00 a.m. – 11:30 a.m. TBD
- **LOCATION:** Virtual Zoom Room, link TBD
- **AGENDA:**
 1. Very brief introductions and Meeting Objectives
 2. Reprocessing Nuclear Fuel Waste and Government Policy in Canada
 3. Nuclear Fuel Waste Reprocessing and Radioactive Wastes
 4. Reprocessing and Proliferation and Security Concerns
 5. Meeting wrap-up

*We will only attend relevant sessions to URWD and not the entire event
- **PARTICIPANTS:**
 - Susan O'Donnell, Representative from the Coalition for Responsible Energy Development in New Brunswick on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy
 - [REDACTED] Coordinator, Nuclear Waste Watch
 - Others TBD: Invited participants include a range of civil society organizations and academics interested in the security, disarmament, and nuclear weapons proliferation and/or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission.

ISSUE

Nuclear Waste Watch is organizing an invitation-only webinar roundtable and Q&A with 15-20 participants from civil society groups and academics to share perspectives, background and updates about potential reprocessing of nuclear fuel waste in Canada.

KEY BACKGROUND

- Nuclear Waste Watch is a national network of Canadian public interest groups and organizations concerned about radioactive waste and nuclear power. They initially believed NRCan was developing a policy on reprocessing of nuclear fuel waste with the CANDU Owners' Group. This has since been corrected through correspondence.
- On December 15, 2022, Nuclear Waste Watch launched a campaign to formally demand that Canada include a ban on plutonium reprocessing in its Policy for radioactive waste management and decommissioning. NRCan did not include reprocessing within the scope of the policy, except that should reprocessing be deployed, the resulting waste would fall under the policy.

SECURITY CLASSIFICATION

- Pui Wai Yuen and Frédéric Beauregard-Tellier last met with Nuclear Waste Watch in September 2023 on their views on the draft Integrated Strategy for radioactive waste before the acceptance of it by the Minister of Energy and Natural Resources.

POINTS TO REGISTER

- NRCan, along with other federal organizations are here today to hear your views on reprocessing of nuclear fuel waste.
- NRCan is aware of the reprocessing draft document prepared by the CANDU Owners Group. This document is an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- NRCan is not establishing a policy on used nuclear fuel reprocessing.
- The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons.

Q&A

If pressed on COG reprocessing policy document..

- NRCAN is aware of this draft document.
- This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document.
- This document is a proposal from industry's perspective of what a reprocessing could look like - it does not represent a policy of or by the federal government.

If pressed on a Government of Canada reprocessing policy..

- NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing.
- Moltex Energy Ltd received funding through Innovation, Science and Economic Development Canada (ISED) to research and better understand waste streams and handling processes resulting from reprocessing, as well as proliferation risks and any additional safeguards requirements beyond the current protocols for Canada's existing facilities to inform decisions on reprocessing policy.
- We remain receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act, as well as safeguards verification by the International Atomic Energy Agency (IAEA).
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons

If pressed on the Integrated strategy..

- This Strategy is an important element of ensuring Canada has continually effective and world-leading disposal and management plans for

SECURITY CLASSIFICATION

radioactive waste of all levels. It is vital that governments, industry and communities work together to advance priorities related to this economic activity — including reconciliation with Indigenous Peoples.

- The Strategy reflects international best practices and is informed by more than two years of extensive engagement with Indigenous Peoples and Canadians across the country.
- We expect waste owners will work together to update the Strategy, in collaboration with Indigenous Peoples, community partners and other involved parties, and submit their recommendations for review and consideration in 2028. We also expect that waste owners will meet with Natural Resources Canada officials on an annual basis to report on their progress in implementing the Strategy, including outlining a plan for their continued collaboration.

If pressed on nuclear non-proliferation policy..

- The pathway to net zero by 2050 is the challenge of our time. We must consider all potential options and solutions emerging from across the different energy sectors. We appreciate hearing different perspectives on these important issues.
- We recognize that nuclear reprocessing is a technology that raises sensitive non-proliferation concerns. We remain attentive to ensuring that Canada does not negatively impact its shared nuclear non-proliferation priorities.
- All activities in Canada involving radioactive materials, including research activities, are governed by our nuclear non-proliferation commitments and safely regulated by the Canadian Nuclear Safety Commission
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act, in line with our multilateral engagements with the Nuclear Suppliers Group, as well as rigorous safeguards verification by the International Atomic Energy Agency.

<i>Drafted by:</i>	<i>Teresa Wittmann</i>
<i>Consulted with:</i>	<i>ESS</i>
<i>Approved by:</i>	<i>[ADM(s) name]</i>

UNCLASSIFIED - NON CLASSIFIÉ
SECURITY CLASSIFICATION

<i>Approval date:</i>	<i>[date of ADM's approval]</i>
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s.21(1)(b)

RE: Follow-up for NWW event - Key Messages + QAs/responsive lines

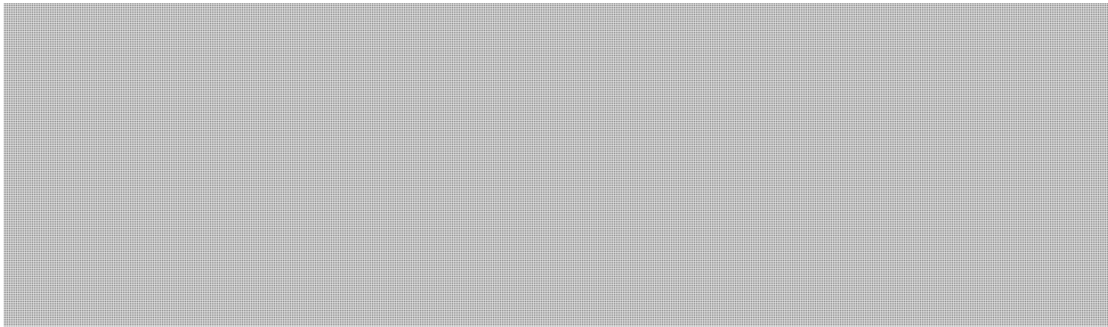
April 26, 2024 2:04 PM

Subject	RE: Follow-up for NWW event - Key Messages + QAs/responsive lines
From	Wilkinson, David
To	Prosser, Kathleen
Cc	Yuen, Pui Wai
Sent	October 31, 2023 2:49 PM

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PROTÉGÉ B

Hi Kate,

I reviewed the letter from the 12 scientist and there are a few more issues that may come up, for your consideration:



FYI, CNSC and GAC noted at the meeting that we may want to try and clarify in advance, to the extent possible, who would be responsible for responding to the various questions that could arise. So please note any potential issues that we would refer to CNSC or GAC for response and we can discuss with them on Nov 14. For instance, we would likely want to refer over to CNSC or GAC if needed to expand on the regulatory and NPT framework for reprocessing research, as applicable to Moltex.

Thanks!

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Wilkinson, David

Sent: Tuesday, October 31, 2023 1:33 PM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: Follow-up for NWW event - Key Messages + QAs/responsive lines

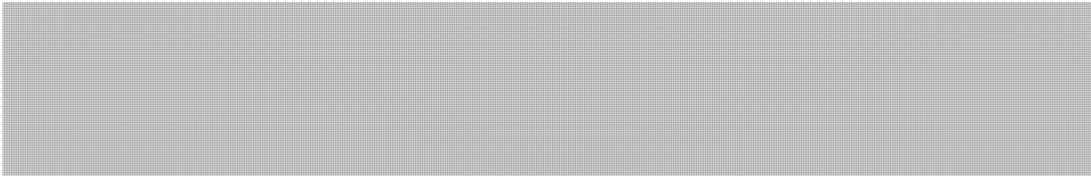
Hi Kate,

Following the prep meeting today with CNSC and GAC, it became apparent we may need to do a little more work to be prepared for issues that may come up. Therefore, in preparation we need to

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s.21(1)(b)

develop/gather some overarching key messages, to be followed by QAs/responsive lines to share with CNSC and GAC in advance of our next prep meeting (follow-up) with GAC and CNSC on November 14. Let's of course reuse the standard approved messaging we have, but also be prepared to respond to the following:

- What is the current framework applicable to reprocessing? What policy applies to Moltex's research on reprocessing?
- How is the Moltex project proceeding?
- How is the government assessing the science, risks and benefits of reprocessing?
- Will the government be consulting on its analysis of reprocessing? (no, this is only internal work to get a better sense of issues and risks)
- 

This is not exhaustive, so please think of other issues that may come up, and take a look back at the incoming from the 12 scientists for ideas. I'll do the same and let you know if other ideas come to mind.

Please work with Emilie for her review of this as a priority (and NSDF would follow as the lower priority of the two). We'll also need to allow time for PW's review, so if you can have a draft to me later this week that would ideal or if you know you'll need more time please let me know.

Happy to debrief you on the discussion we had today when you are free.

Thanks!

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

A0067778_11-000168

RE: Reprocessing documents

April 26, 2024 2:09 PM

Subject	RE: Reprocessing documents
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Hilborn, Jade (she, her elle, elle); Fairchild, Jamie; Wilkinson, David; Wittmann, Tess (she, her elle, elle)
Sent	December 8, 2023 2:35 PM

PROTECTED B - PROTÉGÉ B

That's alright I think – If we could ask for his review before 15th we should be able to coordinate. I think sending the email out any later than the 19th will mean we won't get any responses before the holidays.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Sent: Friday, December 8, 2023 2:32 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>
Subject: RE: Reprocessing documents

PROTECTED B - PROTÉGÉ B

Thanks Kate!

I think it'll depend on how busy Fred is when he gets back next week. I'm not sure that I would load him up with this right off the bat since he'll be quite busy and this isn't as time sensitive, so I'd say, maybe send the package up mid-week next week?

As long as it goes out before the holidays and a kick-off meeting can happen in January, that should work for timing?

Thanks!
PW

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 8 décembre 2023 11:14

A0067785_1-000169

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrca-rnca.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrca-rnca.gc.ca>
Subject: RE: Reprocessing documents

PROTECTED B - PROTÉGÉ B

Thanks so much Pui Wai for taking a look.

I've made the changes you've suggested, and have removed some of the duplicate text that was in there to reinforce the "this is not a policy" messaging.

If we're able to share the folder with DGO so Fred can hopefully take a look when he's back I would be grateful.

Thanks!
-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Sent: Friday, December 8, 2023 7:01 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrca-rnca.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrca-rnca.gc.ca>
Subject: RE: Reprocessing documents

PROTECTED B - PROTÉGÉ B

Thanks Kate for pulling together this package, and sorry for the delay.

I've provided some edits/comment for your consideration on the Brief. The brief is also a bit long.. not sure if there is a way to trim/ eliminate any repetition? I didn't have comments on the FF email for Fred or the agenda.

Thanks and happy to discuss,
Pui Wai

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 9 novembre 2023 19:15
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrca-rnca.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrca-rnca.gc.ca>
Subject: Reprocessing documents

A0067785_2-000170

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Hi Pui Wai,

Hoping to have Fred send out these documents next week so that we can sneak in the kick off meeting for the work before Xmas. Included in the link are:

1. NRCanBrief_UsedFuelReprocessing – this is a summary of the motivation and plan for the work, the main attachment. This is a further evolution of the brief that was originally developed for Debbie.
2. Draft Email (for Fred – will run the French by francophones ones it's been reviewed)
3. Draft Agenda for the kick off meeting (to be an email attachment)
4. Email list of contacts in OGDs (FYI for you)
5. Annex A – Enrichment Policy (will be a meeting invite attachment)
6. Annex B – Work plan with more details (will be a meeting invite attachment)



[used fuel documents - Nov2023](#)

Happy to discuss at your convenience, and a huge thank you to Tess for helping to pull all these together.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Policy Advisor | Uranium and Radioactive Waste Division
Natural Resources Canada | Government of Canada

Conseiller en politique | Division de l'uranium et des déchets radioactifs
Ressources naturelles Canada | Gouvernement du Canada

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Reprocessing Working Group Kick-Off Meeting

Draft Agenda

1. Welcome
2. Introductions
 - a. Roundtable
3. Recap of planned work and proposed outcomes
4. Work Plan Discussion
 - Explore comments and seek consensus on the proposed work plan and criteria, establishing a clear scope of work
 - Finalize criteria for analysis
 - Identify lead and participating departments for each criteria
5. Action Items and Next Meeting Date

Draft Email to OGDs on Reprocessing Working Group February 2024 Meeting

Subject Title: Reprocessing Working Group Kick-Off Meeting

Dear colleagues,

Thank you for your timely response on availability to determine the date for the kick-off meeting for the working level working group on used fuel reprocessing.

Based on the feedback we received, the first meeting will take place Friday, February 23, 2024, from 11:00am-12:00pm on Microsoft Teams. You are welcome to pass this meeting invite along to anyone we may have missed. Tentative agenda is as follows:

1. Welcome
2. Introductions
3. Recap of Planned Work and Proposed Outcomes
4. Work Plan Discussion
5. Action Items and Next Meeting Date

Additional details to follow in the coming weeks as materials are further developed.

Thank you again for your support and expertise on the matter. For any questions, please contact the Advisor leading this work, Kate Prosser at kathleen.prosser@nrcan-rncan.gc.ca.

Kind regards,

Pui Wai Yuen

Director, Uranium and Radioactive Waste Division

Draft Email from Fred to OGDs on Reprocessing Working Group

Subject Title: Reprocessing Working Group

December ____, 2023

Dear colleagues,

I am writing to invite representatives from your department to participate in a working level working group on the subject of used fuel reprocessing.

Canada does not have a policy or a formal internal analysis on commercial reprocessing, including used fuel processing. While nuclear energy and technology, and nuclear non-proliferation, are key to this area, this is a subject that crosses the mandates of many departments. The efforts of this working group, lead by NRCan, will generate a thorough and well documented internal analysis on used fuel reprocessing to support future decisions related to Canada's nuclear fuel cycle.

This work does not constitute the development of a policy for used fuel reprocessing, but is rather a consolidation of the federal government's efforts to understand the risks and benefits associated with the technology. A description of the planned analysis, and the rationale for this undertaking, can be found in the attached Brief.

If you could please have members of your team who are interested and able to participate complete the below poll, we would be grateful to launch this work before the holiday season.

Thank you for your support and expertise on the matter as we develop a better understanding of the risks and benefits of used fuel reprocessing from all perspectives within the Government of Canada.

Kind regards,

Chers collègues,

Je vous écris pour inviter des représentants de votre département à participer à un groupe de travail sur le retraitement de combustible nucléaire usé.

Le Canada n'a pas de politique ni d'analyse interne formelle sur le retraitement commercial, y compris le traitement des combustibles usés. Bien que l'énergie et la technologie nucléaires, ainsi que la non-prolifération nucléaire, soient essentielles dans ce domaine, il s'agit d'un sujet qui recoupe les mandats de nombreux ministères. Les efforts de ce groupe de travail, dirigé par RNCAN, produiront une analyse interne approfondie et bien documentée sur le retraitement de combustible nucléaire usé afin d'étayer les décisions futures relatives au cycle du combustible nucléaire au Canada.

Ce travail ne constitue pas l'élaboration d'une politique pour le retraitement de combustible nucléaire usé, mais plutôt une consolidation des efforts du gouvernement fédéral pour comprendre les risques et

les avantages associés à cette technologie. Une description de l'analyse prévue et de la raison d'être de cette entreprise se trouve dans le mémoire ci-joint (en anglais seulement).

Si vous pouviez demander aux membres de votre équipe qui sont intéressés et en mesure de participer de remplir le questionnaire ci-dessous, nous vous serions reconnaissants de lancer ce travail avant les fêtes de fin d'année.

Nous vous remercions de votre soutien et de votre expertise en la matière, car nous cherchons à mieux comprendre les risques et les avantages du retraitement de combustible nucléaire usé en tenant compte de tous les points de vue au sein du gouvernement du Canada.

Je vous remercie de votre collaboration,

Frédéric Beauregard-Tellier

Reprocessing Mailing List

GAC	Tanya Hinton	tanya.hinton@international.gc.ca
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Technology Summary

Lead NRCan

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Supply and demand for uranium and the implications of different fuel cycles

Lead NRCan

Supporting GAC
RDAs

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Environmental effect (+ waste)		
Lead	ECCC	CNSC
Supporting	NRCan	HC (if includes human health)
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HC	Marc Desrosiers	marc.desrosiers@hc-sc.gc.ca

Economic and cost-benefit analysis for a plant, competitiveness, investors

Lead NRCan

Supporting ISED ECCC

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Domestic Regulatory environment

Lead CNSC
Supporting NRCan

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Energy Security and industrial development

Lead NRCan

Supporting GAC ISED

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	Laura Nourallah	laura.nourallah@ised-isde.gc.ca

Non-Proliferation and safeguarding, import and export control considerations

Lead GAC CNSC

Supporting NRCAN

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International and regional relations on reprocessing

Lead	GAC	NRCan
Supporting	RDAs	

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	Tess Wittmann	tess.wittmann@nrcan-rncan.gc.ca
	Kate Prosser	Kathleen.Prosser@NRCan-RNCan.gc.ca

Indigenous and Host Community considerations

Lead	ECCC	NRCan
Supporting	HC	RDAs
In the Loop	CNSC	

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	Julian Amalraj	julian.amalraj@cnscccsn.gc.ca

REPROCESSING WORKING GROUP KICK-OFF MEETING SUMMARY

MEETING DETAILS:

- **DATE/TIME:** Friday, February 23, 2024, 10:00AM – 11:30AM
- **LOCATION:** MS Teams
- **PARTICIPANTS:**

NRCAN:

- Pui Wai Yuen, Director, Uranium and Radioactive Waste Division
- Jamie Fairchild, Senior Advisor, Uranium and Radioactive Waste Division
- Kathleen Prosser, Policy Advisor, Uranium and Radioactive Waste Division
- Dimitri Temnikov, Policy Analyst, Uranium and Radioactive Waste Division
- Tess Wittmann, Policy Analyst, Uranium and Radioactive Waste Division
- Jessica Poupore, Science and Technology Advisor, Nuclear Energy Division
- Geoff Edwards, Senior Advisor, Nuclear Energy Division
- Brianna Rector, Science and Technology Analyst, Nuclear Energy Division

HC:

- Marc Desrosiers, Head of the Radiological and Nuclear Assessment Section

ISED:

- Elizabeth White, Policy Analyst, Advanced Manufacturing and Materials Industries Directorate

ECCC:

- Duck Kim, Senior Nuclear Coordinator-Energy, Nuclear Program

CNSC:

- David Reinholz, Senior Advisor, Nuclear Non-Proliferation, Non-Proliferation and Export Controls Division
- Michael Kent, Senior Safeguards Advisor, International Safeguards Division
- Tessa Henley, Policy Officer, International and Government Affairs Division
- Julian Amalraj, Senior Project Officer, Nuclear Processing Facilities Division

PrairiesCan:

- Matthew Dalzell, Senior Business Officer, Processes, Program Development & Coordination, Saskatchewan Region
- Anne Ballantyne, Manager, Programs, Enterprises and Ecosystems, Saskatchewan Region
- Canute Rosaasen, Policy Analyst, Saskatchewan Region

TC:

- Daniel Daigle, Analyst, Special Regulatory Projects, Transportation of Dangerous Goods

GAC:

- Tanya Hinton, Senior Advisor and Specialist, Non-Proliferation and Disarmament

EXECUTIVE SUMMARY:

Federal government departments convened for the first time to discuss the issue of used fuel reprocessing. Positive interest for this working group was expressed by many of the participants. This meeting provided an opportunity for the departments associated with each criterion to confirm their interest. Federal departments will have the opportunity to decide on the extent of their participation following the finalization of the scoping for each of the key criteria. NRCAN will serve as the secretariat for this initiative and circulate participants lists, criteria scope documents, and organize kick-off meetings for each criterion.

MINUTES:

1. Roundtable

2. Introduction to the working group

The Government of Canada does not have a specific policy nor formal internal analyses regarding commercial used fuel reprocessing, however there is considerable public interest/discourse on this subject due in large part to specific project proposals. A unified understanding of the key considerations related to this sensitive technology is necessary.

3. Recap of Planned Work and Proposed Outcomes

The objective of this working group is to generate on paper, a consolidated analysis regarding key used fuel reprocessing criterion. Consensus perspectives within the Federal family regarding this technology will facilitate [REDACTED] future discussions. This meeting sought to identify department leads and participants for each of the primary criteria. There is no current plan to do formal policy work after this project is completed. The project outcomes will yield a consolidated internal Government of Canada documentation.

These criteria-specific working groups will develop a series of discussion papers, each of which will be informed by the 1973 enrichment policy. This historic document established a series of criteria that the government would consider should an enrichment project be proposed. A similar approach will be taken for reprocessing to assess the various criteria. This methodology provides for a flexible and technology agnostic approach that could be applied to formal proposals to deploy reprocessing technology.

[REDACTED]

4. Work Plan Discussion

Criteria	Lead Department	Supporting Department(s)	Kept in the loop
Technology Summary	NRCAN		
Supply and demand for uranium and the implications of different fuel cycles	NRCAN	GAC RDAs	
Environmental effect (+ waste)	ECCC CNSC	NRCAN HC (if includes humans)	
Economic and cost-benefit analysis for a plant, competitiveness, investors	NRCAN	ISED ECCC	
Domestic Regulatory environment	CNSC	NRCAN	
Energy Security and industrial development	NRCAN	GAC ISED	
Non-Proliferation and safeguarding, import and export control considerations	GAC CNSC	NRCAN	
International and regional relations on reprocessing	GAC NRCAN	RDAs	
Indigenous and Host Community considerations	ECCC NRCAN	HC RDAs	CNSC

5. Action Items and Next Meeting Date

- NRCAN will internalize/consider the comments shared during the meeting and start setting up kick-off meetings for the criteria discussions.
- Departments have been asked to broaden participation where appropriate and identify others that should be involved. The individual criteria groups will determine the scope of their respective analysis.
- NRCAN confirmed the work is expected to be completed prior to the end of the calendar year.

REPROCESSING WORKING GROUP KICK-OFF MEETING MINUTES

MEETING DETAILS:

- **DATE/TIME:** Friday, February 23, 2024, 10:00AM – 11:30AM
- **LOCATION:** MS Teams
- **PARTICIPANTS:**

HC:

- Marc Desrosiers, Head of the Radiological and Nuclear Assessment Section

ISED:

- Elizabeth White, Policy Analyst, Advanced Manufacturing and Materials Industries Directorate

ECCC:

- Duck Kim, Senior Nuclear Coordinator-Energy, Nuclear Program

CNSC:

- David Reinholz, Senior Advisor, Nuclear Non-Proliferation, Non-Proliferation and Export Controls Division
- Michael Kent, Senior Safeguards Advisor, International Safeguards Division
- Tessa Henley, Policy Officer, International and Government Affairs Division
- Julian Amalraj, Senior Project Officer, Nuclear Processing Facilities Division

PrairiesCan:

- Matthew Dalzell, Senior Business Officer, Processes, Program Development & Coordination, Saskatchewan Region
- Anne Ballantyne, Manager, Programs, Enterprises and Ecosystems, Saskatchewan Region
- Canute Rosaasen, Policy Analyst, Saskatchewan Region

TC:

- Daniel Daigle, Analyst, Special Regulatory Projects, Transportation of Dangerous Goods

GAC:

- Tanya Hinton, Senior Advisor and Specialist, Non-Proliferation and Disarmament

EXECUTIVE SUMMARY:

There is positive interest in participation from each department. This meeting achieved tentative confirmation of the departments associated with each criteria. This is subject to change pending the scope of each criteria determined by the lead and supporting

departments. Next step: NRCan will serve as a secretariat role and circulate this list and set up kick-off meetings for each criteria.

MINUTES:

1. Roundtable
2. Introduction to the working group.

NRCan

The Government of Canada does not have a specific policy or a formal internal analysis on commercial used fuel reprocessing. There is greater public profile for reprocessing. A unified understanding of the key considerations related to this sensitive technology is necessary.

3. Objective:

NRCan

The objective of this working group is to generate on paper, a consolidated analysis. We want everyone to be on the same page with this technology. We want each department to be comfortable with the content so it can help facilitate future discussions. This meeting will determine what area each department wants to participate in.

4. What is reprocessing?

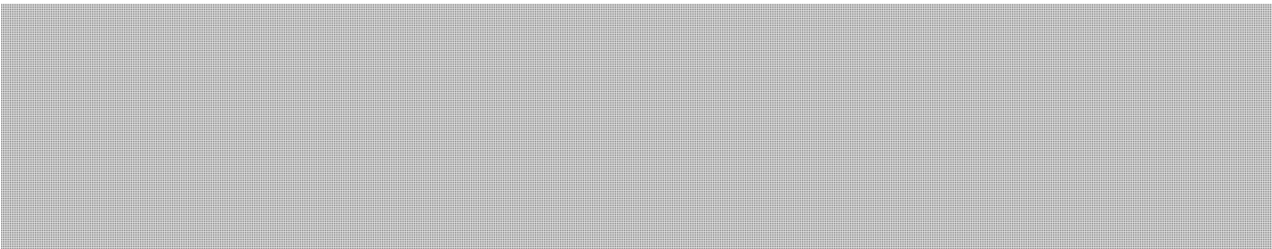
NRCan

The IAEA definition of reprocessing is the definition we will use for this analysis. There are many different technologies, but this analysis will remain relatively technology agnostic and discuss reprocessing more generally. We can't predict which technology Canada may one day deploy.

5. Method and proposed work.

NRCan

We will develop a series of discussion papers based off the 1973 enrichment policy. This laid out a series of criteria that the government would consider. This is a flexible, technology agnostic, lay out of key considerations you would take when considering the deployment of this technology. This will require a modern adaptation since it is from 1973.



[REDACTED]

GAC

[REDACTED] Does that involve different people from different departments? I haven't had a call about reprocessing in a while, [REDACTED]

[REDACTED]

NRCan

[REDACTED]

CNSC

At this point, we are in observing mode and figuring out how to support. [REDACTED]

[REDACTED]

NRCan

Once we get further into the slide deck, we will see the criteria and that will be a good point of discussion to see the key differences. Some will be quite similar; some will be very distinct.

6. Timelines

NRCan

We have gathered everyone today, if there is anyone missing, let us know and we happy to bring them in. We want to capture broad perspectives widely across the federal government. Today will be about criteria, which department leads on which criteria. We will circulate the analysis to this working group to gain consensus. Toward the end, we want everyone to be on the same page. NRCan will produce an executive summary after each analysis is complete. There is no current plan to do formal policy work after this work. This will all be based on the climate at that time. At the end there will be a decision if we

proceed, it is very possible we won't. This would serve as a robust internal document, a foundation well laid for any future work.

7. Example

NRCan

So, what are we asking you to do? We have taken a criteria from the 1973 policy and created a draft paper to illustrate the expectation. Uranium supply and demand is squarely in NRCan's wheelhouse.

8. Work Plan – for discussion

NRCan

We have taken a stab at putting a department down for each criteria. We will populate it as we discuss. NRCan will serve as a secretariat role and help coordinate for each criteria. If you have reflections, this would be the time to comment.

ECCC

Environmental effects, we would be interested in participating in. We work closely with the CNSC, they have their own environmental effects support group. I would suggest we do a co-lead with CNSC. Economic and cost-benefit analysis for a plant, we would be interested in supporting that.

NRCan

Flag energy security for further discussion.

GAC

Geopolitical would fall in international and regional relations on reprocessing. CNSC should join non-proliferation and safeguarding. I think you've identified the right topics that GAC would want to be involved in. No new topics to add.

know in the past we have really relied on technical expertise at CNL for proliferation risks for various technologies. Maybe you have that in-house, I mean you have Geoff. CNSC has a lot of experience, but it is a lot of new tech.

NRCan

We are more comfortable identifying gaps and stating them clearly. If there was a need for that information, we could consider consulting with CNL as appropriate. We prefer to identify as them as a gap now.

HC

We currently aren't listed. For environmental effects, HC could be supportive if it goes to human health impacts. We do participate in the review of licensed facilities with impact assessment, human impact assessment. Last one, Indigenous and host community consideration, if it goes back to human health we could be supporting there. Indigenous Services Canada could be the lead depending on the specifics when you dig into it.

NRCan

Because we haven't started the actual work, I imagine smaller kick-off meetings for each criteria will lay out more clearly what the anticipated scope of that analysis is. More targeted discussions of sub-criteria and identify more specifically if you want to continue working on it or only see it at the end.

HC

There is the federal nuclear emergency plan, not sure if reprocessing is totally applicable. There might be questions on emergency.

CNSC

I agree with Tanya that CNSC should be in non-proliferation. We work closely together. I am curious with import and export considerations. That can be rolled into non-proliferation considering rationale is non-proliferation. That might be an option to save overlapping. Tanya, do you agree?

GAC

I don't disagree. But I do think particularly in reprocessing world, there are some things that may go beyond.

NRCan

When we talked about it previously, one thought with imports/exports, if it is domestic vs international, what those considerations are with import/export controls. Participation in both groups would be the same and they can make a decision further down the line if they need to be consolidated. Punt the decision to later.

CNSC

It might be a bit different for CNSC who is at both. May not have safeguards people at import export meetings.

ISED

For resource availability, is this supply chain considerations, or what is it? We may want to be involved.

NRCan

There are a few criteria from the 1973 policy that seem odd. Part of it is looking at what the value chain would be a bit beyond supply and demand, and complimentary to that work. ISED should be involved.

ISED

Can you explain the difference between the 2? (economic and cost-benefit and resource availability)

NRCan

Economic and cost-benefit analysis, this is related to what the market looks like and different types of investors. Resource availability would be looking at the grid, is Canada ready to support this type of deployment.

This is a really unique space driven by geopolitics. When we get into these cost-benefit conversations, you get into a weird space where it is not just the economics as the justification for policy recommendations.

For example, in resource availability, do you have skilled labour to resource these facilities?

PrairiesCan

Very good to see as the details start coming out for what is involved in each area. We are very supportive and want to be kept in the loop. I am concerned about resourcing availability and expectations. I am interested in resource availability and industrial development as we do a lot of work in that area. Very interconnected under SMR MOU. Linkages into other RDAs where we can provide some support. We might be able to help with the Indigenous one as we are looking into siting opportunities. With supply and demand, there is also an interest from our end since uranium comes from Saskatchewan, we have insight on that one as well. We don't want to overcommit, but happy to help as things flesh out. We may have reviewing capacity.

ISED

ISED wants to be kept in the loop on the supply and demand criteria as well.

NRCan

As we develop this further, the departments involved may change. We can put together an annotated table of contents that will be circulated more widely so other departments can see if they should be more involved.

CNSC

CNSC would at least want to be kept in the loop for Indigenous criteria.

NRCan

Seeking thoughts on which criteria would be different for enrichment vs reprocessing. Regulatory would be quite different. Supply and demand, that foundation would be similar, but final stage would be different.

CNSC

Biggest difference would be on the waste side. [REDACTED]

[REDACTED] From a reprocessing POV, the reliability to assess a particular technology may be lacking. You may have to predict more than for enrichment. That part should be considered. For fuel cycle, are the power plants included if they are advanced?

NRCan

No, the intention is not to capture the plants that would then use the reprocessed fuel. Just reprocessing at this stage.

9. Action Items and Next Meeting Date

NRCan

We will take back the comments you have shared today. We will write out the different selected participation and start setting up kick off meetings for the discussions. I would anticipate it would be a few weeks. We will solicit availability first.

Please let us know if there are others to be involved. Those smaller groups will determine the scope of the analysis. People are likely crunched until end of March; we will be in touch with info we have consolidated and seek feedback to make sure it has been captured correctly. We expect this work to go through the Fall. We hope you will participate actively in discussions as we get this work over the finish line.

Reprocessing Brief – November 2023

A Framework for Used Fuel Reprocessing: an analysis to support future decisions related to Canada's nuclear fuel cycle.

ISSUE: Canada does not have a specific policy or a formal internal analysis on commercial reprocessing, including used fuel processing. A series of public statements qualifying used fuel processing under a variety of funding sources (investment tax credits, strategic innovation fund contribution) has also resurfaced this sensitive topic in the public and media domain. **As we look to build out the next generation of nuclear, it is important that the Government of Canada is well positioned to make informed decisions related to all aspects of nuclear energy, including advanced nuclear fuel cycles. The proposed framework will be a thorough and well documented internal analysis to support future policies/decisions on reprocessing.**

The proposed path forward will be particularly important if Canada realizes its full nuclear ambitions, as these installations will have a significant impact on the volumes of extracted resources and the corresponding used nuclear fuel, potentially influencing the value of a closed vs. open nuclear fuel cycle in the decades to come. Work done today in the development of a framework to understand reprocessing will enable future sound and rational choices about this evolving technology and its role in the nuclear energy landscape. **This work does not constitute the development of a policy for used fuel reprocessing, rather the documentation of the federal governments efforts to understand the risks and benefits associated with the technology.**

An advanced nuclear fuel cycle in Canada – considerations for an open or a closed fuel cycle.

The question on if to reprocess used nuclear fuel is that of an open or closed fuel cycle – a once through utilization of fuel [current status quo for CANDU reactors] or a cycle that implements recycling of fuel [advanced fuel cycle – requires reprocessing]. The consideration of implementing a closed fuel cycle is one for the long term;

- This exercise should not be considered as the Government of Canada taking any initiative towards the implementation of reprocessing, or a closed fuel cycle. This is an exercise in due diligence for long-term planning related to Canada's nuclear sector.
- The deployment of used nuclear fuel reprocessing is a sensitive topic of discussion due in large part to the proliferation risks and associated safeguards, and the novel, and likely complex, radioactive waste streams. The proposed analysis will evaluate both risks and benefits.

What are the objectives in completing this work?

- In Canada, matters that relate to nuclear activities and substances are under the jurisdiction of the Government of Canada. NRCAN is responsible for determining Canada's domestic nuclear energy policies, including those that concern radioactive waste and fuel. This would also include reprocessing.
- Current policies that relate to reprocessing include:
 - Policy for Radioactive Waste Management and Decommissioning
 - Policy on Enrichment
 - Nuclear Non-Proliferation Policy [GAC lead]

Proposed approach for development of a framework for reprocessing:

In the 1973 uranium enrichment policy, the Government of Canada issued a policy statement that sets out its “attitude towards the establishment of uranium enrichment facilities in Canada”, and was based on a study that concluded in 1971. The statement indicates that if an enrichment plant proposal was shown to be in the national interest, the government would consider such proposals against a set of factors. Considering a proposal in the mid-1970s, an MC was prepared that outlines that these factors were assessed by an interdepartmental committee of the day, concluding that “the construction of an enrichment plant in Canada [to produce enriched uranium] for the export market is less attractive in 1976 than in 1971. **However, there is potential for a Canadian enrichment plant in future.**” This analysis demonstrated the utility of the technology agnostic, proposal specific, uranium enrichment policy.

Ongoing work proposes the use of a similar approach for developing a documented analysis for used fuel reprocessing in Canada. This utilizes the factors set out in the uranium enrichment policy as a baseline, updating them to generate a set of criteria that are more relevant to Canada’s modern frameworks and standards. Initial work will assess these criteria, outlined below, developing a corresponding set of discussion papers to lay the groundwork for any future policy development related to used fuel reprocessing. This will provide the Government of Canada with the detail and information necessary to make informed decisions related to reprocessing in Canada and determine strategies and paths forwards for any future public facing policy initiatives in the space, should the need exist.

The short list of criteria for consideration under the analysis framework for reprocessing in Canada:

- Energy Security - Supply and demand for uranium and the implications of different fuel cycles
- Reprocessing technologies
- Power supply requirements [Grid]
- Environmental effect
- Economic and cost-benefit analysis for a plant, competitiveness
- Regulatory situation
- Incentives for investors
- Resource and industrial development
- Non-Proliferation and safeguarding
- Import and Exports
- International and regional relations on reprocessing
 - Includes indigenous and host communities

Reprocessing Brief – November 2023

Next steps and summary of approach

Short term (1-2 months):

- Reach out to OGD colleagues (GAC, ECCC, CNSC, ISED, TC, HC) to establish working level working group, commitment to participate and contribute.
- Kick-off meeting seeking consensus and comment on proposed workplan and criteria, establishing clear scope of work.
- Finalize criteria framework for internal analysis.

Medium term (3-6 months):

- Draft papers and analysis undertaken for each criterion.
- Consult and collaborate with relevant departments for each analysis – for example – GAC on non-proliferation, CNSC on regulatory frameworks.

Long term (6-10 months)

- Finalize analysis, develop executive summary document outlining conclusions, in consultation with relevant departments.
- Consolidate findings into analysis framework mirroring 1970s enrichment policy.
- Assessment of current internal and external conditions to determine if a public process is desired/needed:
 - If yes, proceed with planning for transparent, public facing policy-development process, utilizing completed analysis to inform discussion papers and engagement materials.
 - If no, circulate internal analysis with OGD colleagues and create formal note to file for NRCan that articulates internal results.

Outcome at 10-12 months: informed internal analysis on commercial used fuel reprocessing in Canada over the short, medium, and long term, with well supported documentation that, should the need arise, can be used to develop a public facing position for the broader Government of Canada. Work to this point is maintained exclusively within the federal family, and remains consistent with, and cognizant of, other domestic and international objectives within the nuclear fuel cycle (accessing enriched materials to meet the immediate needs of SMR deployments). Any steps towards policy development would be sought from the government of the time, including consideration for an open and transparent engagement with the public, interested Canadians, Indigenous Peoples, and industry.

Additional materials:

- ANNEX A: Canada's Uranium Enrichment Policy
- ANNEX B: Work plan summary for the analysis related to used fuel reprocessing

Annex B

Annex B: WORK PLAN SUMMARY FOR THE ANALYSIS RELATED TO USED FUEL REPROCESSING

Contents of Annex B:

- 
- Detailed analysis of timelines and high-level objectives

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69(1)(g) re (a), 21(1)(a)

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s.19(1)

s.20(1)(b)

s.20(1)(c)

Poupore, Jessica

From: Poupore, Jessica
Sent: November 8, 2023 15:49
To: Edwards, Geoff; Brady, Daniel
Subject: FW: WATSS extra info for Phase 1 deliverable
Attachments: Final report - WATSS Results v2.pdf; REP-01200-MEC0001 (2) (1).pdf; [REDACTED]

Follow Up Flag: Follow up
Flag Status: Flagged

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FYI, from Rory. I will save these in the restricted folder on GCDocs.

From: Rory O'Sullivan <[REDACTED]>
Sent: Wednesday, November 8, 2023 3:33 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Fw: WATSS extra info for Phase 1 deliverable

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Dear Jessica,
 As discussed on our call, attached is what we sent to SIF [REDACTED]
 Rory

From: Rory O'Sullivan
Sent: 23 October 2023 15:20
To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; [REDACTED]
Subject: WATSS extra info for Phase 1 deliverable

Hi James ,

As requested here is an amendment to the overview report [REDACTED]

I also attach two documents on the process which could give further context if helpful. This would have been presented and shared during the visit to our office earlier this year.

Again, this is highly confidential.

Rory O'Sullivan

Chief Executive Officer

s.19(1)

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WASTE TO STABLE SALT (WATSS) HIGH LEVEL PLANT OVERVIEW

DOCUMENT NUMBER	REVISION	SECONDARY NUMBER
FCY-ALL-MOL-REP 503052-A	00	REP-01200-MEC0001

DOCUMENT APPROVAL – RELEASE FOR CONTROLLED USE				
AUTHORITY	NAME, TITLE	SIGNATURE		DATE
Prepared by	[REDACTED] LEAD PROCESS ENGINEER	[REDACTED]		2022-03-21
Reviewed by	[REDACTED] WATSS PROJECT DIRECTOR			2022-03-25
Approved by	[REDACTED] WATSS PROJECT DIRECTOR			2022-03-25

DATA PROTECTION CLASSIFICATION

INTERNAL

TABLE OF CONTENTS

1.0 BACKGROUND 3

2.0 PROCESS OVERVIEW..... 3

3.0

4.0

5.0

REFERENCE INFORMATION.....13

6.0 INTERNAL REFERENCES13

7.0 EXTERNAL REFERENCES.....13

8.0 TERMS.....13

9.0 ACRONYMS13

10.0 REVISION SUMMARY14

s.20(1)(b)

s.20(1)(c)

1.0 BACKGROUND

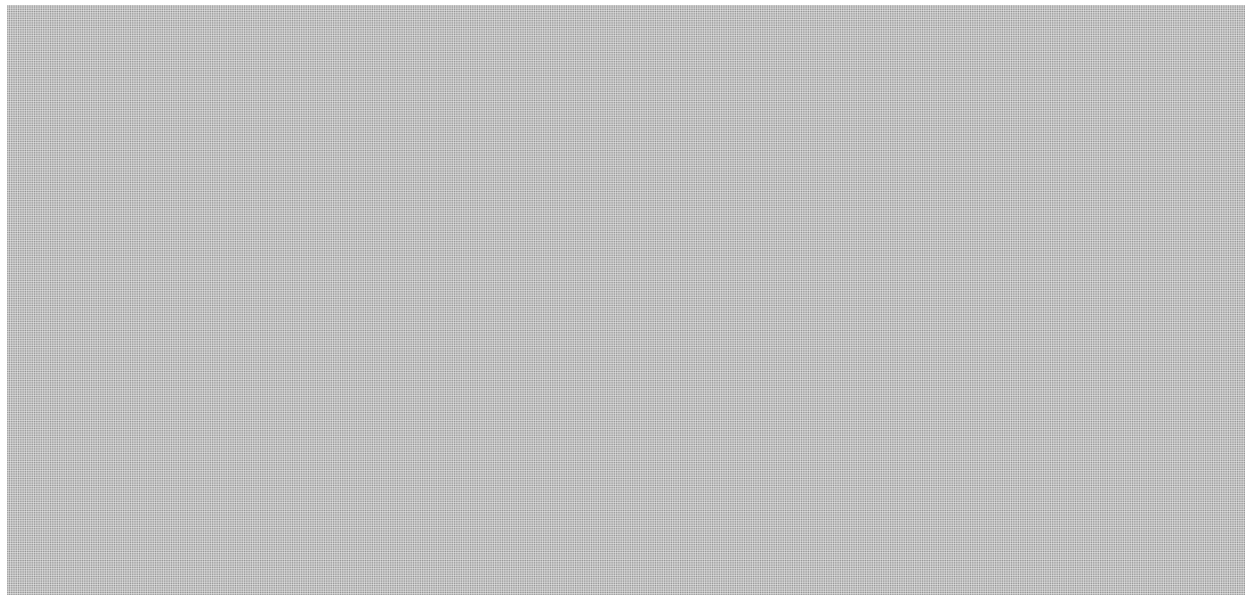


Currently the feedstock for the WATSS plant is CANDU fuel bundles stored at various sites in Canada. Unlike conventional nuclear reprocessing facilities, the WATSS plant is designed to be simple, compact, cost effective and minimises personnel interaction with the facility.

The purpose of this report is to document the pre-conceptual idea and outline the core process of the WATSS plant within the hot cell. The intended use of this is to form a foundation for the project thereby enabling the development into a concept design in accordance with the Moltex management system. There is also a business requirement for renderings of the plant to be produced for marketing purposes and therefore this report will provide an overview of the process, however it is to be noted there are many uncertainties and assumptions in place at this point as engineering substantiation or optioneering has not been undertaken, instead it is representative of development ideas.

Information contained within this document is in the process of being patented and are therefore strictly confidential at this time.

2.0 PROCESS OVERVIEW



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REFERENCE INFORMATION

6.0 INTERNAL REFERENCES

REF. NO.	DOCUMENT NUMBER	DOCUMENT TITLE
1.		
2.		

7.0 EXTERNAL REFERENCES

REF. NO.	DOCUMENT NUMBER	DOCUMENT TITLE
3.		

8.0 TERMS

TERM	DEFINITION
None	

9.0 ACRONYMS

ACRONYM	DEFINITION
R&D	Research and development
PCM	Plutonium Contaminated Material
TRU	Trans-Uranic
UFC	Used fuel containers
WATSS	Waste to Stable Salt

10.0 REVISION SUMMARY

REV	DATE	SECTION(S)	INDEPENDENT REVIEWER(S)	DESCRIPTION OF REVISED CONTENT
0	2022-03-24	ALL	None.	Initial issue.

END OF DOCUMENT

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Poupore, Jessica

From: Poupore, Jessica
Sent: November 27, 2023 12:17
To: Edwards, Geoff
Cc: Rector, Brianna (she, her | elle, la); Brady, Daniel
Subject: FW: SIF Moltex Phase 1 Activity 5 close out report
Attachments: FCY-ALL-MOL-REP-503064-A-WATSS Phase 1- SIF Report.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

UNCLASSIFIED - NON CLASSIFIÉ

Hi Geoff,

FYI, additional materials from Moltex:

Jessica

From: Rory O'Sullivan <[REDACTED]>
Sent: Friday, November 17, 2023 2:21 PM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Fw: SIF Moltex Phase 1 Activity 5 close out report

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Dan and Jessica,
 See below and attached. You don't specifically need to do anything with this but it may be useful to send to Geoff as it answers some of the questions he had.
 Rory

From: Rory O'Sullivan
Sent: 17 November 2023 14:58
To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Andrew Taylor <[REDACTED]>; John Mauti <[REDACTED]>
Subject: SIF Moltex Phase 1 Activity 5 close out report

James,

Please find attached final report to satisfy the WATSS Activity 5 Phase 1 deliverables. Please confirm receipt as the file is large. There is fundamentally no new material over what you have already received but is packaged with context and process descriptions for context.

Please do not forward to ACOA for confidentiality reasons, you can send them your conclusions. We will send to NRCan.

s.19(1)

Rory O'Sullivan

Chief Executive Officer

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 s.20(1)(c)

SIF Phase 1 Completion – WATSS Report		
Number: 503064	Revision: A	

Project	Area	Issuer	Type	Status
FCY	ALL	MOL	REP	Confidential

Authority	Name, Title	Signature	Date
Author	Jose Zuniga, Senior Chemist		17/11/2023
Reviewer	Phil Quayle, Lead Chemist		17/11/2023
Reviewer	Ian Scott, Chief Scientist		17/11/2023
Reviewer	Rob Mallozzi, Technical Director		17/11/2023
Approver	Rory O'Sullivan, CEO		Nov 17, 2023

CONTENTS

1.	EXECUTIVE SUMMARY	2
2.		
3.		
4.		
5.		
6.		
7.	REFERENCES	22
8.	APPENDIX A – VIRGINIA TECH'S WORK ON THE ELECTROCHEMICAL FORMATION OF URANIUM/CERIUM/IRON ALLOY	24
9.	APPENDIX B – RELEVANT TECHNICAL NOTES FOR SIF PHASE 1	70

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8. APPENDIX A - VIRGINIA TECH'S WORK ON ELECTROCHEMICAL FORMATION OF URANIUM/IRON ALLOY

Executive Summary

Uranium and iron alloy have been prepared by using directly heating method in muffle furnace and tube furnace. The composition of alloy is in eutectic composition at 66at% of U and 33at% Fe. Alloy presence was confirmed with DSC analysis and SEM phase characterizations. However, other than UFe_2 and U_6Fe phases that have been expected, additional impurity phase has been seen and the alloy could not be completely melted at 725°C which should be the melting temperature of the alloy at that composition. As a solution, bismuth-uranium alloy was prepared and confirmed the phases of the alloy which are Bi and Bi_2U with SEM analysis. The bismuth-uranium alloy was able to be melted. The liquation starts around 400°C and complete liquid Bi-U alloy could have reached around 900°C .

The purification of CaCl_2 procedure was determined by using TGA analysis, it has been seen that the weight loss is 0.002%, it is concluded that heating procedure removes hydrates bonds of CaCl_2 . After CaCl_2 purification, the salt mixture is prepared at two different compositions. The lowest melting temperature which is determined via DSC analysis could have been reached at 79mol% CaCl_2 - 17mol% CaF_2 - 4mol% CaO , that is 632°C .

Chemical reduction of uranium dioxide has been conducted in eutectic CaCl_2 - CaF_2 composition at 850°C . Initially, the mole ratio between calcium and uranium dioxide is 3. Reduced uranium metal is confirmed with SEM analysis.

In electrochemical test, firstly the molten salt has been checked by using of graphite electrode to confirm calcium reduction (as a cathode) and CO and CO_2 productions (as an anode) at determined temperature. As a further step, uranium reduction was conducted in the molten salt and reduced uranium has been seen on the surface of UO_2 pellet and confirmed with SEM point scans.

Iridium rode was investigated at 675°C . It has been seen that the weight loss of iridium after current applications for 6 hours was 16.5wt%.

Fundamental Research to Advance Scientific Understanding of the Molten Salt Fuel

Nagihan Karakaya

Prof. Jinsuo Zhang

Summary

10/8/21

Contents

1. Uranium Alloy Preparation

- Uranium-Iron Alloy
- Uranium- Bismuth Alloy

2. Molten Salt

- Purification of CaCl_2
- Salt Mixture Compositions/Purification and Melting Temperature
- Electrochemical Test of Salt Mixture

3. Chemical Reduction of Uranium Dioxide

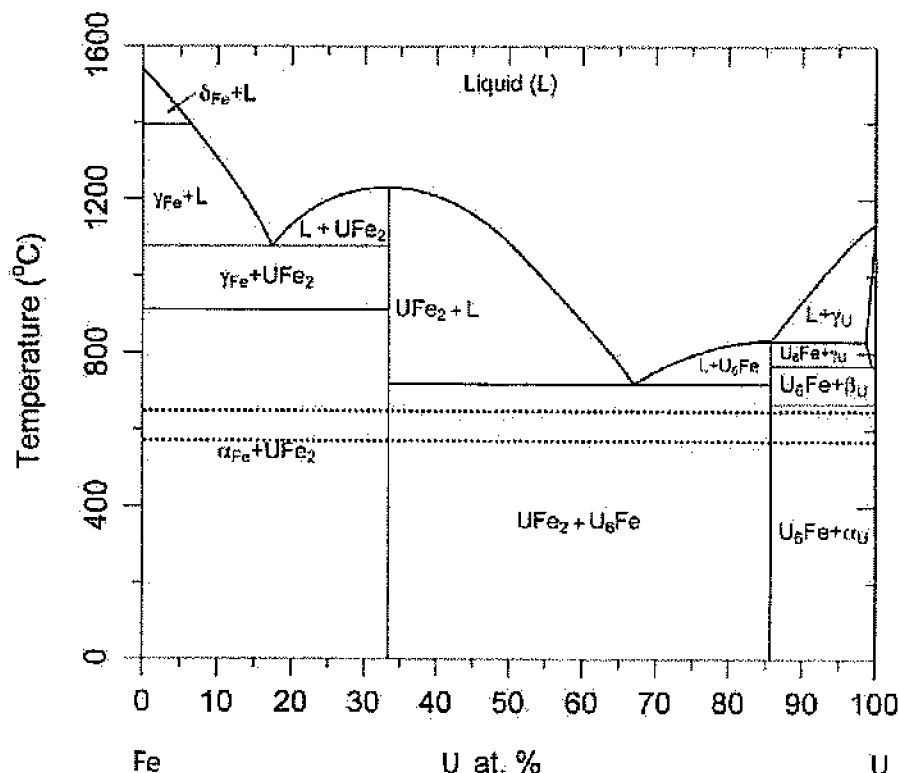
4. Electro-Reduction of Uranium Dioxide

- Ta evaluation
- Reduced Uranium
- Ir rode Investigation

1. Uranium Alloy Preparation

1.1. Uranium- Iron Alloy

Alloy preparation was done by directly heating of two metal in muffle furnace (1100C) or tube furnace (1300C).



a.) Experiment Set-up

Alloy preparation is done by directly heating of two metal in muffle furnace (1100C) and tube furnace (1300C).

First preparation was carried through in muffle furnace, 33at% Fe and 66at% U mixed in alumina crucible and heated to 1100C. That temperature was not enough to melt Uranium. After experiment, uranium and alumina crucible reaction was seen on alumina surface.

Summary

10/8/21

b.)Experiment Setup

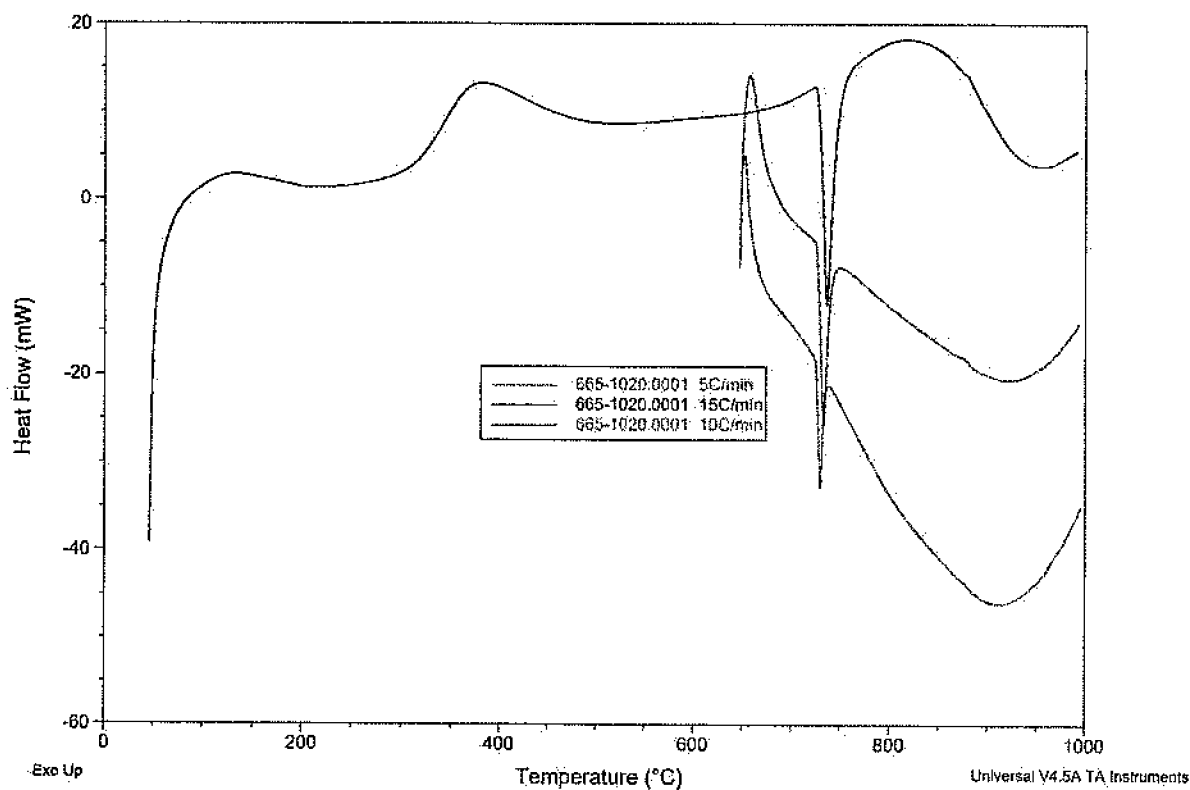
Uranium-Iron were heated in tube furnace that can reach 1400C. Tube furnace was filled with 99.99% Ar gas before materials placed in. Uranium and iron were inserted in yttria crucible. Temperature was increased by following procedure.

Beginning Temperature (C)	Time to Increase (min)	End Temperature(C)	Ramp Rate (C/min)
20	60	300	5
300	15	300	-
300	60	600	5
600	15	600	-
600	90	900	3.3
900	15	900	-
900	120	1200	2.5
1200	15	1200	-
1200	120	1400	
1400	1440	1400	=
1400	120	1200	0.83
1200	15	1200	-
1200	120	900	2.5
900	15	900	-
900	90	600	3.3
600	15	600	-
600	60	300	5
300	15	300	-
300	180	20	1.5

The experiment was redone different temperature 1300C, 1250C, different size of U metal and different time that was kept in at highest temperature.

c.)Result

Alloy eutectic composition was confirmed by DSC. The peaks are;



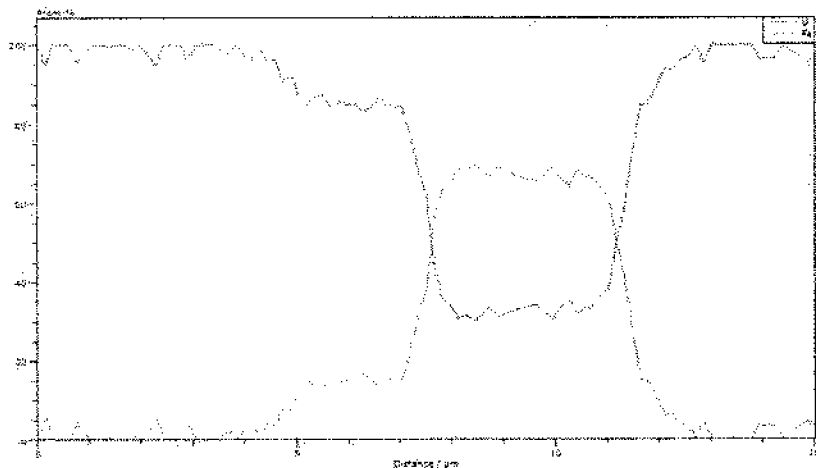
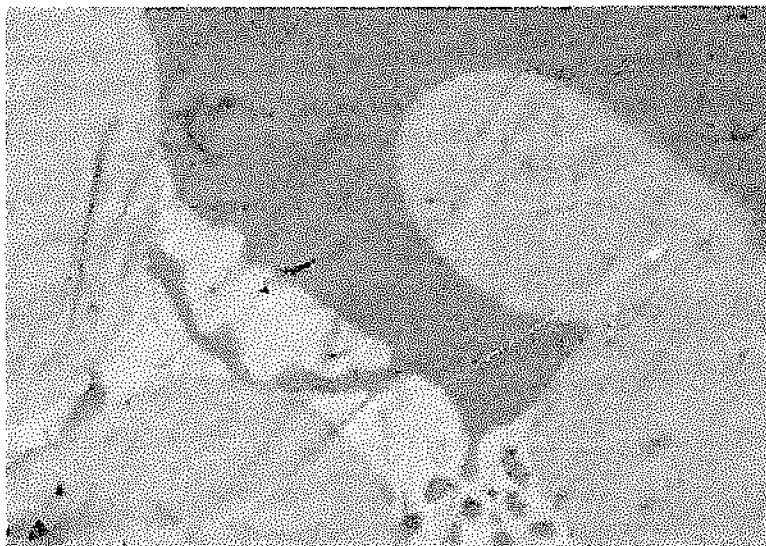
Peak Temperature(C)	Ramp Rate(C/min)
727.64	15
726.31	10
724.86	5

The alloy could not be melted at eutectic temperature. Although temperature was increased up to 1000C, the alloy was still solid. SEM analysis was performed.

Summary

10/8/21

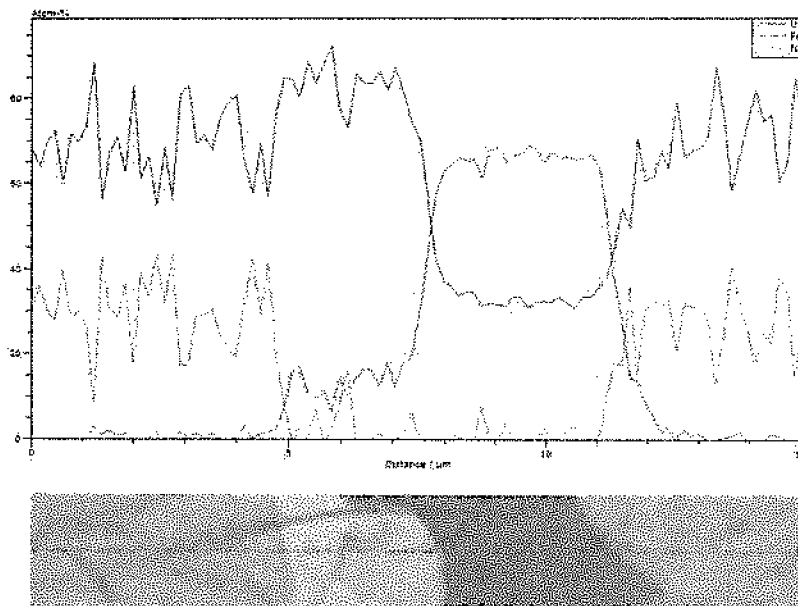
It is confirmed that
darker area is UFe_2
phase, white area is
 U_6Fe phase.
Additional phase was
also found.



Scan data Date: 4/12/2021 8:05:28 PM Measure time: 1:03 min Start: (255,710) End: (881,322) Length: 15 μm

Summary

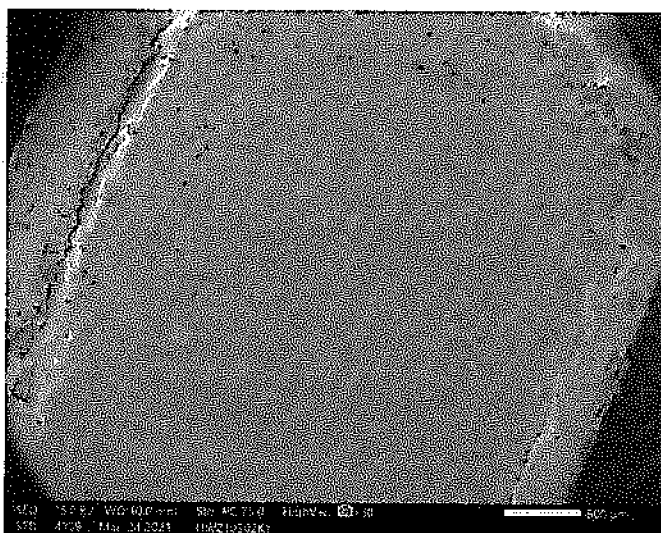
10/8/21



This line scan shows that brighter gray part has impurities with mostly U metal. The phase not only showed N, but also show C, O complex structure peaks.

Scan data Date: 4/12/2021 8:12:45 PM Measure time: 1:03 min Start: (255,710) End: (881,322) Length: 15 µm

Although the uranium was melted completely, appearance of the alloy was fragile and shell-structured.



Summary

10/8/21

1.2. Uranium-Bismuth Alloy

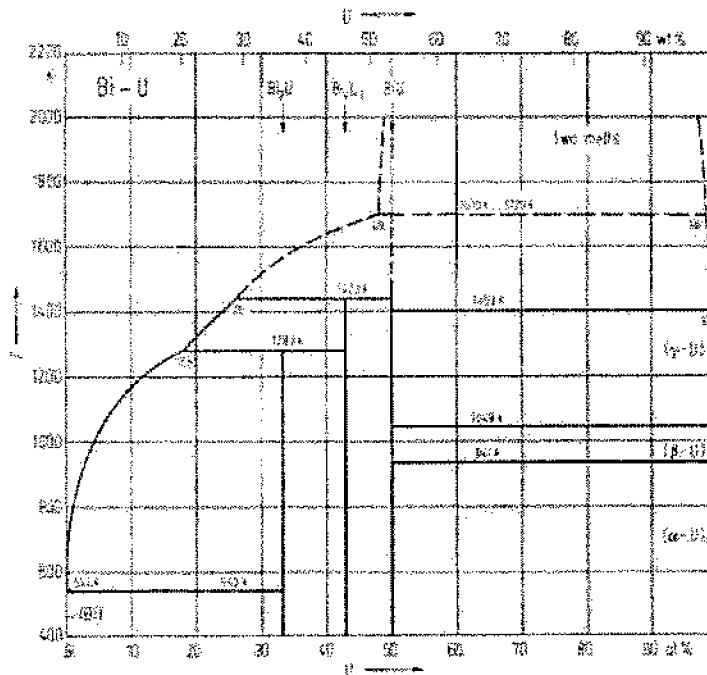
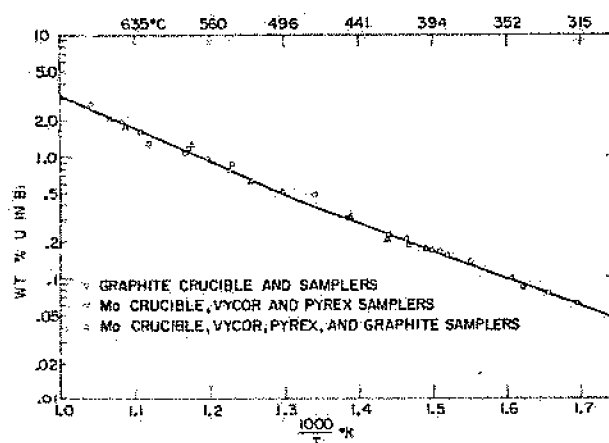


Fig. 1. Bi-U. Phase diagram

Uranium solubility in bismuth was verified with ICP-MS analysis and alloy prepared in muffle furnace up to 1000C.



U wt% solubility in Bi

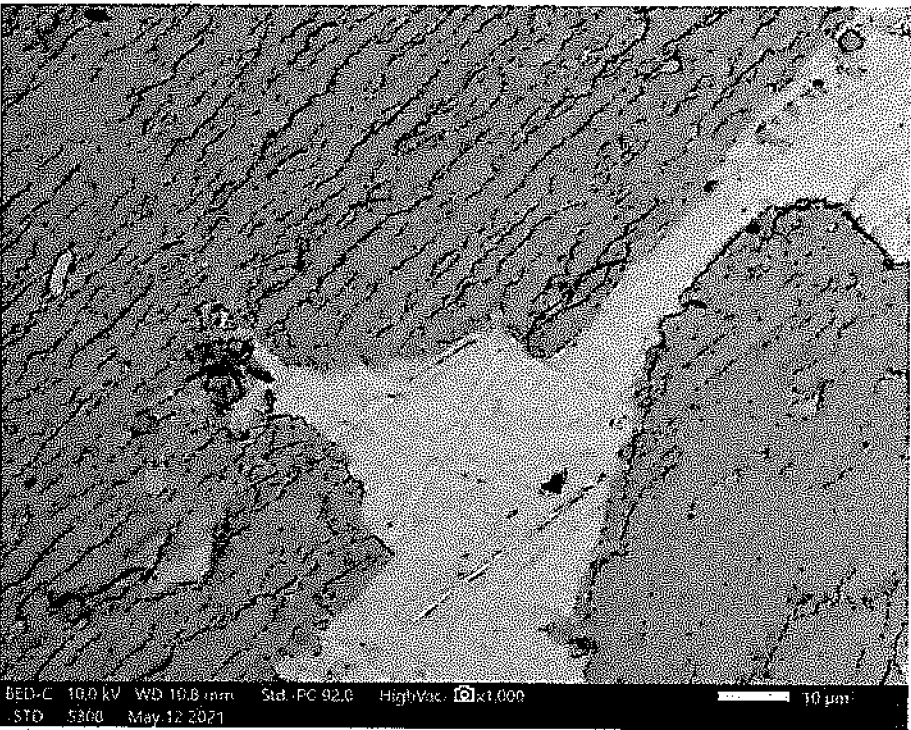
a.)Experiment Setup

Experiment was performed under argon atmosphere in glovebox. Yttria crucible used to melt bismuth and U metal. Experiment started at 600C and reach 1000C. Samples are taken each 100C after waiting an hour.

b.)Results

ICP-MS analysis was run to see U metal solubility in bismuth.

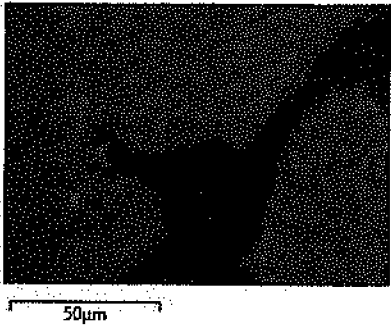
Temperature (C)	600	700	800	900	1000
U wt%	2.5	3.37	8.45	13.5	15.90



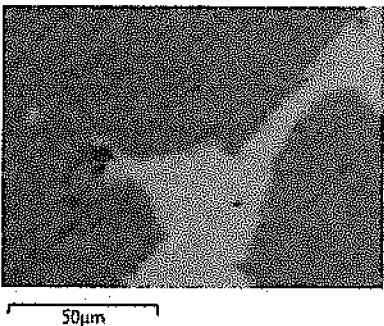
SEM analysis was performed to confirm phases.

Brighter part is bismuth metal, darker parts are Bi₂U phase.

U Ma1



Bi Ma1



Summary

10/8/21

2. Molten Salt

2.1. Purification of CaCl_2

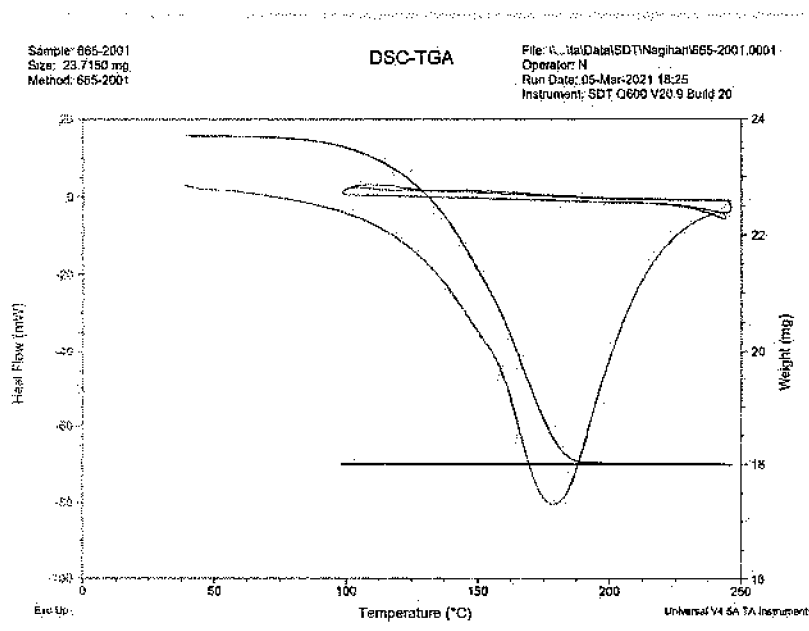
a.) Experiment Setup

CaCl_2 is purchased as calcium chloride dehydrate form. Purification procedure is shown below table. After each step samples were taken and weight loss confirmation was done by DSC. Weight loss of salt shows that in which step hydrates bond of $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ were broken and release from salt.

Samples/Steps	Temperature(C)	Ramp Rate(C/min)	Hold(hr)
2001/(1)	RT-1120		2.5
2002/(2)	120-200		1
2003/(3)	200-400		2.5
2004/(4)	400-600		2.5
2005/(5)	600-RT	N/A	Natural cooldown

b.) Results

DSC result of each sample follows,



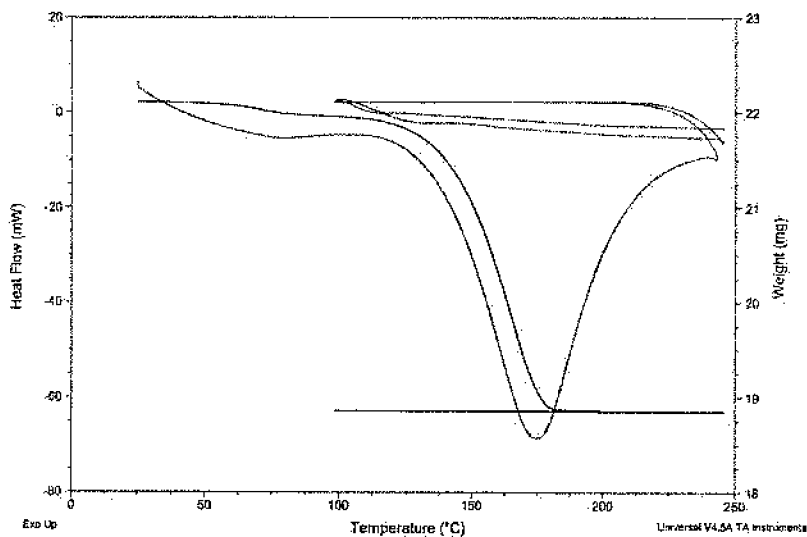
Summary

10/8/21

Sample: 665-2002
Size: 22.1090 mg
Method: 665-2002

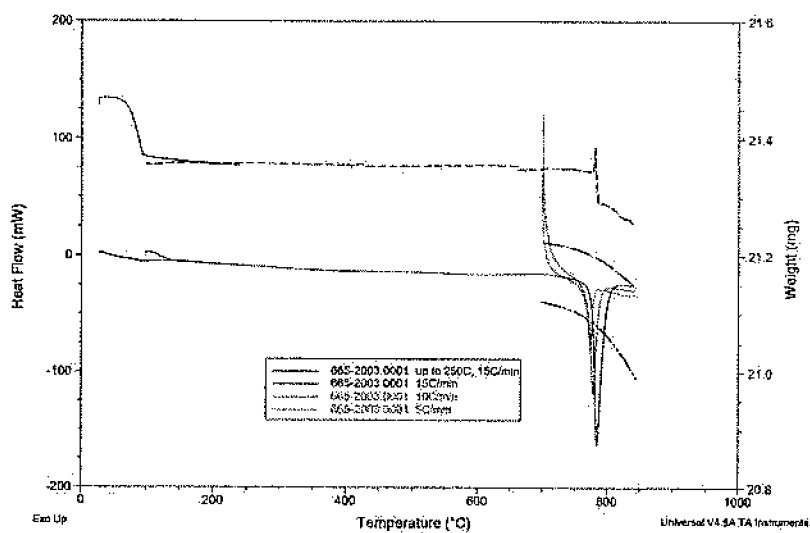
DSC-TGA

File: A:\Data\SDT\Naghan\665-2002.0001
Operator: N
Run Date: 19-Mar-2021 13:40
Instrument: SDT Q600 V20.9 Build 20



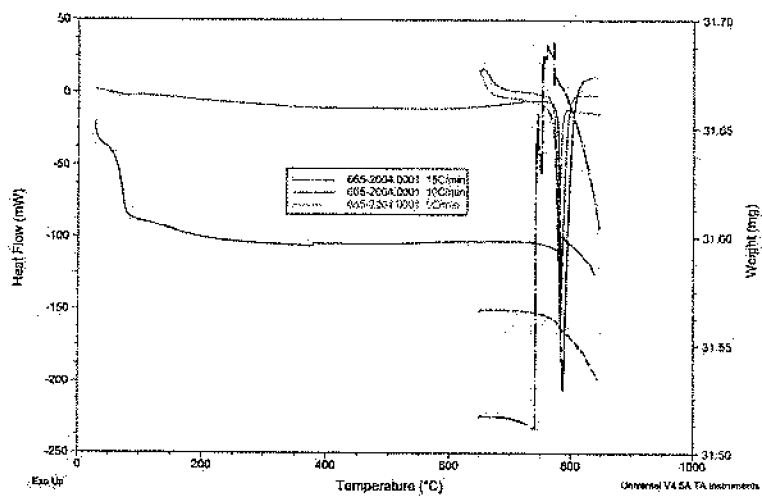
Sample: 665-2003

DSC-TGA



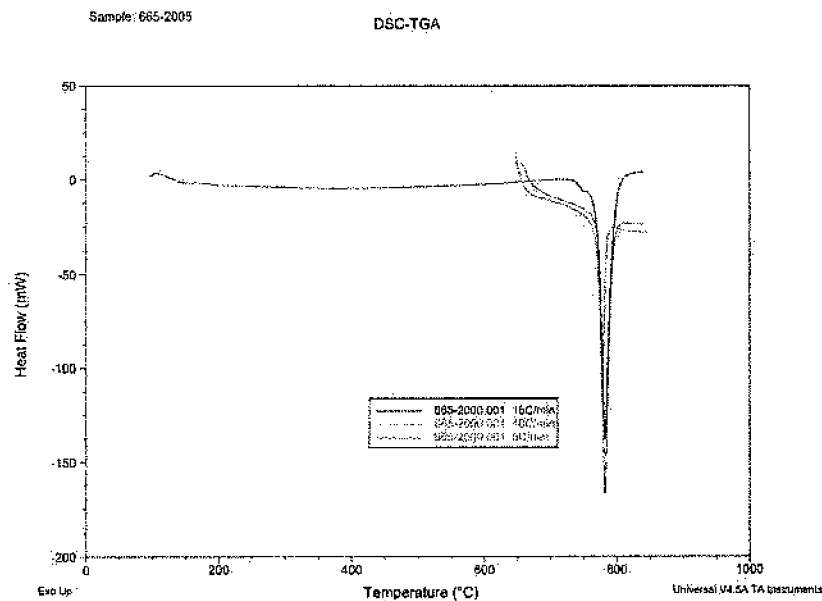
Sample: 665-2004

DSC-TGA



Summary

10/8/21



Weight loss of CaCl_2 after 4th step is %0.002(which is 0.05mg), that shows that hydrates bond are broken and released from the salt.

2.2. Salt Mixture Composition/Purification and Melting Temperature

Salt components are CaCl_2 , CaF_2 , CaO . Purification of salt mixture is done by keeping the temperature at 850C over night, while ramp rate is 5C/min.

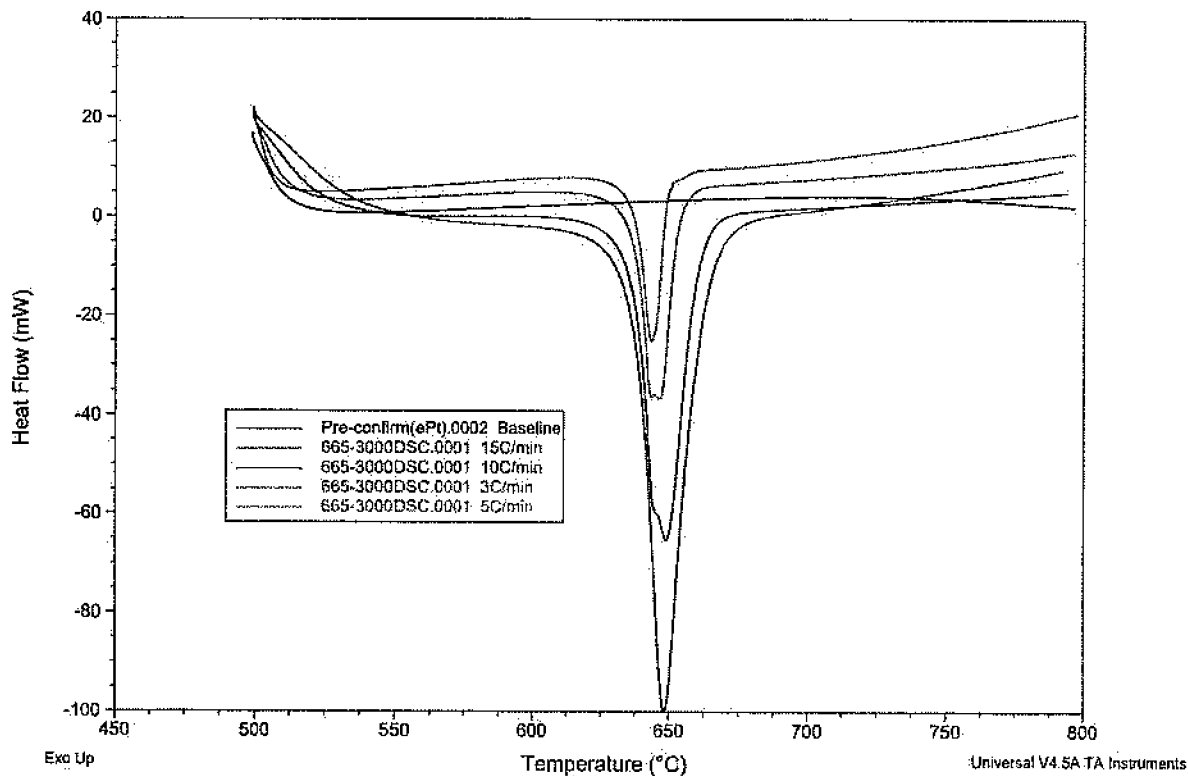
Mixture 1:

Components	Mol%	Wt%
CaCl_2	78	83.7991
CaF_2	20	15.1152
CaO	2	1.0857

Melting temperature of mixture 1 confirmed by DSC, which is 636C.

Summary

10/8/21



Ramp Rate(C/min)	Melting Temperature(C)
15	636.77
10	636.33
5	636.85
3	636.76

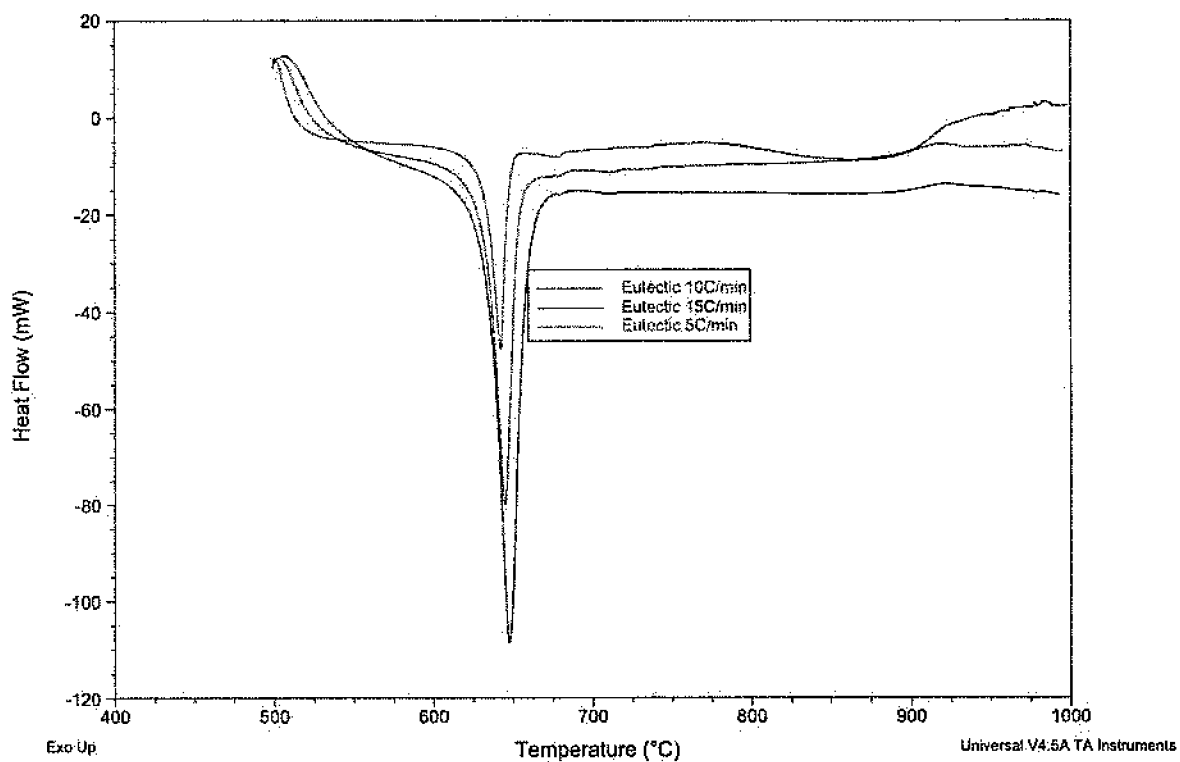
Summary

10/8/21

Mixture 2:

Components	Mol%	Wt%
CaCl2	79	84.965
CaF2	17	12.862
CaO	4	2.173

Melting Temperature if mixture 2 confirmed by DSC, which is 632 C.



Ramp Rate(C/min)	Melting Temperature(C)
15	633.77
10	632.77
5	632.21

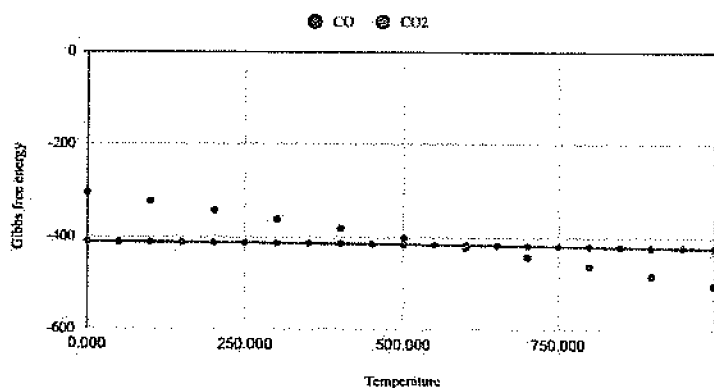
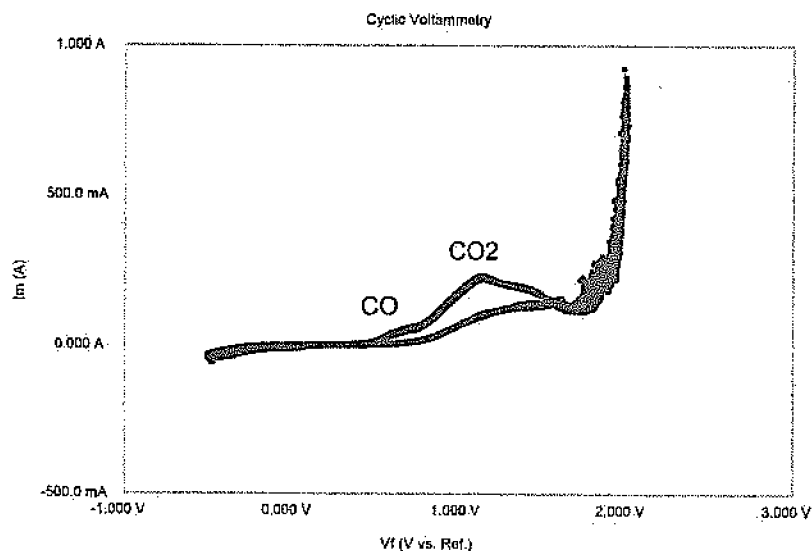
2.3. Electrochemical Test of Salt Mixture

a.) Experiment Setup

After salt mixture is purified in nickel crucible, temperature is kept at 850C. Electrodes are chosen graphite(working electrode), tungsten(counter electrode) and tungsten(reference electrode). Cyclic Voltammetry(CV) and chronopotentiometry(CP) are conducted.

b.) Results

In CV scan, two oxidation reactions have been seen. Okabe et al., indicated that C electrode formed CO and CO₂ in their study "Direct oxygen removal technique for recycling titanium using molten MgCl₂ salt" because of Gibbs energy difference.

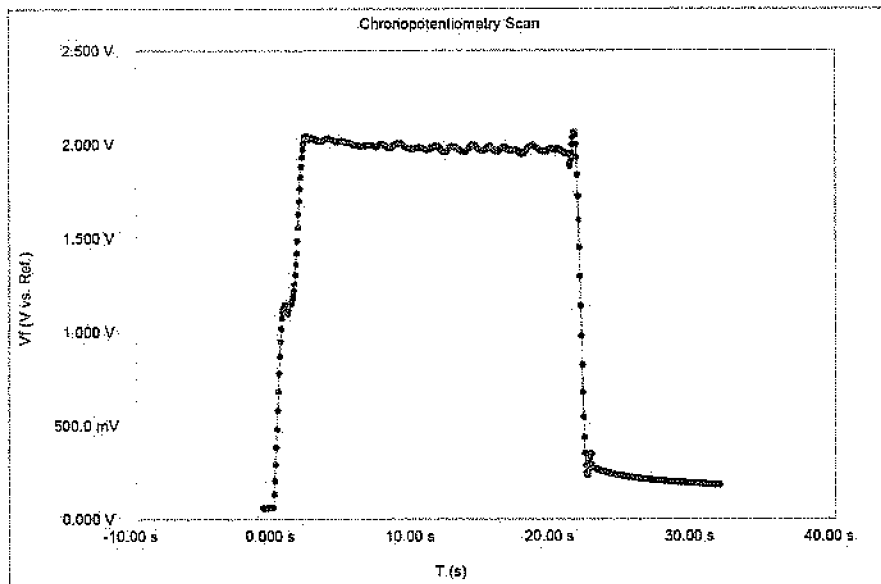
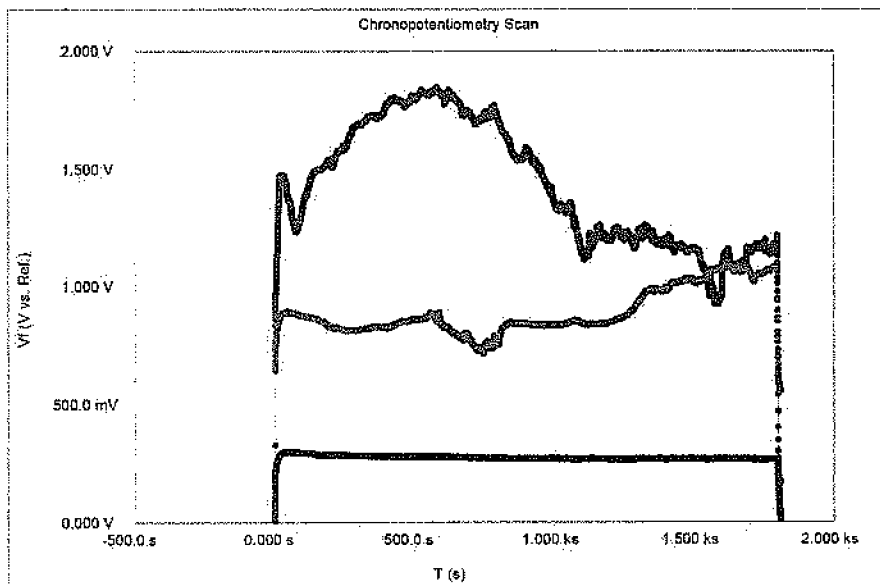


Calculated potential difference of CO and CO₂ reactions is about 0.135V at 850C. It is consistent with our data.

Summary

10/8/21

In CP scan, those oxidation reactions have been confirmed and chlorine release has been seen.



3. Chemical Reduction of Uranium Dioxide

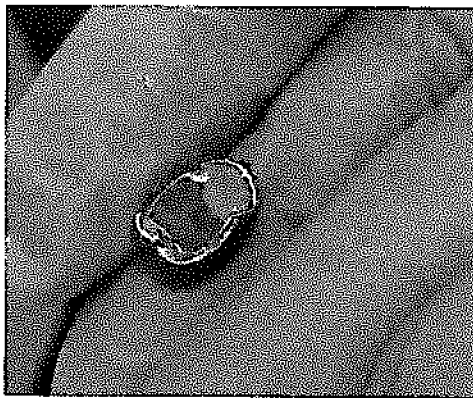
a.) Experiment Setup

For chemical reduction of uranium dioxide into uranium metal, $\text{CaCl}_2\text{-CaF}_2$ eutectic salt was prepared. Since alumina and calcium react, yttria crucible was used. Calcium is added into the salt 3moles per 1 mol U. The experiment was conducted at 850C.

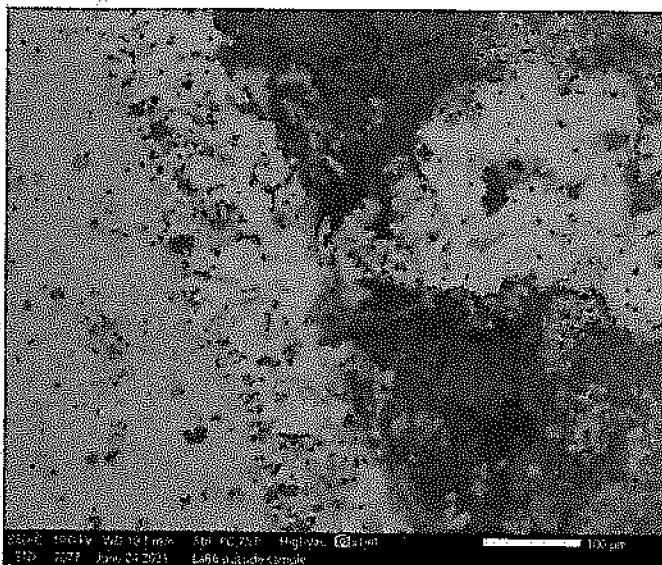
The reaction; $\text{UO}_2 + 2\text{Ca} = 2\text{CaO} + \text{U}$

CaO has solubility in $\text{CaCl}_2\text{-CaF}_2$ salt composition.

b.) Results

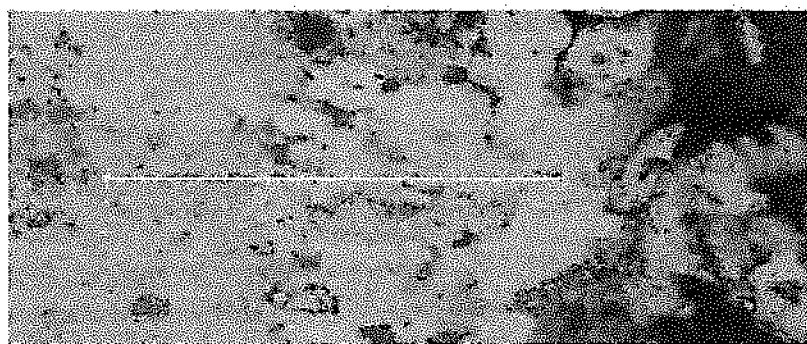


Reduced dioxide pellet picture

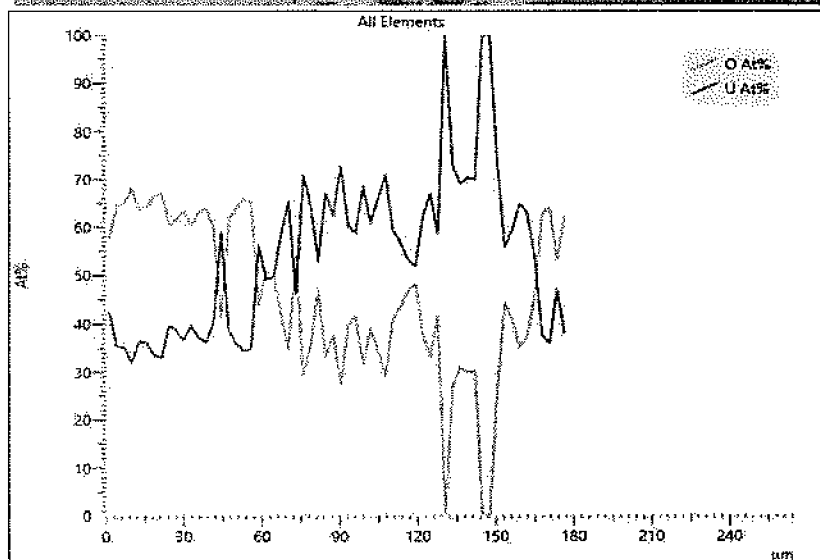


Summary

10/8/21



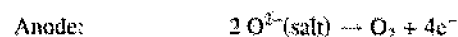
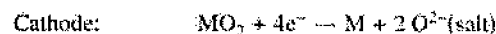
SEM analysis was run to confirm composition. It is confirmed that brighter area reduced U metal.



In couple of experiments, metallic U was seen on UO₂ pellet but it had considerably thin layer. Additionally, salt evaporation was witnessed on those experiment. In reference of 'Method of converting UO₂ into metallic U lump', it is mentioned that "The heat generated in the reduction reaction is unfavorably consumed up by the melting and evaporation of the Calcium metal." Because of this consideration, Ca metal was added at 3 mol%.

4. Electro-reduction of Uranium Dioxide

In electro-reduction test, M represent U metal.



4.1. Ta evaluation

a.)Experiment Setup

To check the impurities in the salt mixture, firstly electrodes were arranged as;

Working electrode: Ta

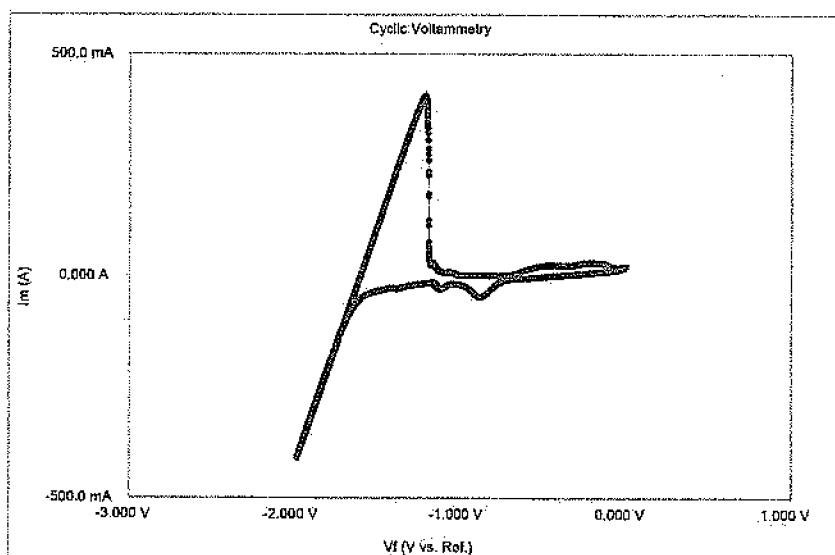
Counter electrode: Graphite

Reference electrode: Tungsten

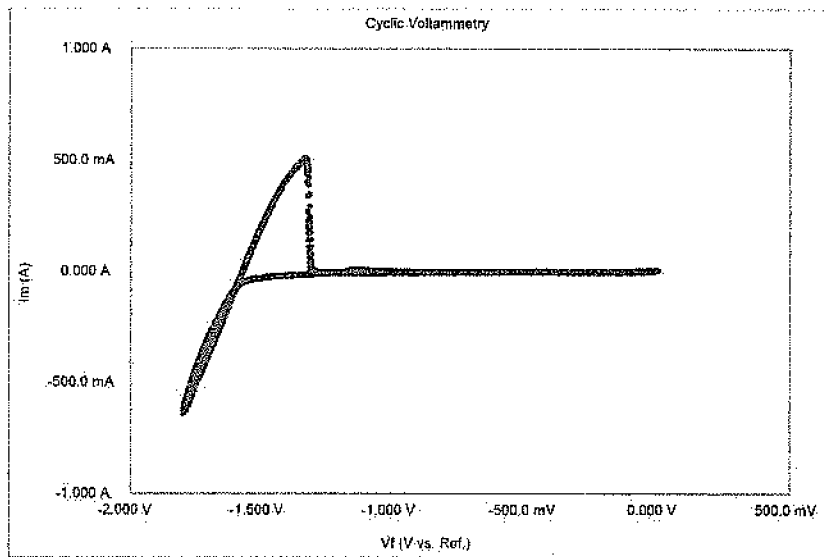
The experiment was conducted at 675C.

b.)Results

In CV scan, extra reduction and oxidation peaks were seen. Those peaks came from scanning of positive potential that caused to oxidize Ta metal and reduced again.



And Calcium re-
duction has been
seen -1.6V.



After that W rode
was inserted as
working electrode.
That time, addition-
al peaks were gone
away.

After CV scan salt sample was taken and analyzed by XRD. TaO peaks have been seen in the mixture.

4.2. Reduced Uranium Metal

a.) Experiment Setup

Working electrode: Tungsten
Counter electrode: Graphite
Reference electrode: Tungsten

After CV curve is obtained, UO₂ is inserted as working electrode. And CP was performed.

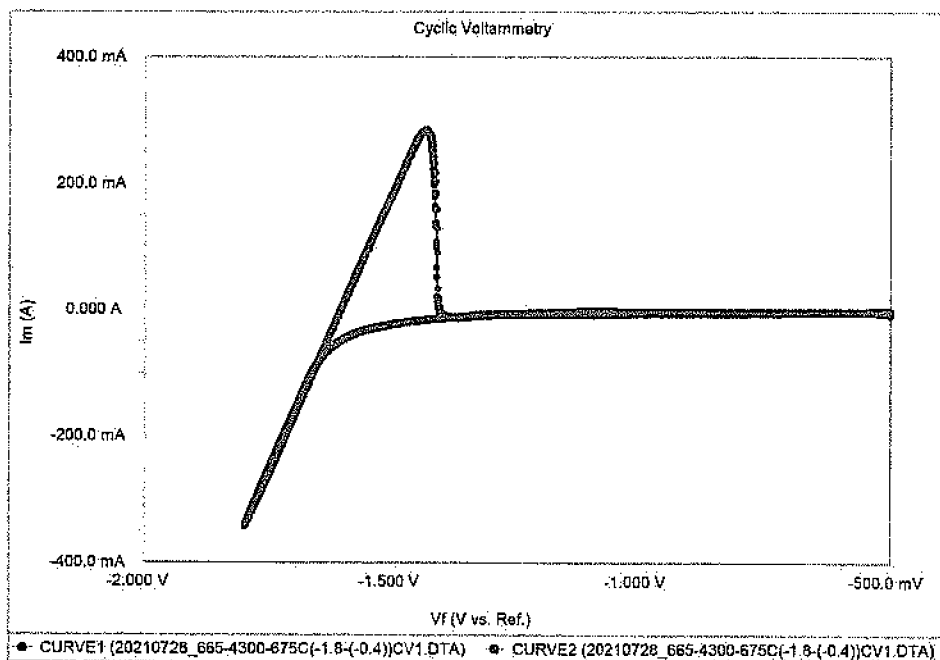
The experiment was conducted at 675C.

Summary

10/8/21

b.)Results

The CV curved that is obtain by W rode;



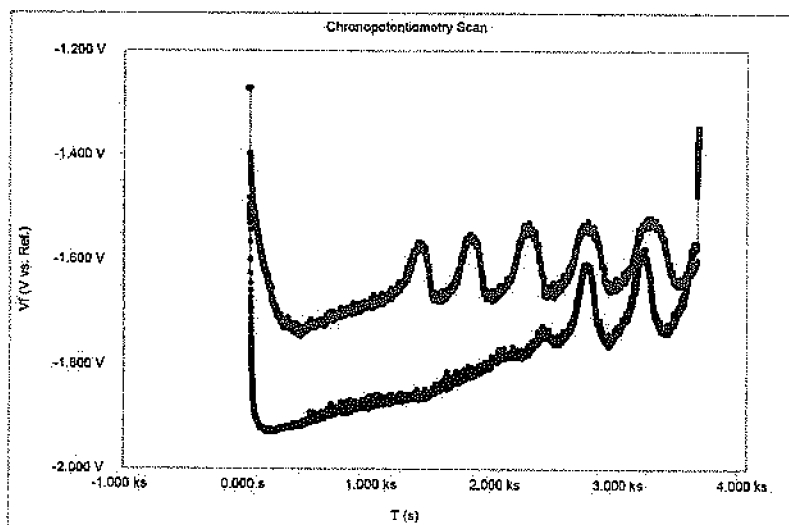
Calcium
reduction
at
-1.516V.

Applied currents at CP, respectively;

250mA 2.45hrs

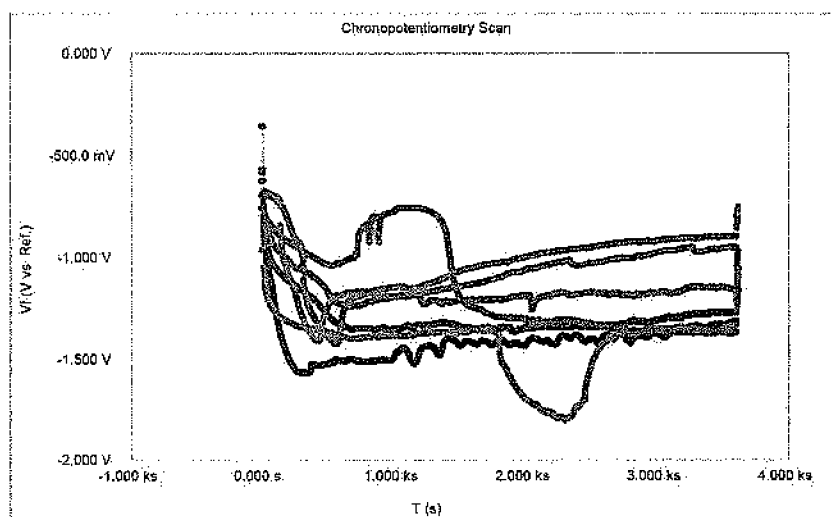
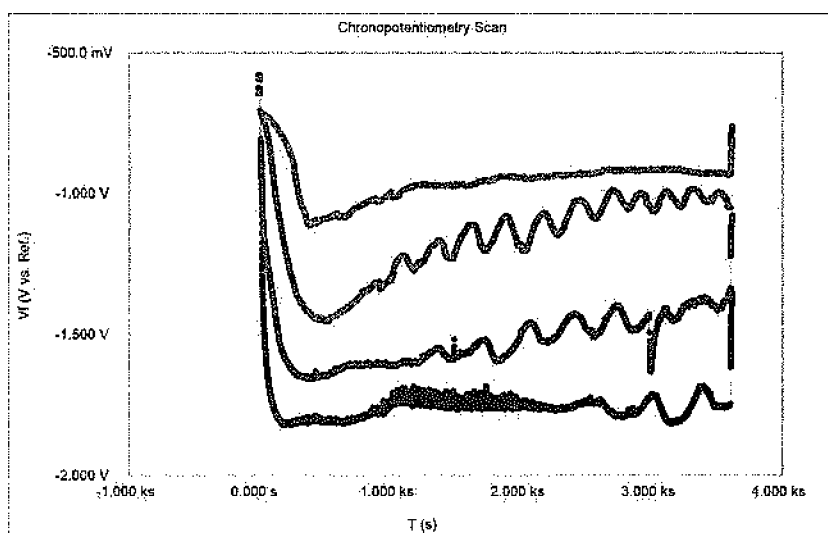
200mA 6hrs

150mA 9hrs



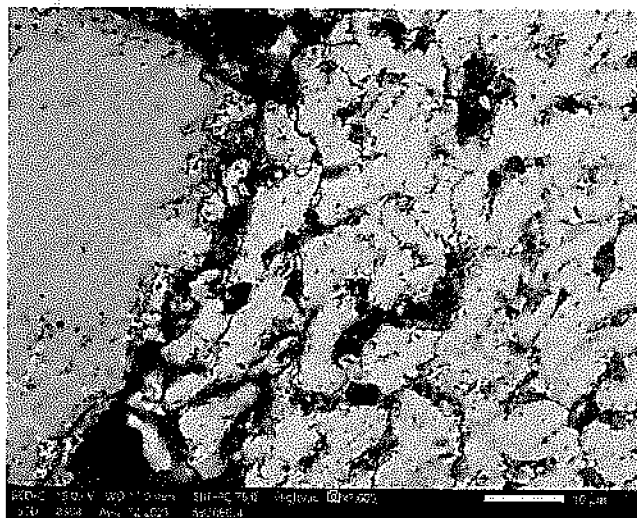
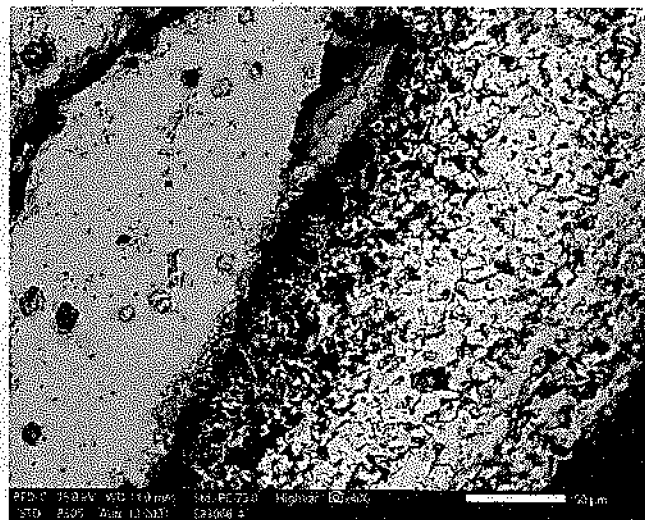
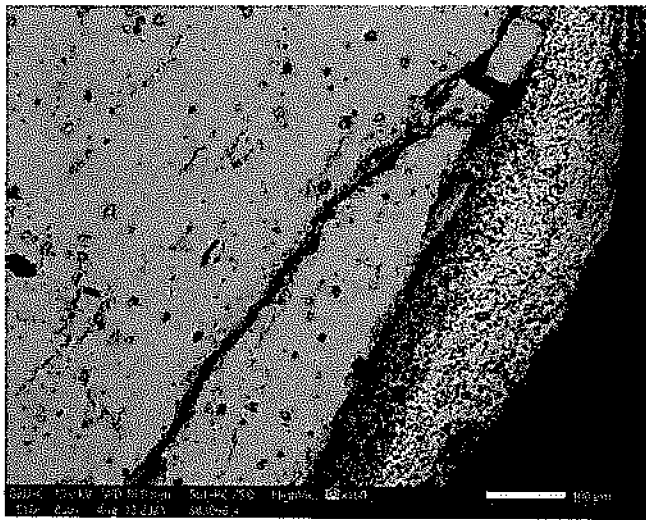
Summary

10/8/21



When constant current is applied, increasing potential was seen because of changing surface of reference electrode, W.

Reduced uranium pellet;

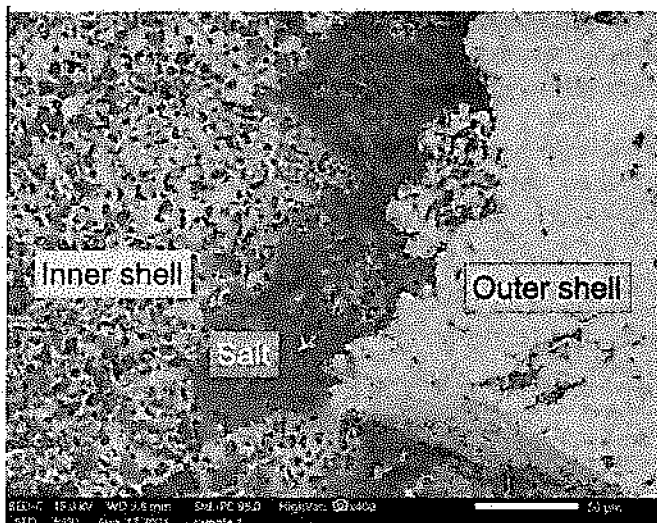
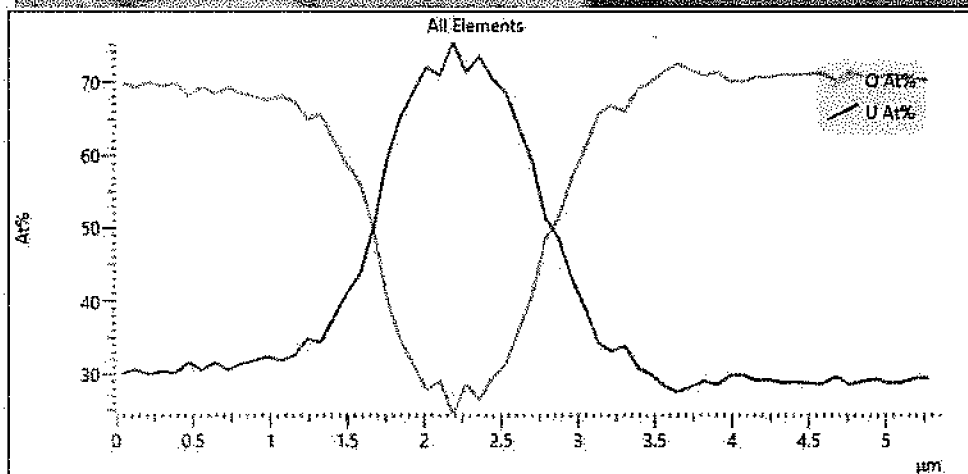
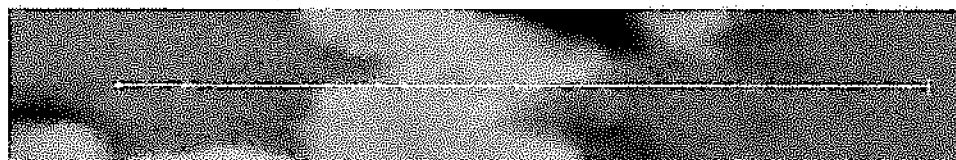
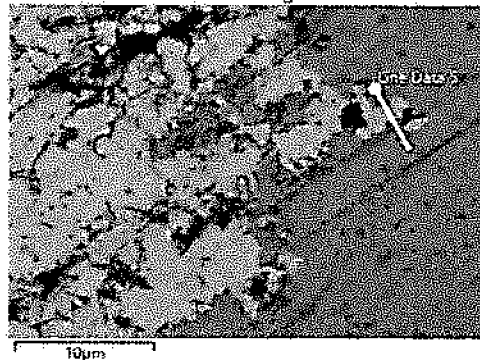


With point scan, it is confirmed that white porous structure is reduced uranium metal. On those area, neither uranium oxide nor uranium carbide have been seen. Following linesman also confirmed that.

Summary

10/8/21

Electron Image 21

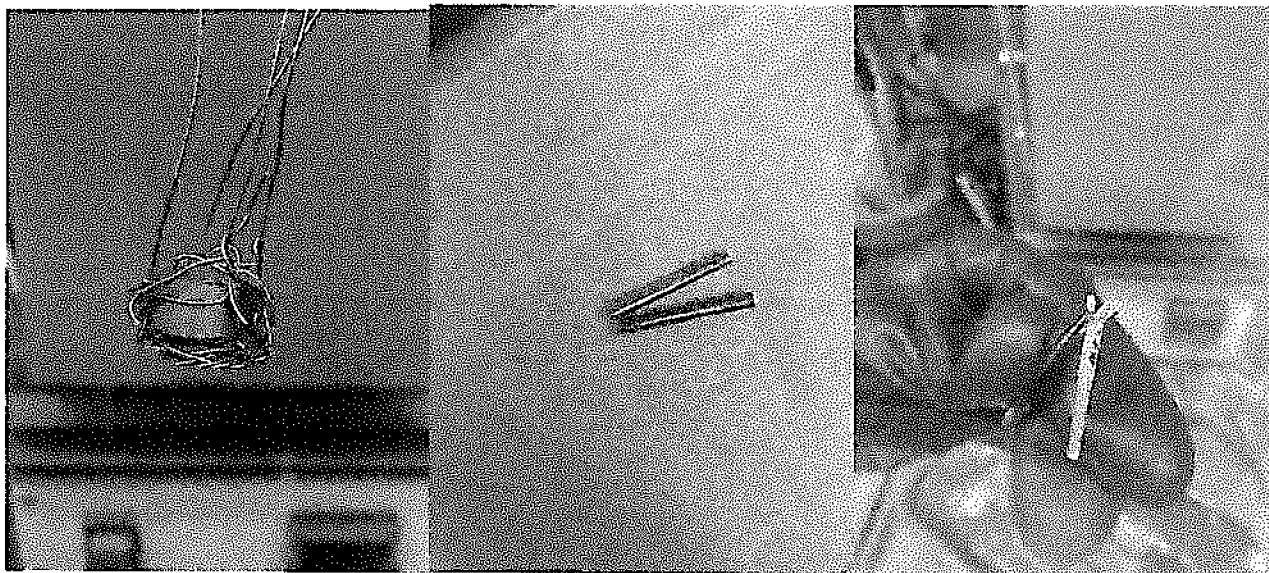


As a conclusion;

- Outer shell of reduced Uranium look denser.
- Salt mixture diffuses between UO_2 and U metal.
- Formation of uranium carbide does not exist.

4.3. Ir Rode Investigation

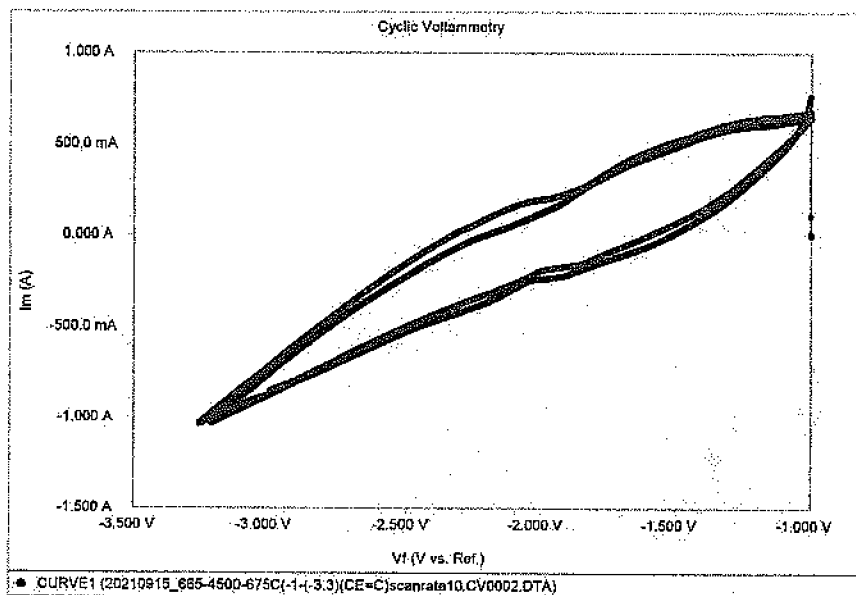
a.) Experiment Setup



Ta basket

Unused and Consumed Ir rode

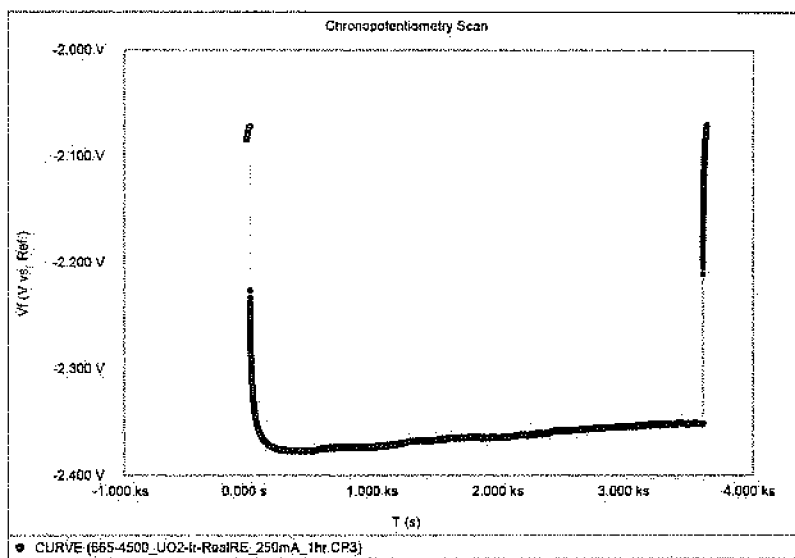
For following experiment, Ta basket is built to hold uranium dioxide and Ir rode is used as counter electrode at 675C. Real reference electrode is prepared with salt mixture and 5wt% NiF₂.



In CV scan, U reduction potential seen as -2.4V.

Summary

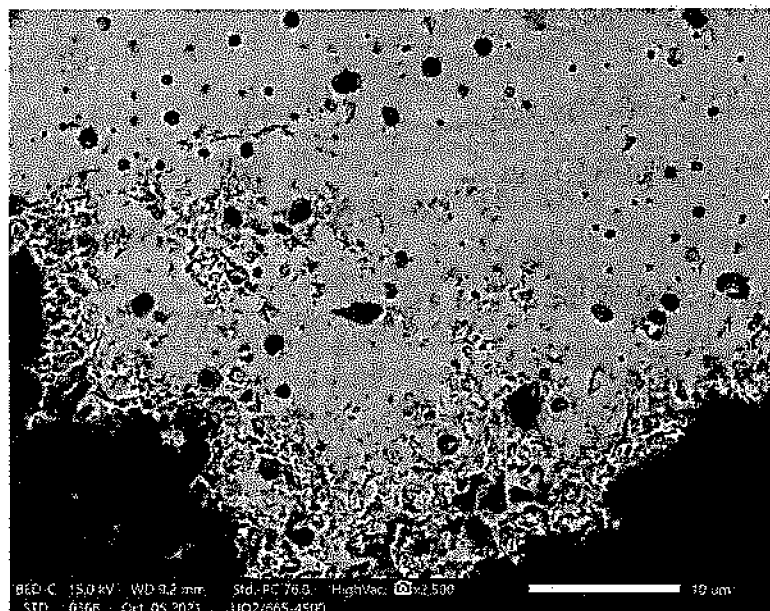
10/8/21



Since this time real reference electrode is prepared, the fluctuation haven't been seen on potential.

b.)Result

Uranium dioxide was reduced but after that it oxidized again. In SEM analysis, porous structure and point scans show that some parts has still higher at% U concentration.



Precipitation of iridium oxide was found on bottom with salt mixture.

Summary

10/8/21

At 675C, after 6hr of applied constant current approximate Ir weight loss is;

Initial mass = 3.9348g

final mass = 3.2839g

Weight loss = (3.9348-3.2839) / 3.9348 = 16.5 %

Reduction of Solid Uranium Dioxide in Calcium Salts

Nagihan Karakaya, Jinsuo Zhang

Abstract

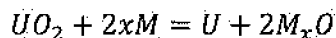
In this study, the oxide reduction of solid UO_2 was performed by mediated chemical and electrochemical reductions in calcium salts. In the chemical design, calcium metal dissolved in $CaCl_2$ - CaF_2 in various concentrations to optimize total reduction of solid pellet in 12 hours at $850^\circ C$. The reduced uranium metal was seen in porous form without any formation of complex or intermediate products. To make a comparison with electrochemical reduction in molten calcium salts, the electroreduction of UO_2 was investigated at $675^\circ C$, $750^\circ C$, and $850^\circ C$ in $CaCl_2$ - CaF_2 - CaO baths. The temperature affected the reduced uranium metal phase and the applied current efficiency. Neither uranium metal in the salt medium nor the intermediate compound on the uranium surface were observed. The result demonstrates that both reductions can meet the oxide reduction under the optimized conditions of each design, having potential to lead to other actinide oxides reduction in spent nuclear fuel (SNF) applications as well as prepare a fuel for new generation actinide burner reactor.

1. Introduction

Nuclear energy plays a crucial role in meeting increased energy demands in the future. One of the main goals forwarded by Generation IV International Forum is that of advance nuclear fuel cycle development for environmentally sustainable and efficient fuel utilization in new generation reactors. The current spent nuclear fuel (SNF) reprocessing technologies have limitations on those goals. However, a pyrometallurgical process could provide higher satisfaction to reduce SNF from current repositories and form reprocessed fuel for the next generation reactors.

The pyroprocess uses an electrorefining stage that leads to a separation of fission products and actinides, mainly by making use of metallic fuel [1,2]. Since the highly used fuel is in an oxide form in the light water reactors (LWRs), the oxide reduction of spent oxide fuel needs to be addressed if the pyroprocess is selected to recover the oxide SNF.

There are two main mechanisms to reduce SNF. First mechanism applied a reducing agent (usually an alkali or earth alkali metal) which causes chemical reaction since the oxide forms of reagent has more negative formation of Gibbs free energy than actinide oxides and some fission products. This chemical reduction is carried out in molten media such as molten salts and/or molten alloys. The widely used active metals are lithium, calcium, magnesium. The processes of this mechanism are the dissolution and diffusion of the metal through the solid pellet in liquid media, then, the following reaction takes place.



where $M = Ca, Li, Mg$

Therefore, the newly formed oxide dissolves and transports into the liquid, or precipitates instead based on the oxide form and medium choice.

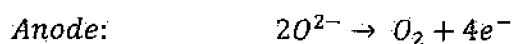
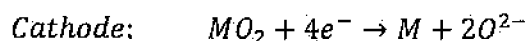
Lithium metal application has been studied widely [3-8] due to the low operation temperature of LiCl and is commonly referred as lithium reduction process. It has been investigated extensively for UO_2 [3,4,6], mixed of UO_2 - PuO_2 (MOX) [6,7], U_3O_8 [9], and SNF [5]. Even though the reduction of uranium has been accomplished by using Li metal in the most studies, the close observation of formed Li_2O is required because of accomplishing AmO_2 reduction [6-8], and as well as avoiding the complex compound formation such as oxychlorides in the molten salt [10].

Mg metal usage in MgCl_2 and its alloys with Cu, Zn, Ca was able to reduce uranium oxides and uranium tetrafluoride, but strong dependencies of MgCl_2 ratio in the media and removal of insoluble MgO in molten media created challenges of deoxidation studies even though Pu recovery was 99% [11-14].

On the other hand, Ca metal was applied on its own or Ca-Zn, Ca-Cu alloys, or Ca metal was added to CaCl_2 salt and CaCl_2 - CaF_2 salts. Sharma and Johnson [11] declared that reduction happened faster in the CaCl_2 than in the Ca-Zn alloy, with the maximum percentage of UO_2 reduction being around 60%. The concentration of CaO has no reported effect on reduced pellet ratio while the reduction of UO_2 was controlled by the reductant diffusion in the salt. Wenz, Wolson, and Johnson [12] showed a whole reduction in Mg-Ca-Cu alloy and CaCl_2 - CaF_2 salts. The potential reason for the complete reduction could be due to the addition of CaF_2 . The advantage of the stirring was also pointed out for the reduction speed.

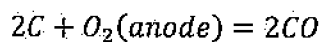
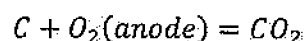
Along with those metals, carbon reduction can be classified as one of the alternatives of mediated chemical reduction, as found in the literature [15].

The second mechanism is electrochemical reduction (electroreduction) by using an external source in molten salt media. The difference of this mechanism from mediated chemical reduction is that an oxide content is added to the molten salt to transport oxygen ions through the salt from one electrode to another. The commonly investigated mediums contain lithium and/or calcium salts due to their oxides as well as the metal solubility in their chloride forms [16-19]. The reactions happening on cathode and anode are as follows:



During the electroreduction, the reduction of solid pellet starts from the outer surface and moves inward while the electrolyte diffuses into the pellet. In the process, it was seen that three-phase interfaces manifest; outer surface becomes a reduced metal, inner surface stays an unreduced pellet, and the reaction taking place between the two boundaries. This phenomenon is affected by the application temperature, salt diffusion into the pellet and pellet sizes. Some studies used powder, such as U_3O_8 , or a fluidized cathode [20-24], while others reduced temperature to avoid sintering effect or unwanted phase formation [24,25]. In addition to those parameters, the various salt mixtures are examined in the literature [24,27,28].

On the anode, the oxygen gas or some oxide gases are produced. By application of graphite anode, CO_2 and CO releases as follows,



The inert anodes, such as Au and Pt, were also used in lithium and calcium fluoride salt bath. Au showed evaluation of only O₂ [29] and Pt formed complex LiPtO₃ and dissolved in the lithium chloride salt [30]. Few studies have focused on Pt anode application in CaCl₂ melts, and confirmed the formation of Pt₃O₄ at the anode surface [26].

To select between LiCl and CaCl₂, LiCl has a lower melting temperature (605°C) whereas CaCl₂ has more affinity for oxygen that provides more advantages since the continuous production of O₂ gas in the electroreduction. Ca metal has higher solubility in CaCl₂ compared to Li solubility in LiCl right above each salts' melting temperature [31,32]. In addition to those advantages, studies have indicated that CaCl₂ medium would allow to reduce not only actinide oxides, but also rare earth elements from SNF for further utilization [26]. Therefore, the formation of Gibbs free energy of calcium salts and the reduction reaction with Ca metal is more negative, compared to Li metal and lithium salts that resulting in high reduction reaction of actinide oxides, as seen in Table 1 (HSC database software).

Table. 1. Calculated formation of standard Gibbs free energy of some actinide oxides, the reaction with Ca metal of those actinides, Li₂O, CaO, CaCl₂ and CaF₂ at 850°C (HSC database software)

Reaction	ΔG, kJ/mol at 850°C
U + O ₂ (g) → UO ₂	-891.235
Pu + O ₂ (g) → PuO ₂	-838.121
Np + O ₂ (g) → NpO ₂	-878.387
Am + O ₂ (g) → AmO ₂	-738.100
2Ca + O ₂ (g) → 2CaO	-517.4
4Li + O ₂ (g) → 2Li ₂ O	-448.121
Ca + Cl ₂ (g) = CaCl ₂	-629.545
Ca + F ₂ (g) = CaF ₂	-1038.527
2Li + Cl ₂ (g) = 2LiCl	-645.421
2Li + F ₂ (g) = 2LiF	-508.488
UO ₂ + 2Ca = 2CaO + U	-143.564
PuO ₂ + 2Ca = 2CaO + Pu	-196.679
AmO ₂ + 2Ca = 2CaO + Am	-296.699
NpO ₂ + 2Ca = 2CaO + Np	-156.412

The reduction mechanism of UO₂ has been widely studied. However, the optimized conditions for fully reduced solid fuel pellet still need to be determined in the mediated chemical reduction with the calcium agent and the electroreduction in calcium salts. In the present study, the reduction of solid uranium dioxide was carried out first via addition of calcium metal as a reductant at various molar concentrations in CaCl₂ and CaF₂; then, the electrochemical reduction behavior was investigated at three different temperatures in a salt mixture of CaCl₂, CaF₂, and CaO. The comparison was made between chemically and electrochemically induced reduction mechanisms of oxide pellet in order to evaluate optimized conditions of solid pellet reduction in calcium salts for both mechanisms.

2. Experiments

2.1. Materials

CaF_2 and CaO purity of 99.95% were purchased from Alfa Easar by Thermo Fisher Scientific, U.S. CaCl_2 was prepared by the thermal drying of $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ (Alfa Easar, >99%), as shown in Table 2. The salt mixture was prepared without extra treatment and was kept at 850°C overnight before any procedures started.

Table 2. Thermal drying method for $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$

Step	Temperature($^\circ\text{C}$)	Ramp Rate($^\circ\text{C}/\text{min}$)	Time(hr)
1	RT-120	2.5	8
2	120-200	1	18
3	200-400	2.5	4
4	400-600	2.5	2
5	600-RT	2.5	N/A

Tantalum (ALB Materials, 99.95%) and nickel crucible (Sigma Aldrich, 99%) were used in chemical and electrochemical reduction experiments, respectively. Tungsten (Midwest Tungsten Service, 99.95%), graphite (Cera Materials), and platinum wire (Surepure Chemicals, 99.95%) were applied in a 3-electrode method in electroreduction as working, counter, and reference electrodes, respectively.

2.2. Experimental Apparatus

All reduction experiments were conducted in an argon atmosphere glovebox since CaCl_2 is highly hygroscopic and has high O_2 solubility at high temperatures. The oxygen level in the glovebox was <0.1 ppm, and the moisture was <0.5 ppm.

The temperature of the muffle furnace (Thermolyne, Thermo Fisher Scientific) was calibrated $\pm 2^\circ\text{C}$ with type-K thermocouple (Omega Eng. Inc.) before each batch of experiments. For electroreduction, Gamry Interface 1010E potentiostat was used, and the cell calibration of the potentiostat was performed under an argon atmosphere glovebox.

The samples were analyzed under a scanning electron microscope (SEM), (JEOL, JEM 2100), X-Ray Diffraction (XRD, Bruker D8).

2.3. Experimental Method

Mediated Chemical Reduction

For chemical reduction procedure, CaCl_2 and CaF_2 were mixed in a eutectic composition in Ta crucible and kept at 850°C overnight. Next, the calculated amount of calcium metal and UO_2 solid pellet were added into the melted mixture. After the reduction time (12 hours), a stainless-steel tool was used to remove the solid pellet, and it was quenched before the sample molded into the resin. SEM was used to demonstrate the reduced and unreduced part of solid pellet. The three different calcium reduction experiments are shown in Table 3.

Table 3. Mediated chemical reduction experiment setups

Name	Ca mol%	UO ₂ mol%	Temp (°C)	Time (hr)
Ch-Red-1:2	2	1	850	12
Ch-Red-1:3	3	1	850	12
Ch-Red-1:5	5	1	850	12

Electrochemical Reduction

CaCl₂, CaF₂, and CaO were added into nickel crucible and heated to 850°C overnight. The system equilibrium and the calcium reduction potential were determined by using open circuit potential (OCP) and cyclic voltammogram (CV), with tungsten (working electrode), graphite (counter electrode), and Pt (reference electrode), respectively. After the tungsten electrode was switched to the UO₂ in the Ta basket, CV and chronopotentiometry (CP) were performed. The temperature effect on the mechanism was investigated under parameters in Table 4.

Table 4. Electrochemical reduction experiment setups

Name	Salt Compositions	Temp (°C)	Time (hr)	Current (mA)
El-Red-675	CaCl ₂ -17%CaF ₂ -4%CaO	675	12	-300
El-Red-750	CaCl ₂ -17%CaF ₂ -4%CaO	750	12	-300
El-Red-850	CaCl ₂ -17%CaF ₂ -4%CaO	850	12	-400
El-Red-850R	CaCl ₂ -17%CaF ₂ -4%CaO	850	12	-500

The illustration of electroreduction experiment after insertion UO₂ in Ta basket as a cathode can be found in Figure 1.

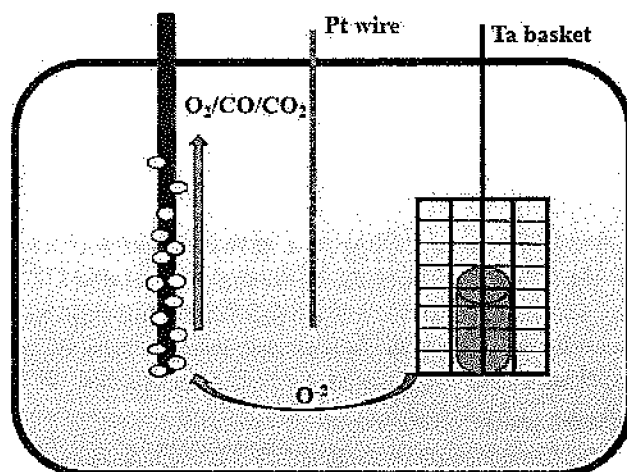
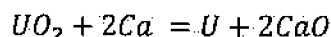


Figure 1. Schematic diagram of electroreduction experiments, three electrode system consisting of a working electrode (UO₂ in Ta basket), counter electrode (graphite, evolves O₂/CO₂/CO gas), and reference electrode (Pt wire)

3. Results

3.1. Mediated Chemical Reduction with Ca metal

The chemical reductions were carried out at 850°C in the argon-filled glovebox. After 12 hours of the reaction in CaCl₂-CaF₂ eutectic mixture, the pellet samples were quenched and molded into the resin to examine the reduction of the pellet under the SEM. The reduction reaction is as follows



Based on the above chemical reaction, the UO₂ requires 2 moles of Ca metal addition into the molten media. Thus, in this study, 2-, 3-, and 5-mole Ca were utilized in the mediated chemical reductions. The calculated final mole concentration of each component for all three experiments is shown in Table 5.

Table 5. Calculated final concentrations of chemical reduction experiments

Components	CaCl ₂ mol%	CaF ₂ mol%	Ca mol%	UO ₂ mol%
Ch-Red-1:2	72.49	16.10	7.61	3.80
Ch-Red-1:3	64.12	14.24	16.23	5.41
Ch-Red-1:5	55.73	12.37	26.58	5.32

Figure 2A, 3A, and 4A show the cross-section photographs after 12 hours of reductions. All the final samples revealed the shiny metallic outer-surfaces. A visual observation indicated that the thickness of that metallic surface was increasing as more Ca metal was added to the system. The pellet after each run stayed intact with, no collapse or broken pieces were observed in the molten salt.

The samples were polished and rinsed under DI water to remove soluble salts. SEM analysis was performed to demonstrate that the visible metallic surface is uranium metal without an intermediate compound formation. Figure 2B, 2C, 3B, 3C, 4B, and 4C show SEM images under different magnitudes.

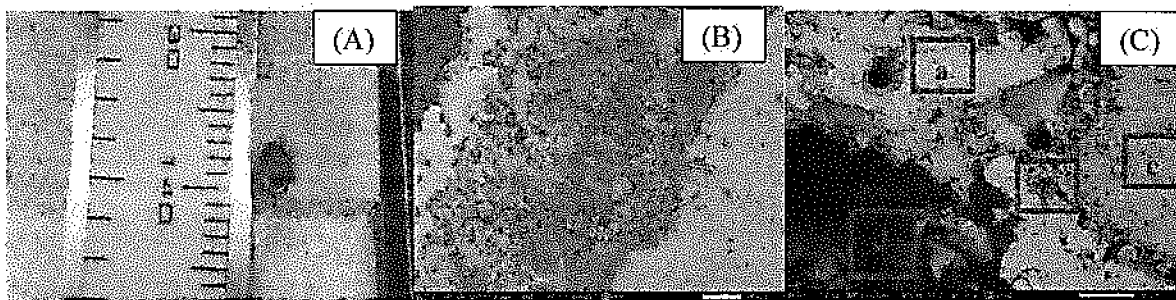


Figure 2. Post reduction product of Ch-Red-1:2 after 12 hours (A) photograph of physical observation, cross-section of UO_2 pellet and reduction product under SEM are shown in (B) and (C). **Region a)** reduced uranium metal, **Region b)** interface reaction taking place, **Region c)** unreduced uranium dioxide, **Region d)** salt diffused in pellet

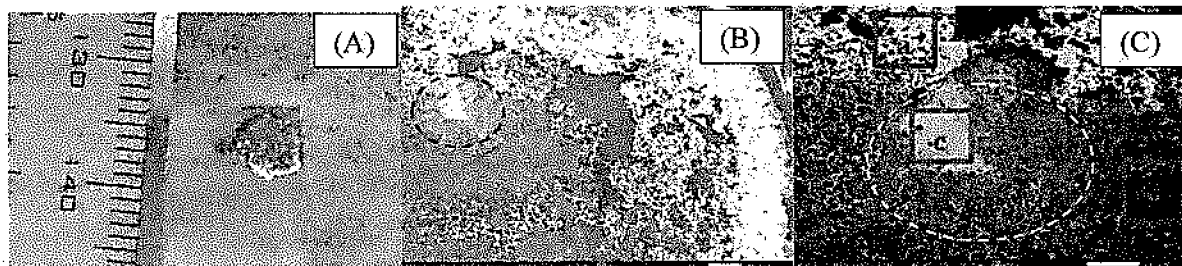


Figure 3. Post reduction product of Ch-Red-1:3 after 12 hours (A) photograph of physical observation, cross-section of UO_2 pellet and reduction product under SEM are shown in (B) and (C). **Region a)** reduced uranium metal, **Region b)** interface reaction taking place, **Region c)** unreduced uranium dioxide, **Region d)** salt diffused in pellet

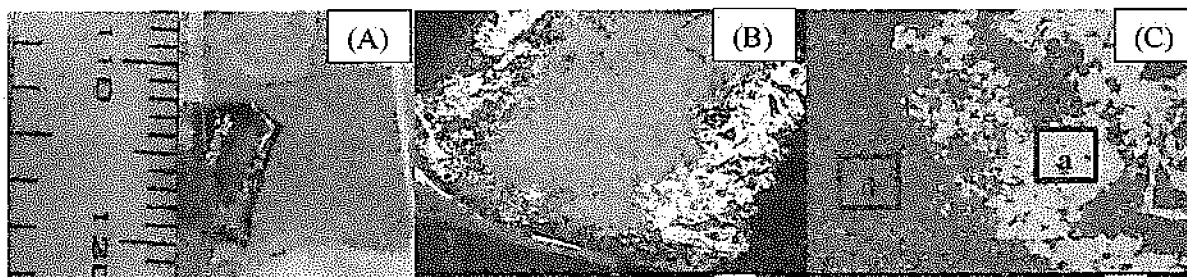


Figure 4. Post reduction product of Ch-Red-1:5 after 12 hours (A) photograph of physical observation, cross-section of reduction product under SEM are shown in (B) and (C). **Region a)** reduced uranium metal, **Region b)** interface reaction taking place, **Region c)** unreduced uranium dioxide, **Region d)** salt diffused in pellet

Figure 2B shows 100 μm thick metal thickness with a gap between unreduced pellet and reduced metal. A visible gap appeared between the unreduced pellet and the reduced metal wherein residual salt filled the gap. As such, the proceeding steps in the reduction process included the salt that was formed in Ch-Red-1:2. Figure 3B revealed an incremental increase in metal surface thickness on Ch-Red-1:3 compared to the Ch-Red-1:2 sample. Even though no stirring was performed, the diffusion rate of reductant was escalated by increased Ca amount in the salt mixture and, therefore, it resulted in larger reduced metal thickness on the solid pellet. Unreduced UO_2 as identified by

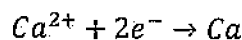
the circle in Figure 2B and 2C, had an approximate diameter of 400µm, a vast reduction in size compared to the Ch-Red-1:3 diameter of approximately 4mm.

Experiment Ch-Red-1:5 exhibited that the solid pellet completely reduced into U metal in 12 hours and the molten salt diffused into the center of the pellet and covered porous, cracked structure of U metal.

Figure 2C and 3C demonstrate Ch-Red-1:2 and Ch-Red-1:3 experiments, respectively. The figure shows three different zones after hours at 850°C in CaCl₂ and CaF₂. Instead of ceasing the reduction, CaO formation and Ca metal insertion, carried the reaction on until the pellet completely converted into U metal. Ch-Red-1:5 showed only U metal and CaCl₂-CaF₂-CaO salt mixture diffused in the pellet. Even though the study by Sharma and Johnson [11] showed the limited reduced metal in CaCl₂, the results of this study were consistent with the study by Wenz et al. [12] that supported CaF₂ as a contributor to the chemical reduction mechanism without any mechanical mixing and alloy employment.

3.2. Electroreduction in CaCl₂-CaF₂-CaO

Current Determination: The electroreduction of UO₂ was conducted at 675°C, 750°C, 850°C in an argon-filled glovebox. After the overnight thermal purification of the ternary salt mixture at 850°C, the desired temperature was reached. First, without the insertion of UO₂ in the Ta basket as a cathode, the cathode reactions were investigated by using tungsten, graphite and platinum as a working electrode, counter electrode, and reference electrode, respectively. Both Ta and W are inert refractory materials, meaning that they are almost inert to Ca metal. The reduction reaction of Ca on the cathode is as follows,



Before the cathode reactions, open circuit potentials were observed and when the deviation reached 5mV in 60 seconds, the cyclic voltammograms (CVs) were performed. Figure 5 shows the CV curves of El-Red-750 with W working electrode and UO₂ in the Ta working electrode (dashed line and solid line, respectively). Inclined temperature led the rise potential during the deposition of calcium on the W cathode. This phenomenon was explained due to the high solubility of deposited Ca solubility in CaCl₂ [26]. Since the melting temperature of Ca metal is 842°C, the faster dissolution of Ca metal was anticipated in the El-Red-850 run. Figure 5 shows that the uranium reduction happening before calcium reduction on the cathode vs platinum quasi reference which is potential of Pt/Pt_xO_y/O⁻²[29]. Since the oxidation of calcium metal did not show up on CV curve of El-Red-750 – U reduction, reduced calcium on UO₂ surface is causing the uranium reduction instantaneously as mentioned in mediated chemical reduction mechanism in section 3.1. The rough potentials of the calcium deposition were measured as -1.8V, -1.6V, and -1.4V, respectively by inclined temperatures.

After UO₂ (working electrode) in the Ta basket was inserted into the salt bath, the reaction of UO₂ reduction is follows as:

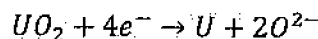


Figure 5 illustrates that the UO_2 pellet reduced into U metal at -1.3V vs Pt-quasi reference at 750°C (solid line), yet it did not allow the oxidize U in negative potential since the formed oxygen ions transferred to graphite anode and released as O_2 and/or CO/CO_2 [28]. Theoretically, the current should carry only U reduction. Nevertheless, the current causes the underpotential Ca deposition as stated in previous studies [26,27,28]. This could be explained by the gradually reduced U metal that requires time to allow the salt to diffuse into the pellet and through unreduced UO_2 , during which time the Ca^{+2} converts into Ca on U metal surface.

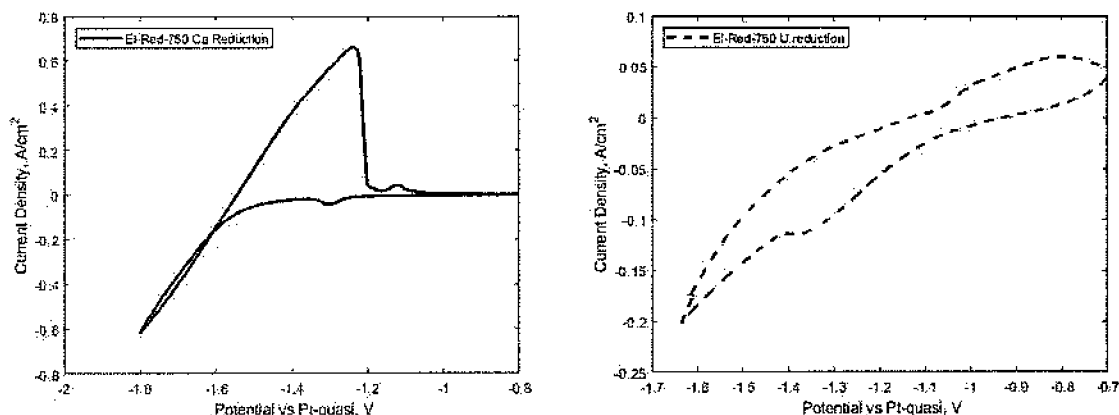


Figure 5. CV curve of El-Red-750 with W working electrode, C counter electrode, Pt-wire reference electrode (Ca Reduction, left, solid line). CV curve of El-Red-750 with UO_2 and Ta working electrode, C counter electrode, Pt-wire reference electrode (U Reduction, right, dashed line)

The recorded potential above for each run was reached by performing chronopotentiometry (CPs) to reach the potential of uranium reduction. The current determination was performed by starting at -10mA and decreasing gradually until uranium reduction potential was reached as shown in Figure 6. Finally, the currents chosen for this study to reduce UO_2 were -300mA, -300mA and -400mA were applied for El-Red-675, El-Red-750, and El-Red-850, respectively.

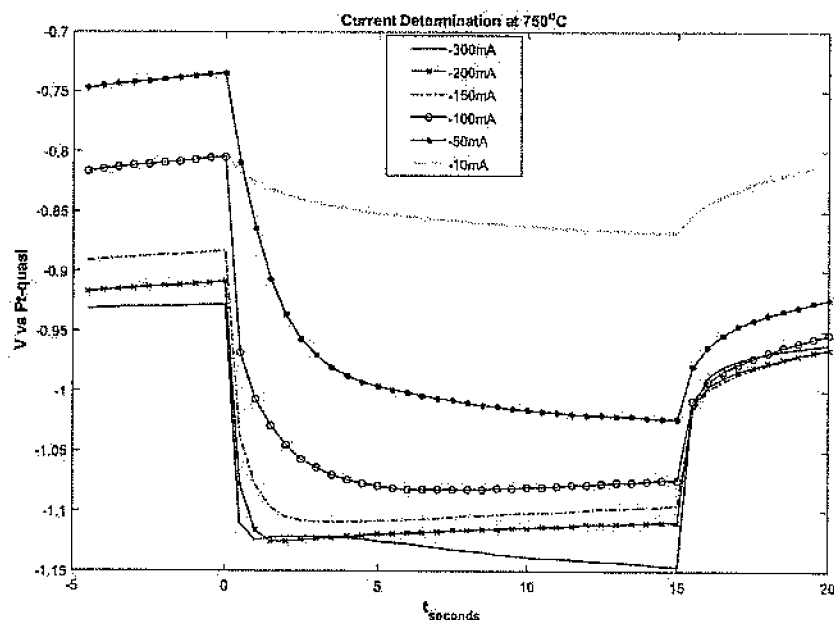


Figure 6. Current determination for EI-Red-750 application. The constant current was applied by starting at -10mA for 15s and decreased gradually until the potential reached the uranium reduction.

UO₂ Reduction: The determined currents were applied for 3-different temperature applications can be found in Figure 7. The figure demonstrates the potential increase phenomenon for each-temperature application of this study during the constant current application that has been indicated in previous studies [28]. This increase could be explained by the cathode change. The reduced metal surface causes the conductivity to be higher. In other words, that the reduced surface now yields less contact area between the unreduced pellet (cathode) and the electrolyte. Therefore, to keep the reduction going, the salt must diffuse into pores and reach the unreduced UO₂.

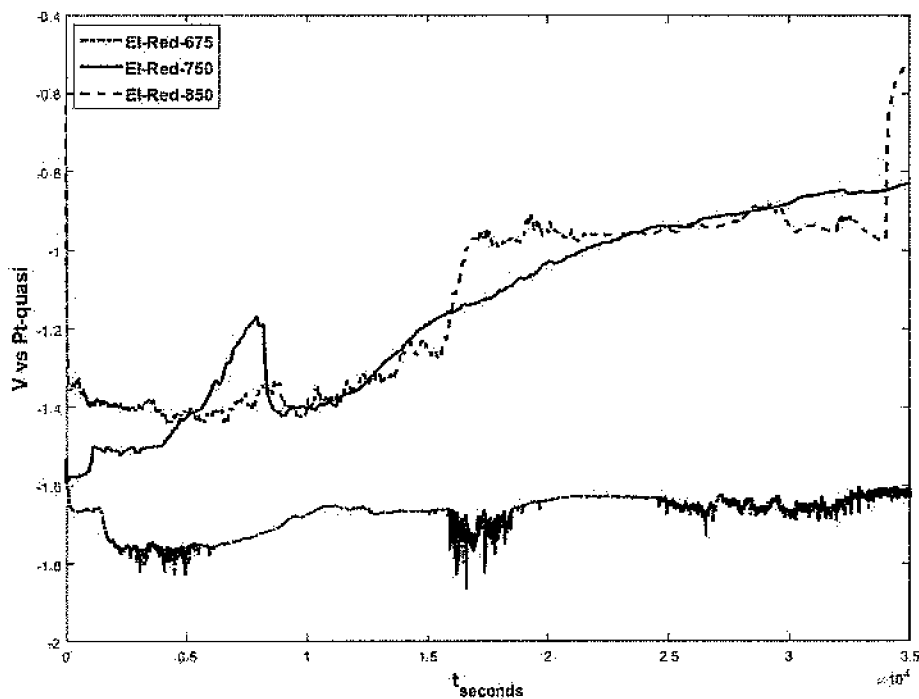


Figure 7. Chronopotentiometry application El-Red-675, El-Red-750, and El-Red 850

The samples were taken out with the Ta basket and molded into the resin before SEM imaging performed. The cross-sections of samples were investigated after polishing and rinsing with DI water.

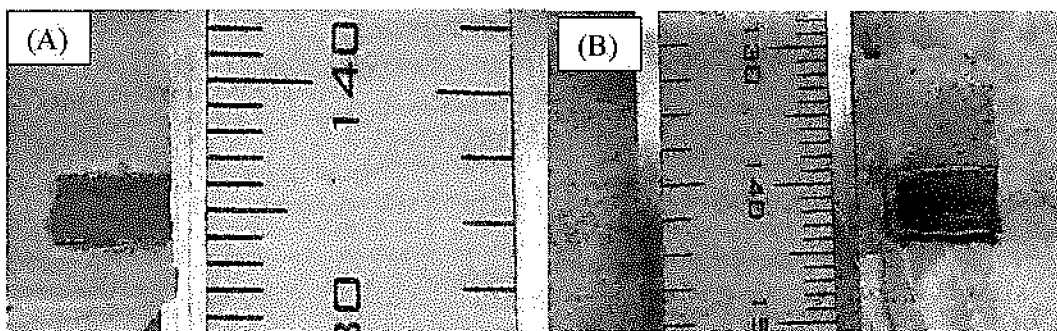


Figure 8. After CP, the physical difference of pellets, (A) El-Red-750, (B) El-Red-850

Figure 8 shows that the thickest metal surface occurred at 850°C. El-Red-675 and El-Red-750 resulted in the thinnest layer of all the reduction mechanisms. The varying layers may have resulted from the formation of beta phase uranium metal between 668°C and 770°C. The tetragonal structure of the beta uranium has 30 atoms packed in the unit cell [33], which could result in denser reduced uranium without allowing salt diffusion into the pellet. Figure 9 supports the structural differences of reduced U metal under the same magnitude and shows the porous structure at 850°C allowing electrolyte diffusion through unreduced pellet.

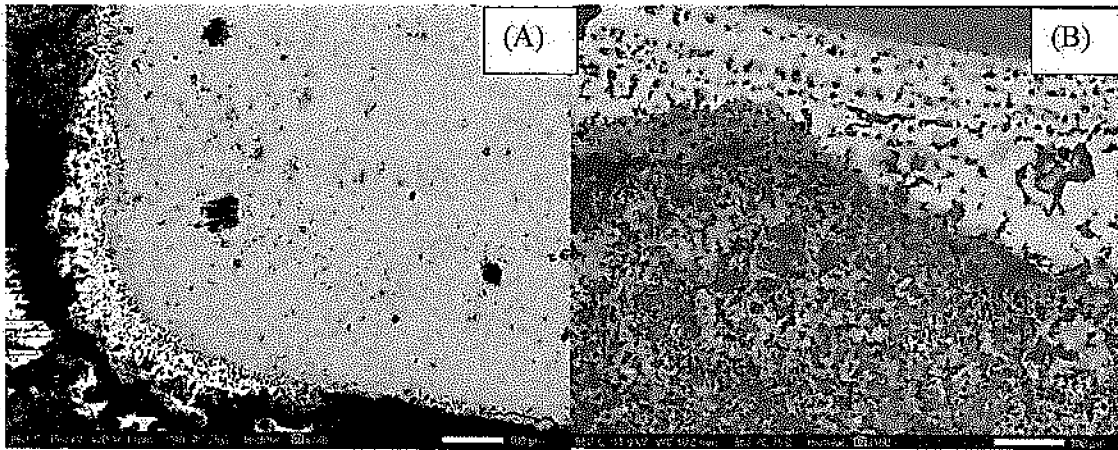


Figure 9. SEM images of the final products of EI-Red-750 (A) and EI-Red-850 (B) under same magnitude.

The formed porous structure at 850°C provided electrolyte diffusion and carried the current to reduce inner layer of UO_2 . These results showed that the continuous reduction reaction might be performed under different conditions. Thus, another run was implemented at the same temperature, same electrode choices but with a higher current of -500mA, named as EI-Red-850R. Figure 10 illustrates the final pellet sample.

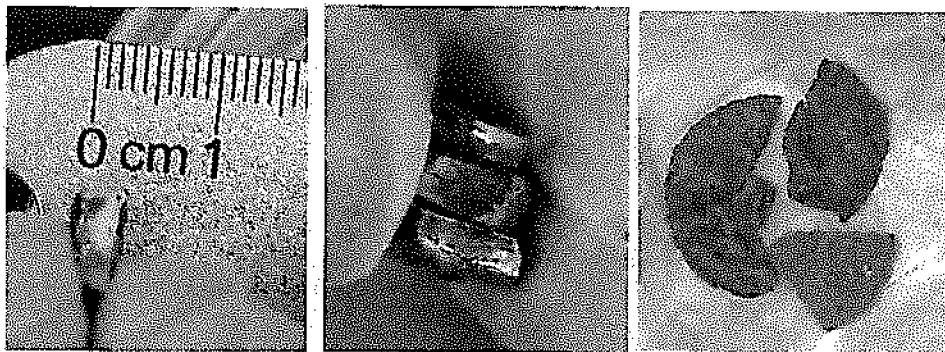


Figure 10. Physical appearance of EI-Red-850R application

The total reduction was distinguished on visual observation, shown Figure 10. The lumps on the surface could have resulted from the high current and SEM analysis confirmed the reduced uranium pellet.

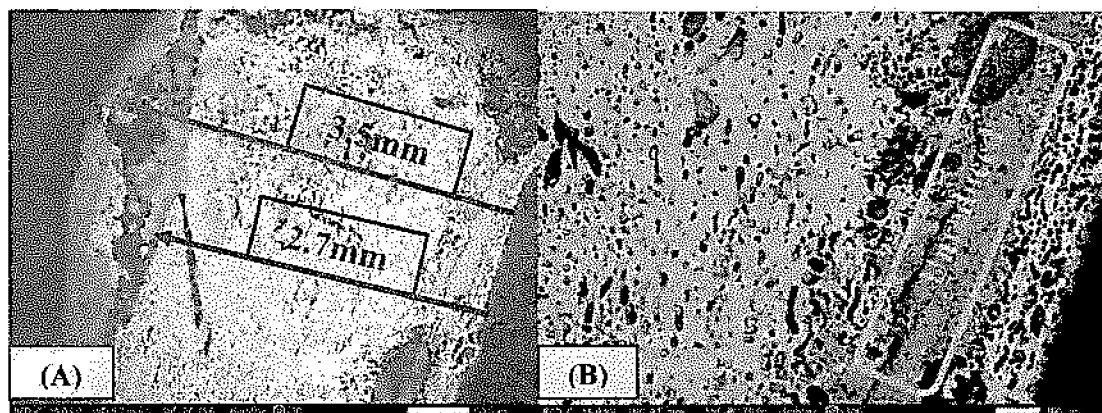


Figure 11. SEM images of the final product of EI-Red-850R under different magnitudes (A) and (B)

Figure 11 shows the total height of the pellet, 3.5mm, and the unexpanded height, 2.7mm. Most of the UO_2 converted into uranium except the indicated area in 11B. It was concluded that the extremely porous formation of uranium metal contributed to a complete reduction.

To confirm, the molten salt composition variation, pre- and post-salt composition were determined using XRD. As a result, it was seen that the pre- and post-salt compositions had no significant differences, as shown in Figure 12, and the identified main peaks remained the same, which would show the presence of CaO in the salt bath.

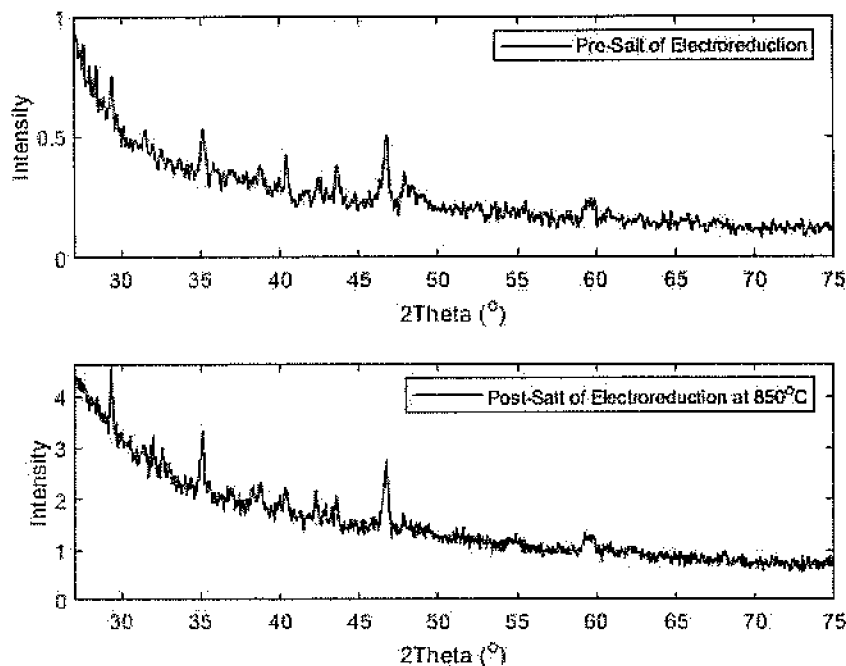


Figure 12. XRDs of pre- and post-salt samples

In electroreduction of solid UO_2 pellet, temperature of 675°C , 750°C , 850°C were applied in calcium salts. It was seen that the temperature had two tremendous effects on formed uranium metal on the surface which either blocked the further reaction or allowed the further reaction via its porous structure. It was demonstrated that the complete electroreduction of UO_2 was applicable at 850°C for 12 hours. Also, the electroreduction results were inconsistent with Vishu and Sakamura's studies since the high temperature implication allowed the total reduction of the solid pellet [26,28]. Instead of having the sintering effect, the temperatures in range of beta phase of uranium metal resulted in a thin reduced surface. However, a higher temperature in the gamma phase (850°C) provided a potential reason for full reduction of the pellet. Another reason might also be due to the added metal fluoride in the molten salt.

4. Discussion

The present study intended to explore both reduction mechanisms in calcium salt. It was marked that these two mechanisms would allow sufficient reduction of UO_2 under optimized conditions to recover usable actinides from SNF and they could be further utilized in electrorefining to obtain desired nuclear fuel.

Reprocessing of SNF was, and continuous to be, a pivotal point for the new generation nuclear reactors. In pyroprocessing, one of the main steps that has to be addressed is the oxide reduction of SNF in molten salt media to perform electrorefining to further obtain a reprocessed nuclear fuel for repeated utilization. In this study, the calcium salt implementations for a mediated chemical reduction and an electrochemical reduction were performed in several design parameters to obtain optimized conditions for total reduced solid fuel pellet.

For the mediated chemical reduction, a eutectic mixture of CaCl_2 - CaF_2 was used to determine the calcium metal concentration effect at 850°C for 12 hours. At the beginning of the experiments, 2, 3, and 5 mole calcium metal, proportional to 1 mol of UO_2 , were added into the liquid salt. Reduced uranium metal surface was confirmed in each run under SEM without forming intermediate compound, such as UO , or complex formation between Ca and UO_2 . Ch-Red-1:3 nearly resulted in total reduction; the only unreduced side was about $400\mu\text{m}$ diameter. It might be possible to acquire fully uranium metal in a longer time implication that would allow the calcium metal diffusion. The complete pellet reduction was observed at 5 mole metal application in 12 hours, with the calculated molar ratio of each component being 55.73% CaCl_2 - 12.37% CaF_2 - 26.58%Ca - 5.32% UO_2 .

Electroreduction experiments were run in CaCl_2 -17mol% CaF_2 -4mol% CaO salt bath at three different temperatures and the results suggested the importance of application temperature due to the beta phase formation of uranium metal between 668°C and 770°C . All experiments revealed reduced uranium, but El-Red-675 and El-Red-750 experiments limited the reduction thickness in maximum $100\mu\text{m}$. At 850°C , uranium metal formed in gamma phase and enabled the sufficient surface area and highly porous structure for the salt diffusion.

UO_2 reduction potentials were around -1.3V vs Pt-quasi reference. During the uranium reduction, the excessive current caused the calcium reduction simultaneously. The underpotential deposition of calcium might be due to the changed surface structure of the cathode; therefore, the electrolyte required time to diffuse into the solid pellet for further reaction. At that moment, the highly conductive surface of uranium metal forced the calcium reduction before it reached its potential.

XRD results showed the presence of CaO on the post-salt samples, supporting the argument that calcium transports through the anode and, hence, oxidizes, and dissolves in molten salt.

The main focus of the research was performing total reduction of solid pellet in calcium salts; the observations have been made for electrodes as well. Severe graphite anode consumption was identified for the electrolytic reduction of UO_2 , especially at 850°C . It was concluded that CO/CO_2 releases happened during the reduction. However, neither carbide formation nor carbon dissolution in the salt bath was spotted. Additionally, no presence of Pt or Ca and Pt complex formation were observed in the salt.

Comparing the chemical and electrochemical reduction results, both mechanisms could satisfy the total solid pellet reduction since both methods have shown whole pellet reductions at 850°C . Porous structures and salt insertion into the pellet were confirmed.

In contrast, the chemical reduction has no need for anode material or an external power supply to carry the reaction. It also has no impact on $\text{O}_2/\text{CO}/\text{CO}_2$ release, which would be highly beneficial to reduce the greenhouse gas impact for larger applications. On the other hand, the electroreduction mechanism could provide electrolyte use for the same application repeatedly. Even though the recycling of the calcium metal in the chemical reduction is possible, the salt composition may change.

5. Conclusions

To optimize the reduction of solid UO_2 , fundamental studies in mediated chemical reduction and electroreduction in calcium salts were performed under various conditions.

The results of this study suggested that both mechanisms in calcium salts would satisfy the reduction of solid UO_2 pellets when the optimized conditions are applied. For future studies, the consumption of anode material should be plotted due to the high current application for electrochemical reduction mechanism in CaCl_2 -17mol% CaF_2 -4mol% CaO . For the mediated chemical reduction, a metal fluoride addition to the molten salt should be investigated systematically, and online monitoring should be addressed for large-scale applications.

It can be suggested that the reduction of UO_2 in calcium salts indicates the actinide oxides reduction from SNE. Therefore, calcium salts would meet the requirements of oxide reduction in pyroprocessing since the salts would provide the sufficient implementation to obtain reprocessed metallic, salt, and other form of nuclear fuel preparation.

Acknowledgments

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Page 378

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19(1), 20(1)(c), 20(1)(b)

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20(1)(c), 20(1)(b)

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19(1), 20(1)(c), 20(1)(b)

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19(1), 20(1)(c), 20(1)(b)

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20(1)(c), 20(1)(b)

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de la Loi sur l'accès à l'information**

Page 392

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19(1), 20(1)(c), 20(1)(b)

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20(1)(c), 20(1)(b)

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Page 400

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19(1), 20(1)(c), 20(1)(b)

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de la Loi sur l'accès à l'information**

Page 401

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20(1)(b)

**of the Access to Information Act
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20(1)(c), 20(1)(b)

**of the Access to Information Act
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Page 427

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20(1)(b)

**of the Access to Information Act
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s.21(1)(a)
s.21(1)(b)

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RE: Reprocessing documents

April 26, 2024 2:08 PM

Subject	RE: Reprocessing documents
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	November 16, 2023 8:00 AM

PROTECTED B - PROTÉGÉ B

Thanks Dave for your feedback. Happy to further discuss.

This isn't a priority so I suspect I will only have time to review/discuss with Kate/Tess when she's back.

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: 15 novembre 2023 10:51
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: RE: Reprocessing documents

PROTECTED B - PROTÉGÉ B

Hi Pui Wai,

Just a quick note on the reprocessing brief

Just some thoughts I thought I'd share if you're planning on reviewing and commenting to Kate.

Thanks,

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Thursday, November 9, 2023 7:15 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>
Subject: Reprocessing documents

PROTECTED B - PROTÉGÉ B

Hi Pui Wai,

A0068136_1-000428

Hoping to have Fred send out these documents next week so that we can sneak in the kick off meeting for the work before Xmas. Included in the link are:

1. NRCanBrief_UsedFuelReprocessing – this is a summary of the motivation and plan for the work, the main attachment. This is a further evolution of the brief that was originally developed for Debbie.
2. Draft Email (for Fred – will run the French by francophones ones it's been reviewed)
3. Draft Agenda for the kick off meeting (to be an email attachment)
4. Email list of contacts in OGDs (FYI for you)
5. Annex A – Enrichment Policy (will be a meeting invite attachment)
6. Annex B – Work plan with more details (will be a meeting invite attachment)



[used fuel documents - Nov2023](#)

Happy to discuss at your convenience, and a huge thank you to Tess for helping to pull all these together.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)


Policy Advisor | Uranium and Radioactive Waste Division
Natural Resources Canada | Government of Canada

Conseiller en politique | Division de l'uranium et des déchets radioactifs
Ressources naturelles Canada | Gouvernement du Canada

kathleen.prosser@nrcan-rncan.gc.ca

RE: Reprocessing Working Group Email

April 26, 2024 2:20 PM

Subject	RE: Reprocessing Working Group Email
From	Wittmann, Tess (she, her elle, elle)
To	Yuen, Pui Wai
Cc	Prosser, Kathleen; Fairchild, Jamie; Temnikov, Dimitri; Wilkinson, David
Sent	March 28, 2024 1:51 PM
Attachments	 Reprocessi ng Worki...

PROTECTED B - PROTÉGÉ B

Hey!

All good. I've reflected these edits in tracked changes here:



Kick-Off Meeting Summary.docx

I've also attached the updated email that mentions the new slides and revised due date (April 12). I will just update the Meeting Summary PDF in the email after the edits are approved.

Let me know when it is ready to be shipped out!

Best,
Tess

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Sent: Thursday, March 28, 2024 1:04 PM
To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>; Temnikov, Dimitri <dimitri.temnikov@NRCan-RNCan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Subject: RE: Reprocessing Working Group Email

PROTECTED B - PROTÉGÉ B

Hi Dave, Tess, Dimitri,

Apologies for the delay. I have two comments in the minutes for your consideration. Happy to discuss at the Radwaste meeting later this afternoon.

Also, for the draft email, could you please indicate for the group which slides are new for ease of reference? For e.g.,:

The following two documents are attached to this email:

1. *Reprocessing Working Group Kick-Off – Elaborated Criteria (new slides 12-20)?*
2. *Kick-Off Meeting Summary*

Thanks!
PW

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: Friday, March 22, 2024 12:28 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: FW: Reprocessing Working Group Email

PROTECTED B - PROTÉGÉ B

Draft email attached.

David Wilkinson

Manager – Radioactive Waste Policy / Gestionnaire – Politique sur les déchets radioactifs
Uranium and Radioactive Waste Division / Division de l'uranium et des déchets
radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Temnikov, Dimitri <dimitri.temnikov@NRCan-RNCan.gc.ca>
Sent: Friday, March 22, 2024 10:11 AM
To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Cc: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: FW: Reprocessing Working Group Email

PROTECTED B - PROTÉGÉ B

Hi Dave!

As discussed!
Ok for Tess to send out the attached?

(I made a few tweaks to her email message 😊)

The following two documents are attached to this email:

1. *Reprocessing Working Group Kick-Off – Please see the new slides 12-20 for the Elaborated Criteria and roles.*
2. *Feb 23 Kick-Off Meeting Summary*

We invite you to share your comments on these documents by April 3rd, especially on the elaborated criteria and roles, to establish consensus going forward.

NRCan will soon be sending out invitations for the kickoff meetings for each subgroups.

Thanks!
Dimitri

From: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>
Sent: Thursday, March 21, 2024 12:17 PM
To: Temnikov, Dimitri <dimitri.temnikov@NRCan-RNCan.gc.ca>
Subject: Reprocessing Working Group Email

PROTECTED B - PROTÉGÉ B

Hey Dimitri!

A0068142_2-000431

I've attached the reprocessing working group email that I mentioned earlier today. Jamie has looked at both documents within the email, but not the email itself. We are looking for comments on these documents, but I wasn't totally sure when I should put a due date for, especially if people will be extra busy during fiscal year end. Let me know what you think.

The email list this would go out to is here:





Email list.xlsx. I am just updating it now as we had some additional faces from PrairiesCAN that were not on the initial email list.

Best,
Tess

Reprocessing Working Group Kick-Off Meeting Summary and Next Steps

April 26, 2024 2:25 PM

Subject	Reprocessing Working Group Kick-Off Meeting Summary and Next Steps
From	Wittmann, Tess (she, her elle, elle)
To	tanya.hinton@international.gc.ca; naina.thoppil@international.gc.ca; duck.kim@ec.gc.ca; jennifer.mckay@ec.gc.ca; catalin.obreja@ec.gc.ca; Elizabeth.White-Senack@ised-isde.gc.ca; laura.nourallah@ised-isde.gc.ca; david.reinholz@cnscccsn.gc.ca; michael.kent@cnscccsn.gc.ca; tessa.henley@cnscccsn.gc.ca; julian.amalraj@cnscccsn.gc.ca; marc.desrosiers@hc-sc.gc.ca; Daniel.Daigle@tc.gc.ca; Rector, Brianna (she, her elle, la); Poupore, Jessica; matthew.dalzell2@prairiescan.gc.ca; anne.ballantyne@prairiescan.gc.ca; Rosaasen, Canute (PrairiesCan); Cox, Jenny; Edwards, Geoff
Cc	Temnikov, Dimitri; Fairchild, Jamie; Wilkinson, David; Prosser, Kathleen; Hilborn, Jade (she, her elle, elle); Yuen, Pui Wai; Hault, Colin
Sent	March 28, 2024 4:43 PM
Attachments	 Reprocessi ng Worki...  Kick-Off Meeting S...

Dear colleagues,

Thank you again for your participation in the working group on used fuel reprocessing.

The following two documents are attached to this email:

1. Reprocessing Working Group Kick-Off – Please see the new slides 12-20 for the Elaborated Criteria and roles.
2. Feb.23 Kick-Off Meeting Summary

We invite you to share your comments on these documents by April 12, 2024, especially on the elaborated criteria and roles, to establish consensus going forward.

NRCAN will soon be sending out invitations for the kickoff meetings for each subgroup be based on identified participants in the power point document.

Thank you for your support and expertise on the matter.

Kind regards,

Tess



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Used Fuel Reprocessing Working Group

Kick-Off Meeting – Feb. 23, 2024

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Agenda

1. Welcome
2. Introductions
 - Roundtable
3. Recap of planned work and proposed outcomes
4. Work Plan Discussion
 - Explore comments and seek consensus on the proposed work plan and criteria, establishing a clear scope of work
 - Finalize criteria for analysis
 - Identify lead and participating departments for each criteria
5. Action Items and Next Meeting Date

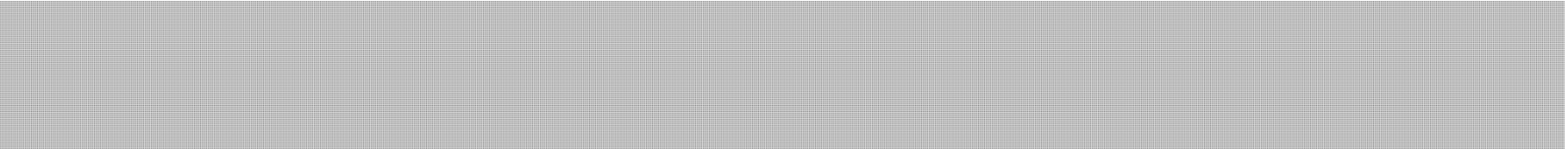


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Objective

- Develop a documented analysis for used fuel reprocessing in Canada
- 
- Key Outcomes of the Work:
 - Each government department should be comfortable with the fact pattern and collective analysis that is developed.
 - Aim to facilitate future discussions by having a common foundation.
 - Well position GoC to make important decisions for future policy work.

Today's Objective: Identify participation and working groups for analysis



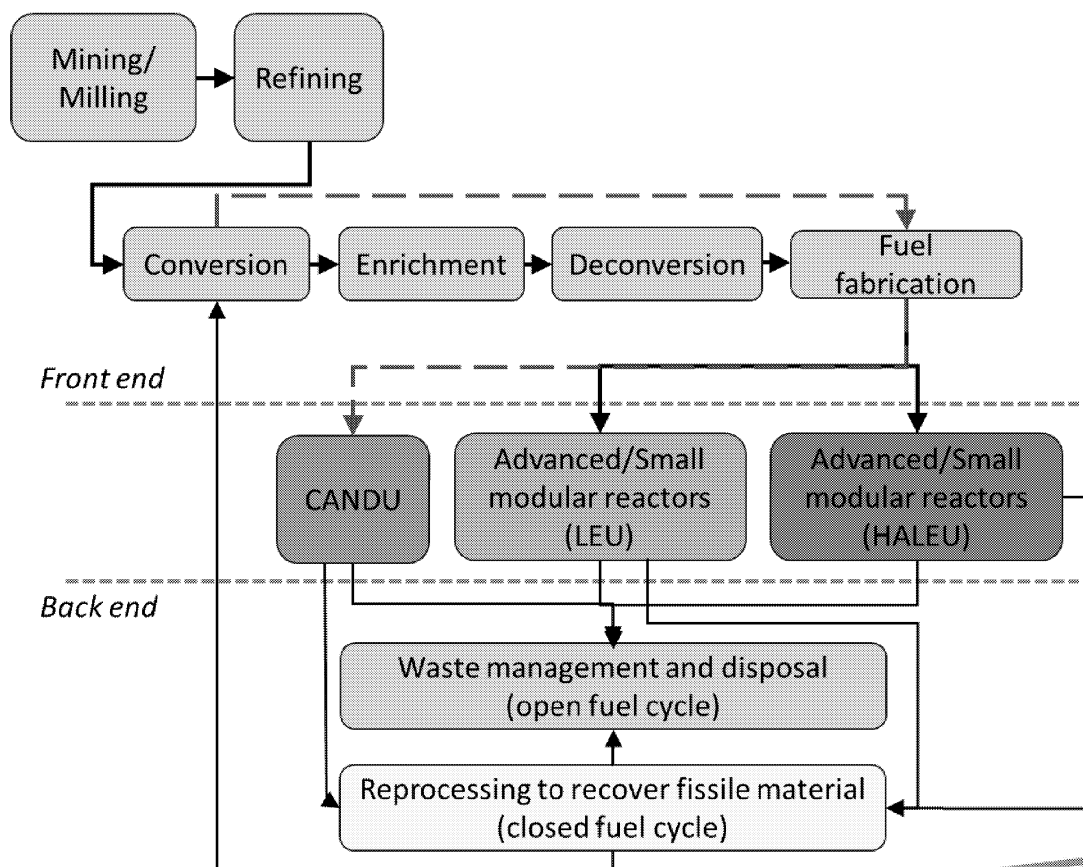
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What is reprocessing?

- IAEA Nuclear Safety and Security Glossary – 2022 Interim Edition
 - Reprocessing: *A process or operation, the purpose of which is to extract radioactive isotopes from spent fuel for further use.*
- What will be needed and what will enable us to meet our net-zero objectives – considerations related to advanced fuel cycles and the role of the federal government in supporting these advanced fuel cycles.



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Timelines

Current planned work		
Scoping + Plan (complete)	Initial work (February – April 2024)	Analysis (March – Fall 2024)
<ul style="list-style-type: none"> Scoping of analysis Identification of key internal partners Establish governance plan 	<ul style="list-style-type: none"> Identify criteria set out in scoping exercise Develop paper(s) to guide internal and intra governmental consultations Establish partner OGD and organizations 	<ul style="list-style-type: none"> Undertake detailed analysis of criteria Circulate documents to key government departments and organizations

Outcomes and Objectives

Decision Point

Work products at this stage:

Obtain consensus among OGDs

Series of internal discussion papers with analysis of each of the criteria for consideration and an executive summary

Decision to proceed to engagement should be based on:

need for public policy

ongoing activities in the nuclear sector

consultation of OGD collaborators and contributors

Possible post-decision point steps (not currently planned)

Engagement

Dispositioning

Final Analysis

Decision

Cabinet



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A0068142 11-000440

Table 3. Fuel Composition by Reactor Type, indicating Previously or Currently Used Fuels (o), and Proposed or Theoretical Fuels (x).

Reactor Type	Natural U	Enriched U*	Reprocessed U**	MOX	Other Fuels†
PWR		o	o	o	
PHWR	o	o	o	x	x
BWR		o	x	x	
HTGR		o		x	o
MSR		o	x	x	o
SFR		o		o	x
GCR/AGR	o	o			
Heat Pipe Microreactor		x			x

* Enriched uranium, including LEU (Low-Enriched Uranium, up to 5%), LEU+ (Low-Enriched Uranium Plus, between 5 ~ 10%), and HALEU (High-Assay Low-Enriched Uranium, between 5% and 20%).

** Reprocessed uranium fuels may include down-blended natural uranium equivalents to re-enriched fuels; reprocessed uranium composition depends on initial enrichment, but frequently has less than 1% U-235. Reprocessed uranium may be contaminated with traces of fission products and to some extent.

† Other fuels describe fuels not included in Natural U, Enriched U, Reprocessed U, or MOX categories, and fuels using non-standard materials, such as thorium-based fuels, composite fuels, metal alloy fuels, etc.

Pressurized Water Reactor (PWR) technologies typically make use of uranium dioxide (UO₂) powder that is sintered into hard ceramic pellets typically enriched between 3 and 5% U-235. Some reactors can make use of reprocessed uranium or MOX fuels.

Pressurized Heavy Water Reactors (PHWR) of the CANDU type (large-scale nuclear currently deployed in Canada) typically use natural uranium (0.7% U-235) based sintered pellets. Studies have demonstrated that CANDU type reactors could use reprocessed U from LWRs or slightly enriched U (e.g. low-volatile reactivity fuel, LVRF). MOX-type fuel has been tested in research reactors. The design for the AWRH-300 in India is proposed to use thorium-based fuels, such as Th/U and Th/Pu MOX-type.

Boiling Water Reactor (BWR) technologies use fuels similar to PWRs, with fuels typically enriched to near 2.4% U-235.

High Temperature Gas Reactors (HTGR) are currently expected to use uranium-based oxides or carbides with HALEU at <20% U-235, but could make use of other alternative and recycled fuels, including U-Pu, Pu, MOX, and U-Th.

Molten Salt Reactors (MSR) can use a wide range of fuels, although the reference fuel salt is typically a molten mixture of lithium and beryllium fluoride (FLiBe) with dissolved low-enriched uranium (U-235) fluoride (UF₄). MSRs may make use of spent fuel from other reactors, mixed uranium/plutonium oxide fuels, or other fuels including Th and U-233.

Sodium Fast Reactors (SFR) are currently expected to use uranium-based fuels, either in a mixed oxide form (MOX), U fuels with U-235 between 5 ~ 20%, or mixed metal alloys. Operational SFR in Russia have used enriched U or reprocessed U in their fuels.

Gas Cooled Reactors (GCR) can use UO₂ fuel with U-235 typically between 2.5% ~ 3.5%. The Magnox reactors (UK) used natural uranium.

Heat Pipe Microreactors (HPR) are microreactor designs which could use HALEU up to 10.75% U-235 in some designs, or Ceramic metal composite (CERMET) fuel with dispersed UOX, UN, or UC kernels dispersed, e.g., W-UC CERMET fuel.

Table 4. Projected Canadian Demand for Enriched Fuel

TIMELINE	ENRICHED FUEL* (in tonnes)		
	HALEU	LEU+	LEU
Until 2030			
Until 2035			

*HALEU: High Assay Low Enriched Uranium, enriched between 5% and 20%.

LEU+: Low Enriched Uranium Plus, enriched between 5 ~ 10 %.

LEU: Low Enriched Uranium, enriched up to 5%.

GLOBAL URANIUM SUPPLY AND DEMAND

Currently, some 60,000 tonnes of uranium are required annually to fuel the world's 410 operating nuclear power reactors. However, with countries increasingly expected to turn to nuclear power to address climate change, energy security and sustainable development, demand could be as high as 100,000 tonnes of uranium per year by 2040. That would require a near doubling of uranium mining and processing from current levels.⁸

Mines in 2021 supplied some 56,951 tonnes of uranium oxide concentrate (U₃O₈) containing 48,303 tU, 77% of the utilities' annual requirements. The balance is made up from secondary sources including stockpiled uranium held by utilities, and in the last few years of low prices those civil stockpiles have been built up again following their depletion over 1990-2005. Nuclear fuel supply may be from secondary sources including recycled uranium and plutonium from used fuel, as mixed oxide (MOX) fuel.²

In December 2023, at the 28th Conference of the Parties (COP28) to the United Nations Framework Convention in Dubai, 22 countries, including Canada, agreed to triple global nuclear power capacity by 2050 to help reach global net-zero emissions.

Russian Impacts

Close allies, including the U.S., U.K., E.U., and France, rely on nuclear to power their economies, and view nuclear as key to advancing their climate plans.

Table 5. Global nuclear supply and Russian supply

	% of electricity supplied by nuclear power	% of nuclear fuel supplied by Russia
E.U.	25%	~25%
U.S.	20%	~20%
France	69%	~20%
U.K.	15%	?
Canada	15%	0%

GLOBAL REPROCESSING

Used nuclear fuel has long been reprocessed to extract fissile materials for recycling and to reduce the volume of high-level wastes. Several European countries, Russia, China and Japan have policies to reprocess used nuclear fuel, although government policies in many other countries do not see used fuel as a resource but rather a waste.¹⁰

Table 6. Key commercial reprocessing facilities globally

Facility	Country	Company	Method	Reprocessing Capacity (tonnes/year)
La Hague	France	Orano	PUREX	1600
RT-1 (Mayak)	Russia	Rosatom	PUREX	400
PREFRE (Tarapur)	India	NPCIL	PUREX	200
Kalpakkam	India	NPCIL	PUREX	100
Rokkasho	Japan	JNFL	PUREX	800



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Work Plan - For Discussion

Criteria	Lead Department	Supporting Department(s)	Kept in the loop
Technology Summary	NRCan		
Supply and demand for uranium and the implications of different fuel cycles	NRCan	GAC Sask RDA	
Environmental effect (+ waste)	ECCC CNSC	NRCan HC (if includes humans)	
Economic and cost-benefit analysis for a plant, competitiveness, investors	NRCan	ISED ECCC	Sask RDA
Domestic Regulatory environment	CNSC	NRCan	
Energy Security and industrial development	NRCan	GAC ISED	Sask RDA
Non-Proliferation and safeguarding, import and export control considerations	GAC CNSC	NRCan	
International and regional relations on reprocessing	GAC NRCan	Sask RDA	
Indigenous and Host Community considerations	ECCC NRCan	HC RDAs	CNSC

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Action Items and Next Meeting Date



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NEW: Technology Summary

- High-level description of the different used fuel reprocessing technologies
 - PUREX reprocessing
 - Molten salt electro-refining
 - Oxide electrowinning process
 - Fluoride volatility process

Participants

Lead: NRCan

Support:

Stay in the loop: RDAs



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Supply and demand for uranium and the implications of different fuel cycles

- Domestic uranium supply
- Domestic fuel supply
- Current domestic uranium and fuel demand
- Future domestic uranium and fuel demand
- Current global reprocessed uranium supply
- Uses of reprocessed uranium (current global utilization)
- Future global utilization of uranium, and potential demand for alternative uranium sources (RepU)

Participants

Lead: NRCan

Support: GAC + RDAs

Stay in the loop:



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Environmental effect (+ waste)

- What are the unique waste streams with reprocessing technologies:
 - (1) PUREX reprocessing (2) molten salt electro-refining
 - (3) oxide electrowinning process (4) fluoride volatility process
- What solutions does Canada have in place for these waste streams
- What novel environmental impacts would we expect from a reprocessing facility (vs. existing fuel cycle facilities)
- How would reprocessing of used fuel contribute to sustainable development goals (open vs. closed cycles)
 - What amount of waste would be generated/diverted?
 - What amount of uranium would be diverted?

Participants

Lead: ECCC + CNSC

Support: NRCan + HC

Stay in the loop:



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Economic and cost-benefit analysis for a plant, competitiveness, investors

- Macro-economics
- Labor force requirements
- Major costs associated with:
 - CapEx and OpEx
 - benchmark with international examples where possible
 - Taxation
 - IP payments as necessary
- Sale price of material
- Potential Canadian economic impact of:
 - Domestic deployment only
 - Domestic deployment and export
 - No reprocessing

Participants

Lead: NRCan

Support: ISED + ECCC

Stay in the loop: RDAs



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Domestic Regulatory environment

- What parts of the current regulatory framework impact reprocessing
 - NSCA
 - IAA
 - Reg docs
 - CSAs
- What are the key gaps in Canada's regulatory frameworks for reprocessing?
- What additional capacity would we anticipate being needed at implicated departments and agencies to support this technology in Canada

Participants

Lead: CNSC

Support: NRCan

Stay in the loop:



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Energy security and industrial development

- Canada's nuclear energy and technology industrial strategy
 - how would reprocessing fit/contribute to Canada's overall objectives for its nuclear sector
- Energy security
 - Future energy needs
 - Non-emitting energy needs
 - How do these interface with nuclear deployment
 - What gaps identified in the supply and demand section can be addressed
- Identify key reactor types that would support the use of RepU
 - Identify scenarios in the long term where we might expect reprocessing to be beneficial to Canada (how many reactor deployments domestically/internationally)

Participants

Lead: NRCAN

Support: GAC + ISED

Stay in the loop: RDAs



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Non-Proliferation and safeguarding, Import and export control considerations

- What would the deployment of reprocessing change for Canada's safeguarding and non-proliferation programs
- Costs of inspections and associated costs to the sector
- Canada's import and export regime, and what would it take to import or export material and/or technologies?
- Evaluate implications for the list of nuclear dual use items

Participants

Lead: GAC + CNSC

Support: NRCan

Stay in the loop:



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International and regional relations on reprocessing

- What provinces would consider this and for what reasons?
 - What do the provinces want/need from the GOC?
- Implications for the Canada's international commitments – including non-proliferation
- Impact on other areas of international importance?

Participants

Lead: GAC + NRCan

Support: RDAs

Stay in the loop:



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Indigenous and Host Community considerations

- What would the needs of a host community and local Indigenous community be should this technology be deployed?
- Are any communities seeking the deployment of this technology?
- What challenges would we anticipate from the wider public?

Participants

Lead: ECCC + NRCan

Support: HC + RDAs

Stay in the loop: CNSC



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REPROCESSING WORKING GROUP KICK-OFF MEETING SUMMARY

MEETING DETAILS:

- **DATE/TIME:** Friday, February 23, 2024, 10:00AM – 11:30AM
- **LOCATION:** MS Teams
- **PARTICIPANTS:**

NRCAN:

- Pui Wai Yuen, Director, Uranium and Radioactive Waste Division
- Jamie Fairchild, Senior Advisor, Uranium and Radioactive Waste Division
- Kathleen Prosser, Policy Advisor, Uranium and Radioactive Waste Division
- Dimitri Temnikov, Policy Analyst, Uranium and Radioactive Waste Division
- Tess Wittmann, Policy Analyst, Uranium and Radioactive Waste Division
- Jessica Poupore, Science and Technology Advisor, Nuclear Energy Division
- Geoff Edwards, Senior Advisor, Nuclear Energy Division
- Brianna Rector, Science and Technology Analyst, Nuclear Energy Division

HC:

- Marc Desrosiers, Head of the Radiological and Nuclear Assessment Section

ISED:

- Elizabeth White, Policy Analyst, Advanced Manufacturing and Materials Industries Directorate

ECCC:

- Duck Kim, Senior Nuclear Coordinator-Energy, Nuclear Program

CNSC:

- David Reinholz, Senior Advisor, Nuclear Non-Proliferation, Non-Proliferation and Export Controls Division
- Michael Kent, Senior Safeguards Advisor, International Safeguards Division
- Tessa Henley, Policy Officer, International and Government Affairs Division
- Julian Amalraj, Senior Project Officer, Nuclear Processing Facilities Division

PrairiesCan:

- Matthew Dalzell, Senior Business Officer, Processes, Program Development & Coordination, Saskatchewan Region
- Anne Ballantyne, Manager, Programs, Enterprises and Ecosystems, Saskatchewan Region
- Canute Rosaasen, Policy Analyst, Saskatchewan Region

TC:

- Daniel Daigle, Analyst, Special Regulatory Projects, Transportation of Dangerous Goods

GAC:

- Tanya Hinton, Senior Advisor and Specialist, Non-Proliferation and Disarmament

EXECUTIVE SUMMARY:

Federal government departments convened for the first time to discuss the issue of used fuel reprocessing. Positive interest for this working group was expressed by many of the participants. This meeting provided an opportunity for the departments associated with each criterion to confirm their interest. Federal departments will have the opportunity to decide on the extent of their participation following the finalization of the scoping for each of the key criteria. NRCAN will serve as the secretariat for this initiative and circulate participants lists, criteria scope documents, and organize kick-off meetings for each criterion.

MINUTES:

1. Roundtable

2. Introduction to the working group

The Government of Canada does not have a specific policy nor formal internal analyses regarding commercial used fuel reprocessing, however there is considerable public interest/discourse on this subject due in large part to specific project proposals. A unified understanding of the key considerations related to this sensitive technology is necessary.

3. Recap of Planned Work and Proposed Outcomes

The objective of this working group is to generate on paper, a consolidated analysis regarding key used fuel reprocessing criterion. Consensus perspectives within the Federal family regarding this technology will facilitate [REDACTED] future discussions. This meeting sought to identify department leads and participants for each of the primary criteria. There is no current plan to do formal policy work after this project is completed. The project outcomes will yield a consolidated internal Government of Canada documentation.

These criteria-specific working groups will develop a series of discussion papers, each of which will be informed by the 1973 enrichment policy. This historic document established a series of criteria that the government would consider should an enrichment project be proposed. A similar approach will be taken for reprocessing to assess the various criteria. This methodology provides for a flexible and technology agnostic approach that could be applied to formal proposals to deploy reprocessing technology.

[REDACTED]

4. Work Plan Discussion

Criteria	Lead Department	Supporting Department(s)	Kept in the loop
Technology Summary	NRCan		
Supply and demand for uranium and the implications of different fuel cycles	NRCan	GAC RDAs	
Environmental effect (+ waste)	ECCC CNSC	NRCan HC (if includes humans)	
Economic and cost-benefit analysis for a plant, competitiveness, investors	NRCan	ISED ECCC	
Domestic Regulatory environment	CNSC	NRCan	
Energy Security and industrial development	NRCan	GAC ISED	
Non-Proliferation and safeguarding, import and export control considerations	GAC CNSC	NRCan	
International and regional relations on reprocessing	GAC NRCan	RDAs	
Indigenous and Host Community considerations	ECCC NRCan	HC RDAs	CNSC

5. Action Items and Next Meeting Date

- NRCan will internalize/consider the comments shared during the meeting and start setting up kick-off meetings for the criteria discussions.
- Departments have been asked to broaden participation where appropriate and identify others that should be involved. The individual criteria groups will determine the scope of their respective analysis.
- NRCan confirmed the work is expected to be completed prior to the end of the calendar year.

Reprocessing Working Group Templates

April 26, 2024 3:04 PM

Subject	Reprocessing Working Group Templates
From	Wittmann, Tess (she, her elle, elle)
To	Yuen, Pui Wai
Cc	Hilborn, Jade (she, her elle, elle); Wilkinson, David; Temnikov, Dimitri
Sent	April 19, 2024 4:22 PM

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Hey PW!

I have finished the templates for each criterion for the reprocessing working group. The idea is to create a sort of “fillable” document for each sub-group.

Over to you for review. They are all located here:



Draft. There is also a document “Title Page” in that folder that is a summary of each theme and the lead department.

The content was all derived from 2 of Kate’s documents here:



Scoping. The working group has already seen the PowerPoint (and is comfortable with the content), but I added in some extra content from Kate’s word doc in this folder.

For awareness of what we are looking for, we already drafted criteria 2 on supply and demand with NED here (prior to Kate’s departure):



2 - Supply and Demand for Uranium and the Implications of Different Fuel Cycles.docx. After these are reviewed, next steps would include sending these out to each sub-group with calendar invites to begin work. I am hoping to send these out **before the beginning of May**.

Happy Friday,
Tess

Technology Summary

LEAD DEPARTMENT: Natural Resources Canada

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

PUREX REPROCESSING

MOLTEN SALT ELECTRO-REFINING

OXIDE ELECTROWINNING PROCESS

FLUORIDE VOLATILITY PROCESS

Environmental Effect (+Waste)

LEAD DEPARTMENTS: Environment and Climate Change Canada, The Canadian Nuclear Safety Commission

SUPPORTING DEPARTMENTS: Natural Resources Canada, Health Canada (pending the inclusion of human health)

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

REPROCESSING TECHNOLOGY WASTE STREAMS

- What are the unique waste streams with reprocessing technologies:
 - (1) PUREX reprocessing
 - (2) molten salt electro-refining
 - (3) oxide electrowinning process
 - (4) fluoride volatility process

WASTE STREAM SOLUTIONS

- What solutions does Canada have in place for these waste streams?

ENVIRONMENTAL IMPACTS

- What novel environmental impacts would we expect from a reprocessing facility (vs. existing fuel cycle facilities)?
 - High level liquid waste in large volumes for example, would be problematic under current framework [NWMO DGR for CANDU bundles]
- Do we currently have [proposed] solutions in place for any of the waste forms?
 - Impacts of a closed, domestic, fuel cycle vs:
 - Once through
 - Closed
 - What are international examples?

SUSTAINABLE DEVELOPMENT GOALS

- How would reprocessing of used fuel contribute to sustainable development goals (open vs. closed cycles)?
 - What amount of waste would be generated/diverted?
 - What amount of uranium would be diverted?

DRAFT

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PROJETÉ A, PROJETÉ A

Economic Benefits and Costs

LEAD DEPARTMENT: Natural Resources Canada

SUPPORTING DEPARTMENTS: Environment and Climate Change Canada, Innovation, Science and Economic Development Canada

CONSULTED: Regional Development Agencies

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

ECONOMIC BENEFITS

- Cost savings from not disposing of used nuclear fuel
- Jobs, economic benefits
- Fuel security
- Sale price of material
- Domestic and export markets

COSTS

- Labour force requirements
- CapEx and OpEx (benchmark with international examples where possible)
- Taxation
- IP payments as necessary
- Opportunity costs (alternatives, e.g. enrichment, others?)
- Regulatory resources cost

Commented [We1]: Dave: Given other papers address environmental, regulatory, indigenous considerations, etc., I think we want the focus of this one on economic/financial benefits and costs. A broader "Cost-Benefit Analysis" would actually take everything into account and I don't think that's what we want to do here. Perhaps at a later stage, if needed. Therefore, suggest sections and subsections more structured as follows:

Economic Benefits:

- Cost savings from not disposing
- Jobs, economic benefits
- export opportunity
- Fuel security

Costs:

- Labour force requirements
- CapEx and OpEx (benchmark...)
- Taxation
- IP payments as necessary
- Opportunity costs (alternatives, e.g. enrichment? other?)
- regulatory resources cost

May end up that this paper overlaps with others, but that's ok.

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POTENTIAL GOVERNMENT ROLE

- What assurances do investors need from the GOC to consider funding to the needed level to develop the technology?
- Do the needs of the nuclear industry require/suggest that there exists a demand for these government assurances? Is there a reason the government should consider providing incentives to investors of such a project?

Commented [W02]: Suggest changing this to Potential Government Role

DRAFT

Domestic Regulatory Environment

LEAD DEPARTMENT: Canadian Nuclear Safety Commission

SUPPORTING DEPARTMENT: Natural Resources Canada

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

CURRENT REGULATORY FRAMEWORK

- Does the CNSC already have the expertise to regulate?
 - What additional capacity would the CNSC need?
 - NRCan?
 - GAC?
 - IAAC?
- What parts of the current regulatory framework impact reprocessing
 - NSCA
 - IAA
 - Reg docs
 - CSAs

KEY REGULATORY FRAMEWORK GAPS

- Key gaps in Canada's regulatory frameworks for reprocessing.

ADDITIONAL REQUIRED SUPPORT

- What additional capacity would we anticipate being needed at implicated departments and agencies to support this technology in Canada?

Energy Security and Industrial Development

LEAD DEPARTMENT: Natural Resources Canada

SUPPORTING DEPARTMENT: Global Affairs Canada, Innovation, Science, Economic Development Canada

CONSULTED: Regional Development Agencies

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

CANADA'S NUCLEAR ENERGY AND TECHNOLOGY INDUSTRIAL STRATEGY

- How would reprocessing fit/contribute to Canada's overall objectives for its nuclear sector?

ENERGY SECURITY

- Future energy needs
- Non-emitting energy needs
 - How do these interface with nuclear deployment?
 - What gaps identified in the supply and demand section can be addressed?

REACTOR TYPES THAT WOULD SUPPORT THE USE OF RepU

- Identify scenarios in the long term where we might expect reprocessing to be beneficial to Canada (how many reactor deployments domestically/internationally)

Non-Proliferation and Safeguarding, Import and Export Control Considerations

LEAD DEPARTMENTS: Global Affairs Canada, Canadian Nuclear Safety Commission

SUPPORTING DEPARTMENT: Natural Resources Canada

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

POTENTIAL CHANGES TO CANADA'S SAFEGUARDING AND NON-PROLIFERATION PROGRAMS

- What would the deployment of reprocessing change for Canada's safeguarding and non-proliferation programs

COSTS

- Costs of inspections and associated costs to the sector

IMPORT AND EXPORT REGIME

- Canada's import and export regime, and what would it take to import or export material and/or technologies?

IMPLICATIONS FOR THE LIST OF NUCLEAR DUAL USE ITEMS

International and Regional Relations on Reprocessing

LEAD DEPARTMENTS: Natural Resources Canada, Global Affairs Canada

SUPPORTING DEPARTMENT: Regional Development Agencies

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

PROVINCIAL UPTAKE

- What provinces would consider this and for what reasons?
 - What do the provinces want/need from the GOC?

INTERNATIONAL COMMITMENTS

- Implications for the Canada's international commitments – including non-proliferation
 - Implications for the joint convention
 - Implications within the broader G7 community
 - Japan's contracts with the UK to reprocess fuel in the UK have been terminated
 - Japan's plant is not yet running
 - UK has stopped reprocessing
 - France still has active contracts

OTHER INTERNATIONAL IMPORTANCE

- Impact on other areas of international importance

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Indigenous and Host Community Considerations

LEAD DEPARTMENTS: Environment and Climate Change Canada, Natural Resources Canada

SUPPORTING DEPARTMENT: Health Canada, Regional Development Agencies

CONSULTED: Canadian Nuclear Safety Commission

Commented [TD1]: "Consulted" is formal way of saying.

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

COMMUNITY NEEDS

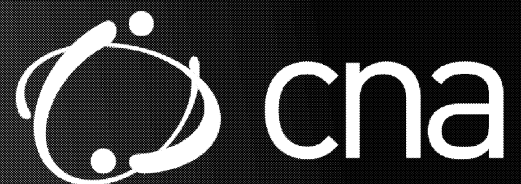
- What would the needs of a host community and local Indigenous community be should this technology be deployed?

CURRENT DEMAND

- Are any communities seeking the deployment of this technology?

ANTICIPATED CHALLENGES

- What challenges would we anticipate from the wider public?



2023 PUBLIC ATTITUDES TO NUCLEAR POWER

Report
January 2024

ENVIRONICS
RESEARCH

IMAGE CREDIT: CANADIAN NUCLEAR ASSOCIATION

TABLE OF CONTENTS

RESEARCH OBJECTIVE	3
RESEARCH METHODS	4
EXECUTIVE SUMMARY	5
VIEWS ABOUT NUCLEAR AND NET ZERO	8
KNOWLEDGE AND INFORMATION SOURCES	19
MESSAGING AND TRUSTED SOURCES	25
SEGMENT PROFILES	31

Where does the Canadian public see nuclear power fitting in a net zero world?

The Canadian Nuclear Association has been tracking public attitudes towards nuclear power over the past several years, to support public-facing communications.

In 2023, the federal government's budget indicates clear and strong support for nuclear power, while more provinces are expressing interest in expanding or developing nuclear facilities.

This study, conducted in November 2023, was designed to track trends in the Canadian public attitudes towards nuclear energy, including the potential impact of governments' growing support for it.

RESEARCH METHODS

This report is based on an online survey conducted with a representative sample of 2,726 Canadians (18 or older), conducted from November 17 – December 4, 2023.

The sample was stratified by province as outlined in the table below, to ensure adequate subsamples for analysis of smaller regions. Quotas were also used to ensure the sample was representative by age, gender and household income. At the analysis stage, the data was weighted to ensure the final sample reflects the actual distribution of the Canadian population per 2021 Census data.

Because the survey uses a non-probability sample, no margin of sampling error can be calculated.

	Total	BC	AB	SK	MB	ON	QC	NB	NS	PEI/NFLD
Sample size (unweighted/actual)	2726	375	402	411	153	599	452	151	129	54
Sample size (weighted)	2726	370	315	84	99	1052	629	57	72	49
Population (%) per Census	100%	14%	12%	3%	4%	39%	23%	2%	3%	2%

EXECUTIVE SUMMARY

KEY INSIGHTS

In 2023, as Canada grappled with climate change and how to achieve net zero, there was a major shift in the federal government's policy approach to nuclear energy. The March 2023 federal budget saw nuclear power included in the clean energy investment tax credit, as well as in a range of other tax incentives. There were also new and ongoing signals and/or discussions in favour of nuclear in many provinces, such as Ontario (four SMRs at Darlington and a new reactor at Bruce Power) and Quebec (assessing the viability of the mothballed Gentilly-2 plant), following previous announcements about SMR development in Saskatchewan and New Brunswick. **All this activity raises the questions: has the public noticed and what impact has it had?**

- 1 The survey results indicate that recent developments have not broken through to the broader public.** Canadians are not hearing news about nuclear energy any more frequently than in 2022 (four in 10 recall hearing it often or sometimes). Only one in five recall hearing about newly proposed nuclear power projects (19%, up a marginal 4 points from 2022) and while there is better awareness of SMRs (47% have heard of them, up 8), there continues to be very limited familiarity with them (12%).
- 2 Therefore, from the public's perspective, nothing has happened to fundamentally shift their views about nuclear power.** As in 2022, just four in ten Canadians believe nuclear power is no or low emitting and just under half (47%) support nuclear as a way of providing electricity for Canada. As well, widespread concern about the handling of nuclear waste (66% extremely or definitely concerned) and the potential for nuclear accidents (64%) has not softened. Reflecting these concerns, half of Canadians (53%) say they would feel more confident in new nuclear energy generation if there was technology to address nuclear waste.

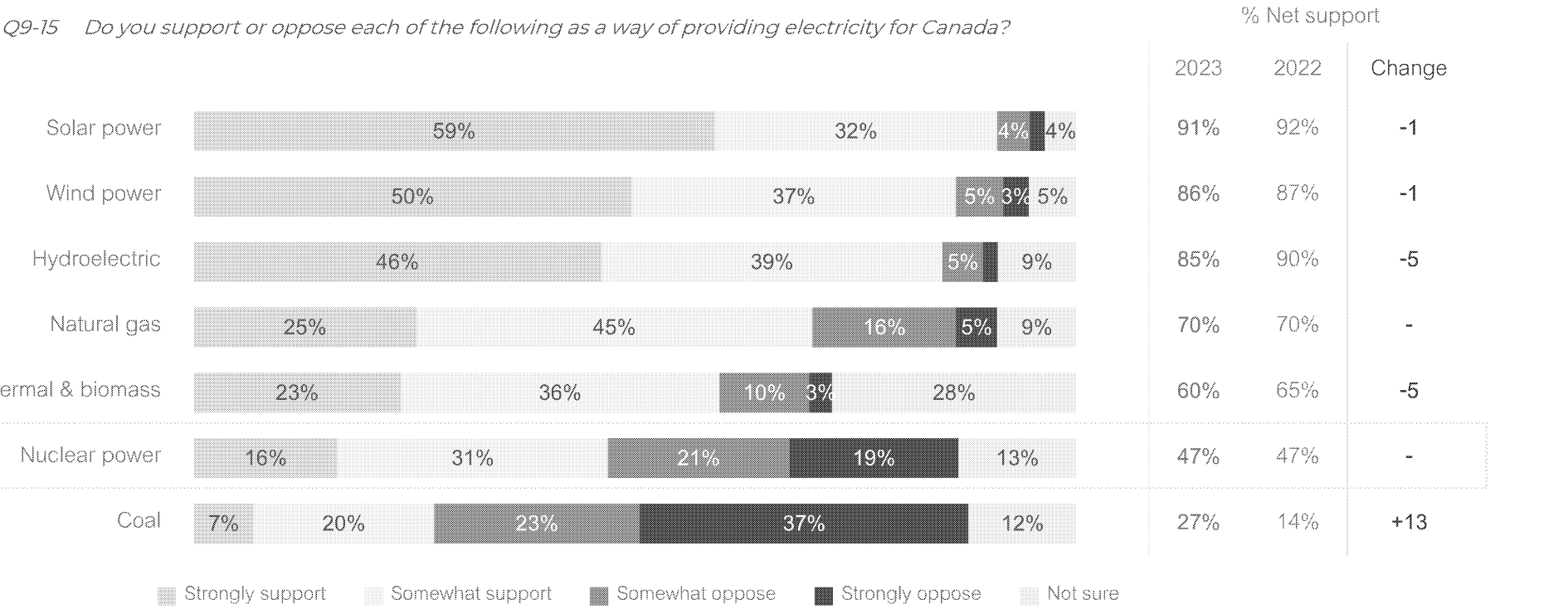
KEY INSIGHTS

- 3 **There is a new risk factor on the horizon: growing concern about the cost of new nuclear builds** (58% extremely or definitely concerned, up 10 points since 2022). Increased concern is evident across the country, but particularly among those already most in favour of nuclear energy - suggesting cost is becoming a more relevant consideration in the current economic climate as new builds become a greater reality.
- 4 As in 2022, there continues to be a willingness to pair nuclear with renewables to meet net zero (66% say nuclear should play either a major or minor role). However, **Canadians do not have a shared perspective on the relative costs of building new electricity sources or future electricity rates:** a greater proportion (about one-third) think having nuclear in the mix will be *more* costly than renewables alone (about one-quarter), with the remainder who say there will be no difference or are unsure. This lack of understanding that nuclear will be more affordable in the long run risks its future support compared to renewables.
- 5 **These findings are largely consistent across the population: in the few cases where metrics have shifted nationally, this is apparent in most regions and demographics rather than driven by any specific subgroup(s).** As in 2022, Saskatchewan residents remain among the most positive towards nuclear, together with ON and NB (each with operational nuclear power plants) and Alberta. There has been limited progress in women's awareness of or attitudes towards nuclear, and they continue to express more concern than men about the potential risks; it will remain challenging to grow nuclear support without more women on board.

VIEWS ABOUT NUCLEAR AND NET ZERO

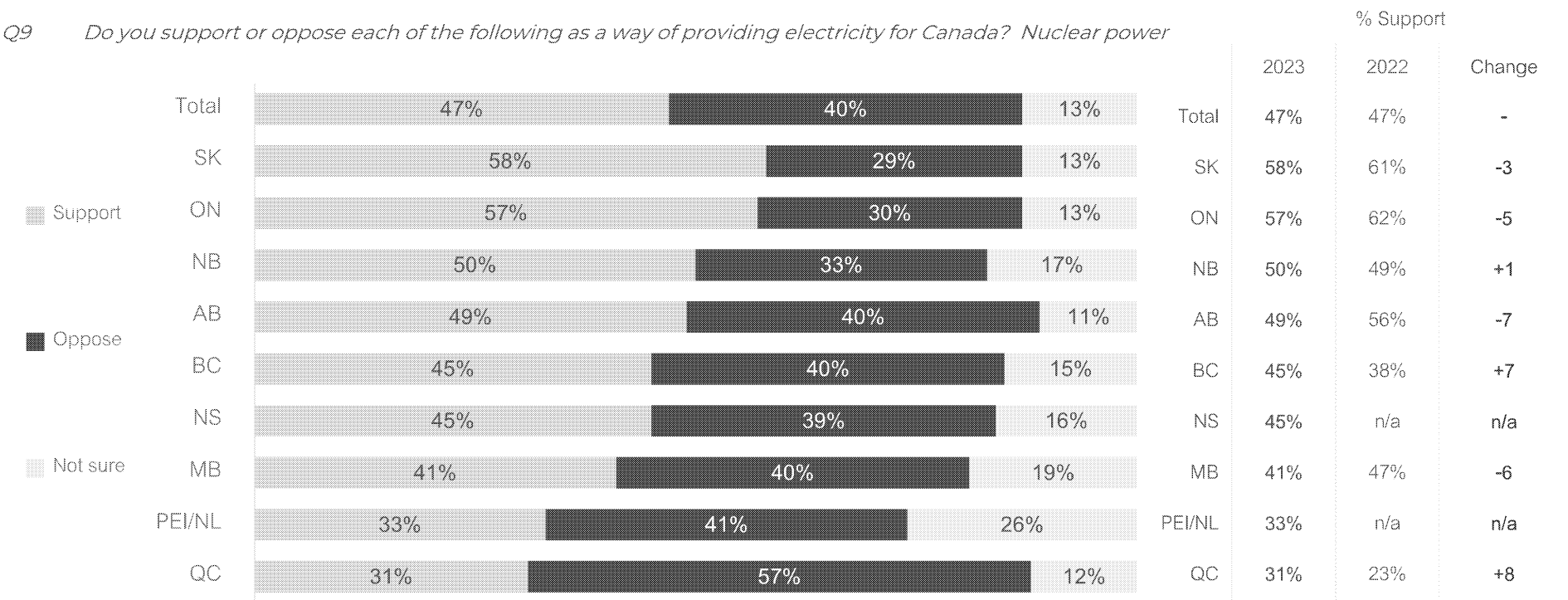
Overall Views | **Support for electricity sources**

Support for electricity sources in Canada is steady since 2022. Renewable sources (solar, wind, hydroelectric) remain most preferred; views about nuclear remain mixed (47% support, unchanged); and coal continues to sit far below other sources (it remains to be seen if the bump in support persists in the future).



Overall Views | **Support for nuclear by province**

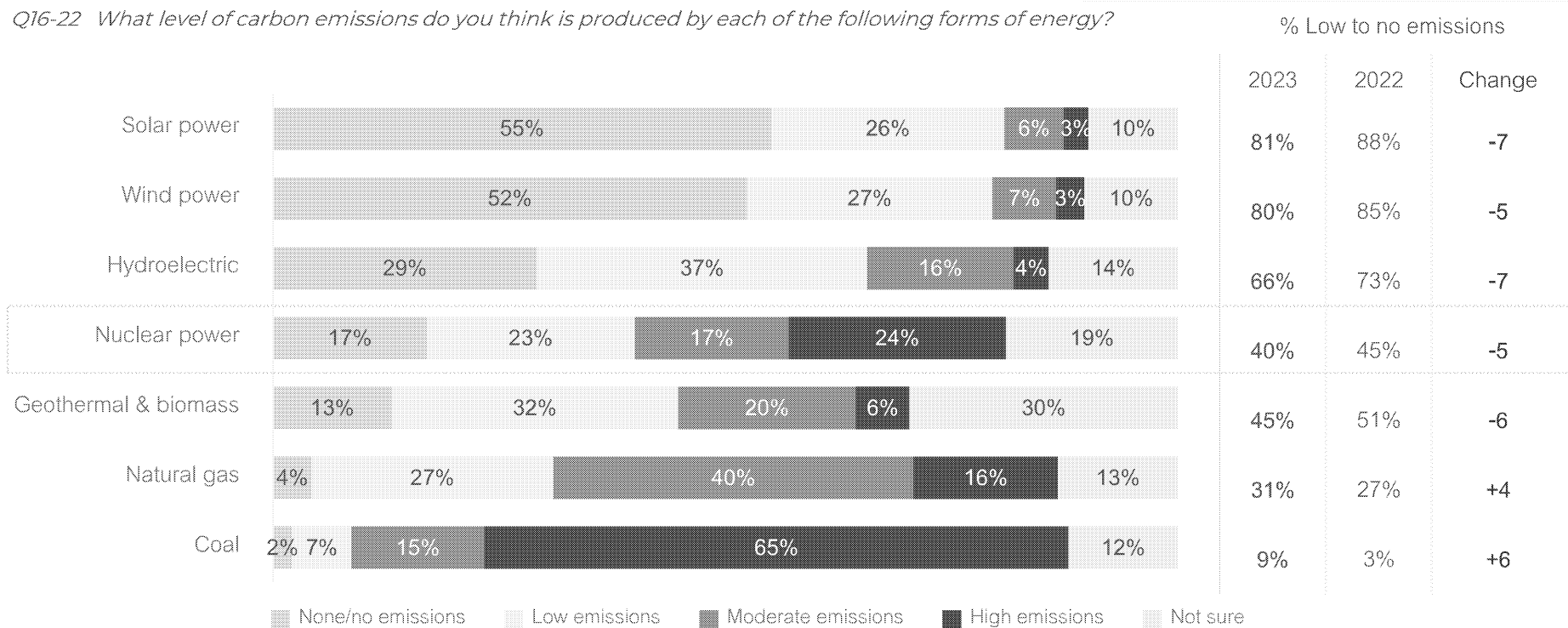
Overall stable views about nuclear at the national level also points to consistent provincial views. As before, support remains highest in Saskatchewan and Ontario and lowest in Quebec, with other provinces – including New Brunswick (50% support) – falling in between. It remains to be seen if the slight shifts in AB, BC and QC become meaningful trends.



Overall Views | **Level of carbon emissions produced**

There continues to be a large distinction between sources perceived as least and most emitting; since 2022, there has been a slight “reversion to the mean” resulting in less of a range in perceptions than before. As in 2022, roughly four in ten accurately perceive nuclear as no/low emissions, with another two in ten still unsure about its status.

Q16-22 What level of carbon emissions do you think is produced by each of the following forms of energy?



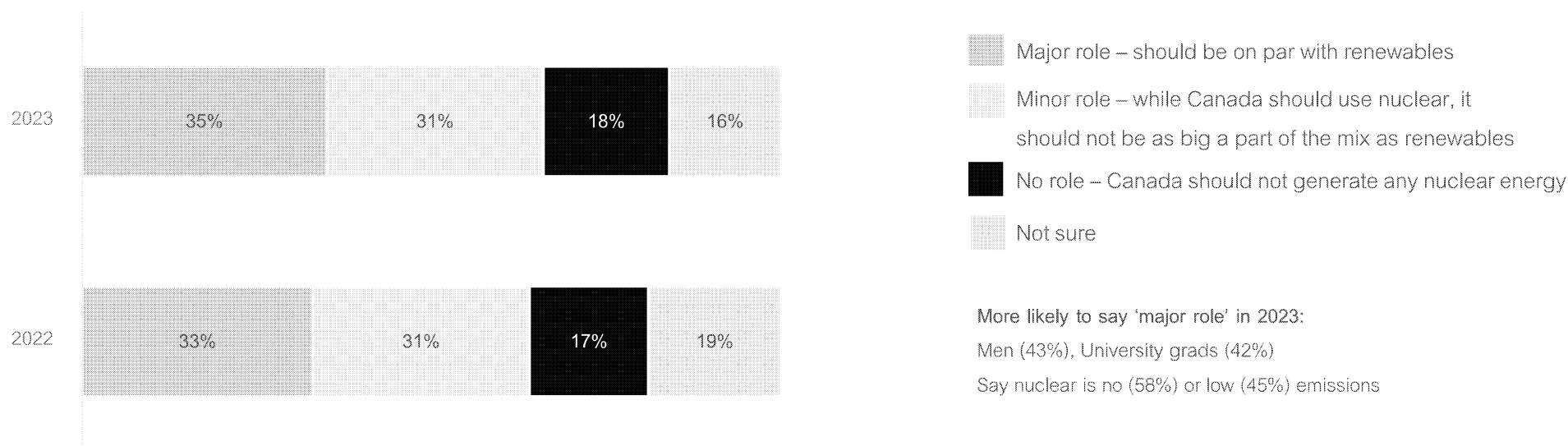
CANADIAN NUCLEAR ASSOCIATION | PUBLIC ATTITUDES TO NUCLEAR POWER 2023
INSIGHTS CREDIT: ENVIRONICS RESEARCH

11 | **ENVIRONICS**
RESEARCH

Overall Views | **Role for nuclear in reaching net zero**

Essentially unchanged since 2022, almost two-thirds of Canadians say nuclear should play a role in Canada's efforts to reach net zero, including one-third who say it should be a major role on par with renewables; as before, the latter proportion is considerably higher among those who know nuclear as a no/low carbon-emitting source.

Q23 Canada has committed to a carbon emissions reduction target of "net zero" by 2050. "Net zero" means reducing Canada's total carbon emissions (by reducing the production and use of fossil fuels like oil, gas and coal) to the extent possible, with the remainder offset by initiatives to remove carbon (through carbon-capture technologies or natural systems like forests), resulting in a sum total of zero net emissions. How much of a role, if any, do you think nuclear energy should play in attempts to reach net zero in Canada?



Overall Views | **Reasons for preferred role in net zero**

The view that nuclear should play a *major* role is not only driven by understanding of its climate benefits, but also by its perceived advantages as an efficient, reliable, and safe electricity source. Preference for a *minor* role for nuclear reflects hedging between those advantages and the perceived safety risks (waste, accidents).

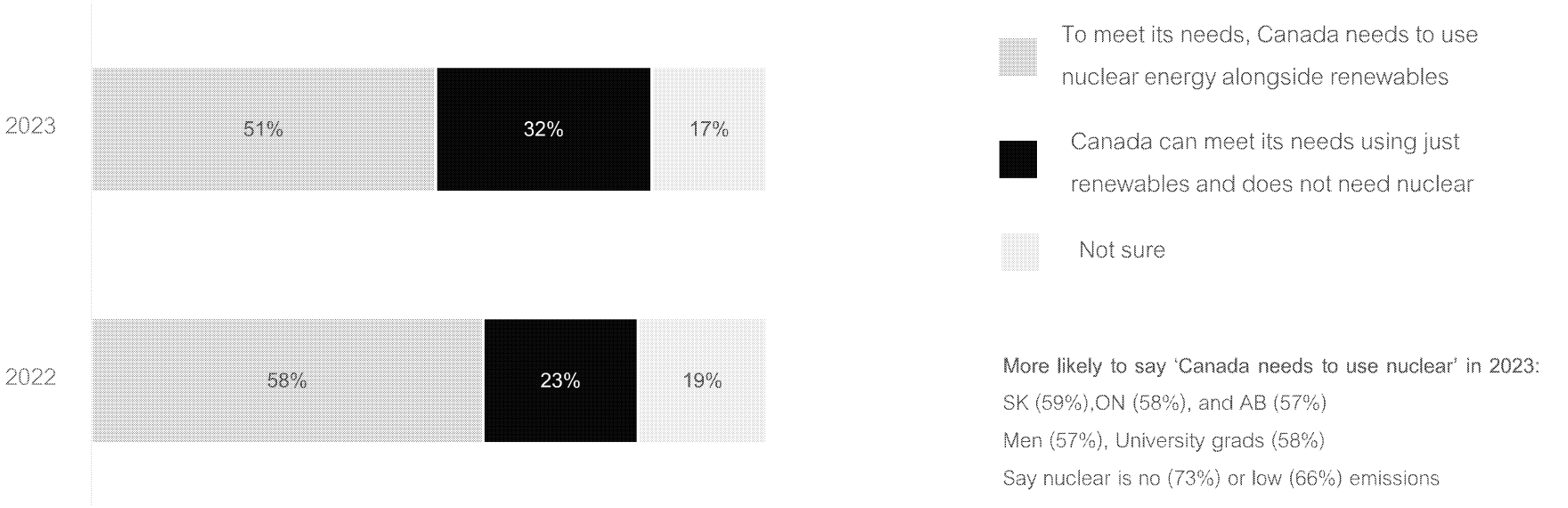
Q24 Why do you say nuclear energy should play [a major/a minor/no] role in attempts to reach net zero in Canada?

Major role in net zero	Minor role in net zero	No role in net zero
Clean energy/Low emissions/No pollution	Need more information about how it works, how safe it is and if it produces GHG	Too risky/dangerous when something goes wrong
Proven efficient/powerful	Most risky/Only source of energy that can lead to a global disaster (others may only have a local impact)	Lasting health effects of radiation exposure
Safe/Recent technology is very safe now	There are alternatives such as solar, hydro and wind (less expensive, safer, faster to build), but nuclear can be a good backup	Nuclear waste management
Reliable/Sustainable/Long lasting	Nuclear is better than gas, oil and coal	Referring to Fukushima and Chernobyl nuclear accidents
Cheaper	Nuclear is a reliable source of power	Toxic to the environment
Best alternative to coal, gas, oil/Wind turbines get hit by birds, Hydro floods large areas and forests	Nuclear is better for the environment, no greenhouse gas emissions, but nuclear waste	There are better options/No need
SMR can be built more easily in remote locations or large urban centers		Nuclear power is also used for weapons (for example nuclear bomb during World War II)

Overall Views | **Role for nuclear knowing it is low carbon**

After telling respondents about nuclear's status as the second-largest source of low carbon electricity in Canada, half believe Canada needs nuclear alongside renewable energy – but this view has declined since 2022 (51%, down 7 points), while a larger (but still minority) proportion say we can our meet our energy needs through renewables alone (32%, up 9).

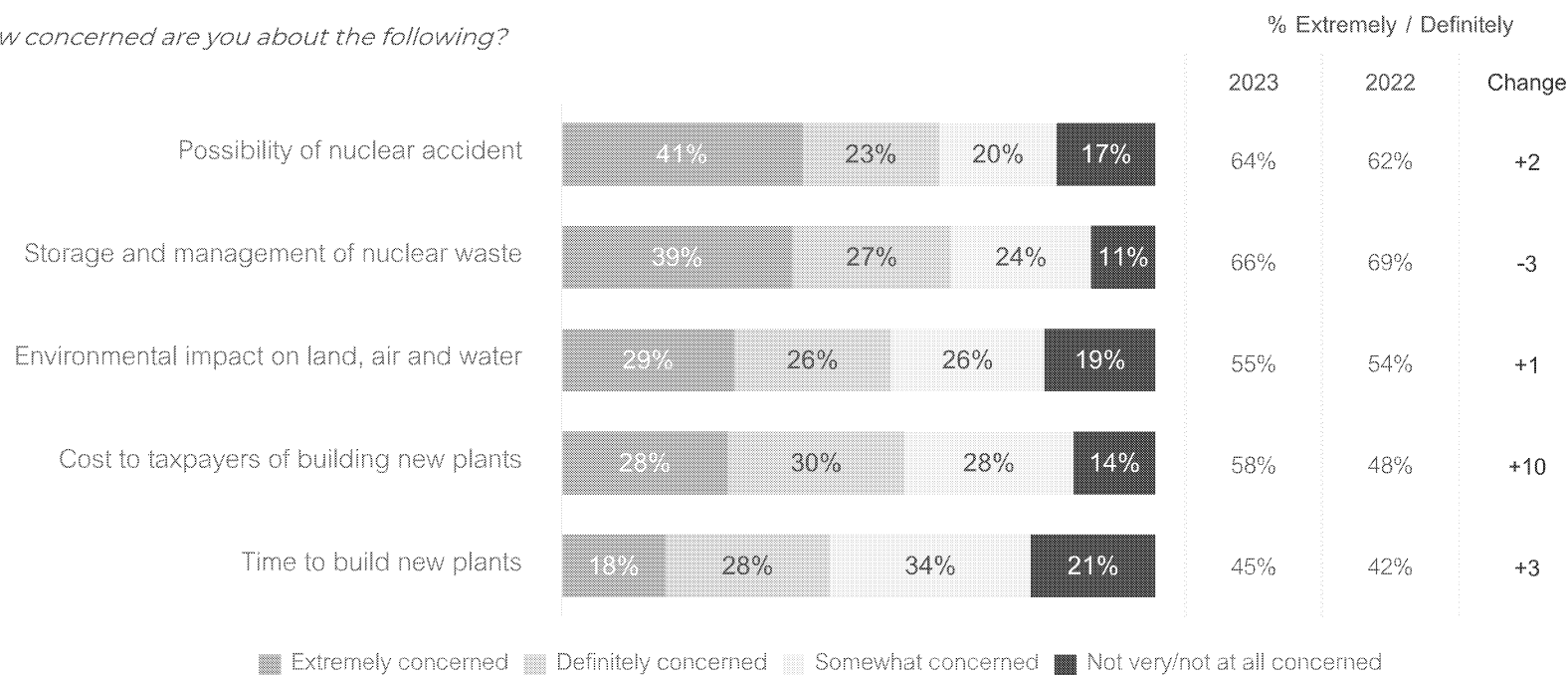
Q25 In fact, nuclear is the second-largest source of low carbon electricity in Canada, after hydroelectricity. Nuclear power is also a more constant electricity source than renewables, which require backup storage to provide reliable electricity when there is no wind or sun. Knowing that, and thinking about what Canada needs to do to meet its energy needs without using fossil fuels, which of the following best represents your view?



Overall Views | **Concerns about nuclear energy**

Concern about the cost of new plants has increased since 2022 (up 10 points), now on par with environmental concerns, although they remain secondary to concerns about safety and security.

Q26-30 How concerned are you about the following?



Overall Views | **Concern about cost of new plants**

The increased concern about the cost of building new nuclear plants (up 10 points nationally) is evident in all provinces and among most demographic groups – but particularly among those on side with nuclear energy - suggesting cost is becoming a more relevant consideration in the current economic climate as new builds become a greater reality.

Q26 *How concerned are you about the following? The **cost** to taxpayers of building new nuclear energy plants to replace retired plants and increase electricity supply*



PROVINCE

Cost concerns increased in all provinces. While in 2022 cost concerns were more evident in Quebec, they are now on par across the country.



DEMOGRAPHICS

- Cost concerns grew among Canadians under 60 (from 48% in 2022 to 60%) and are now higher than among older Canadians 60+ (53%).
- Cost concerns increased among both genders and in all education and income levels.



SUPPORT FOR NUCLEAR

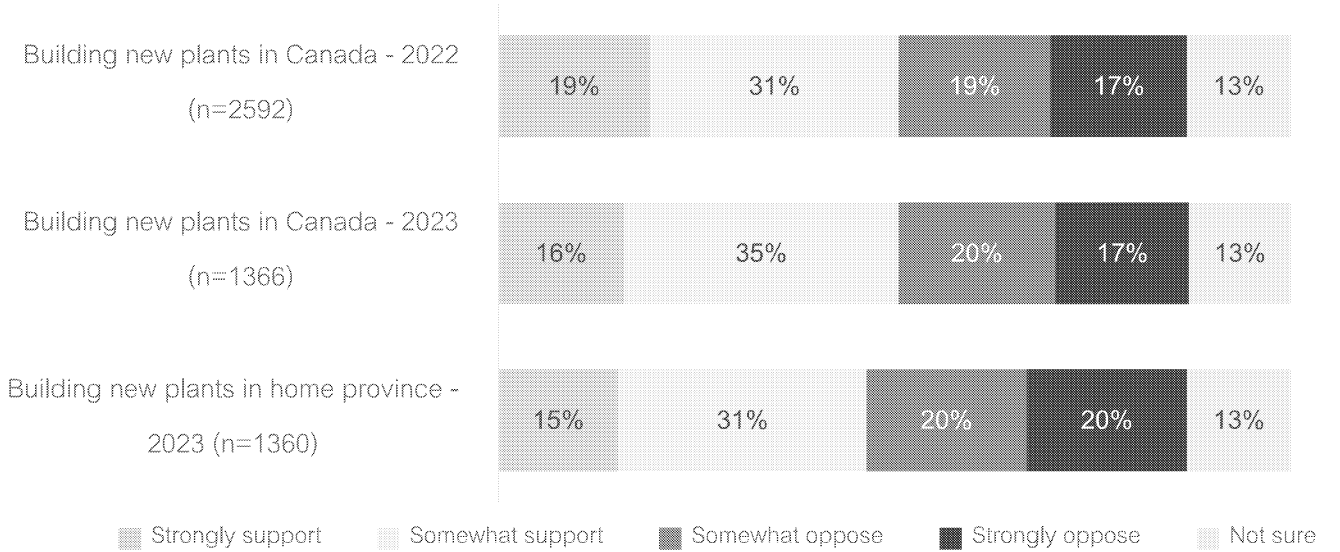
Cost concerns grew most notably among:

- Strong supporters of nuclear energy (40% concerned, up 17 points from 2022)
- Those who feel most knowledgeable about nuclear energy (65%, up 23 points)

Overall Views | **Support for building new nuclear plants**

Overall support for building new nuclear power plants in Canada is essentially unchanged from 2022, at half of Canadians (51%). There is comparatively softer support for building new plants in their home province (46%), suggesting the presence of NIMBY concerns.

Q31 (ASKED OF ½ SAMPLE) Do you support or oppose building new nuclear power plants in Canada to increase electricity supply?
 Q32 (ASKED OF ½ SAMPLE) Do you support or oppose building new nuclear power plants in your province to increase electricity supply? [NEW]



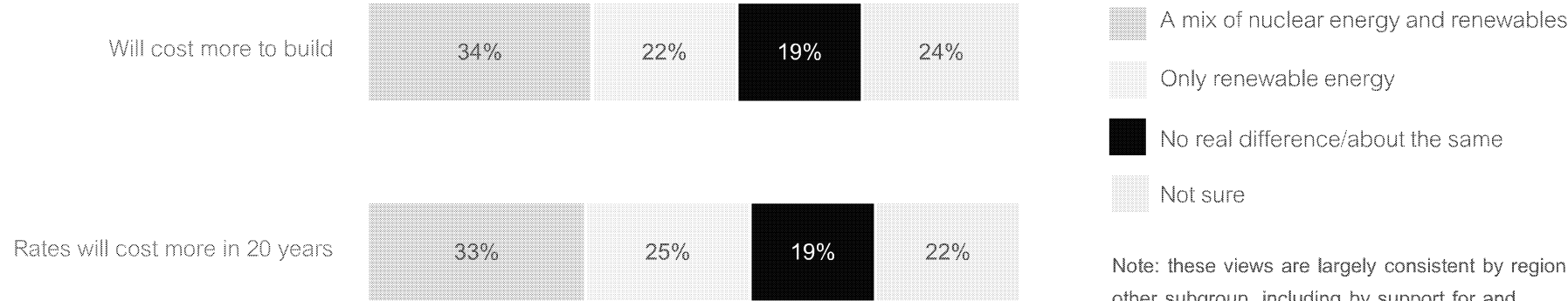
There is slightly greater support for building new plants in Canada (51%) than in their home province (46%) in all provinces except:

- BC (where support levels are equal at 47%)
- NS (where support for a new plant in NS, 49%, outweighs that for Canada, 43%)

Overall Views | **Perceived cost of new builds & future rates**

There is no consensus view about what type of electricity sources will cost more to build, nor does the public differentiate between the cost to build now versus future rates. This indicates a major gap in understanding, and these perceptions are currently vulnerable to being swayed in either direction.

- Q33 The demand for electricity in Canada is growing due to electrification (e.g., electric vehicles, electricity to power homes and businesses). New sources of electricity need to be built, expanded and upgraded to meet this demand. From what you know or have heard, which of the following will **cost more to build**, or is there no real difference?*
- Q34 Thinking about 20 years in the future, when new sources of electricity have been built to meet demand, do you think the electricity **rates charged to households and businesses** will cost more if the electricity is generated...?*



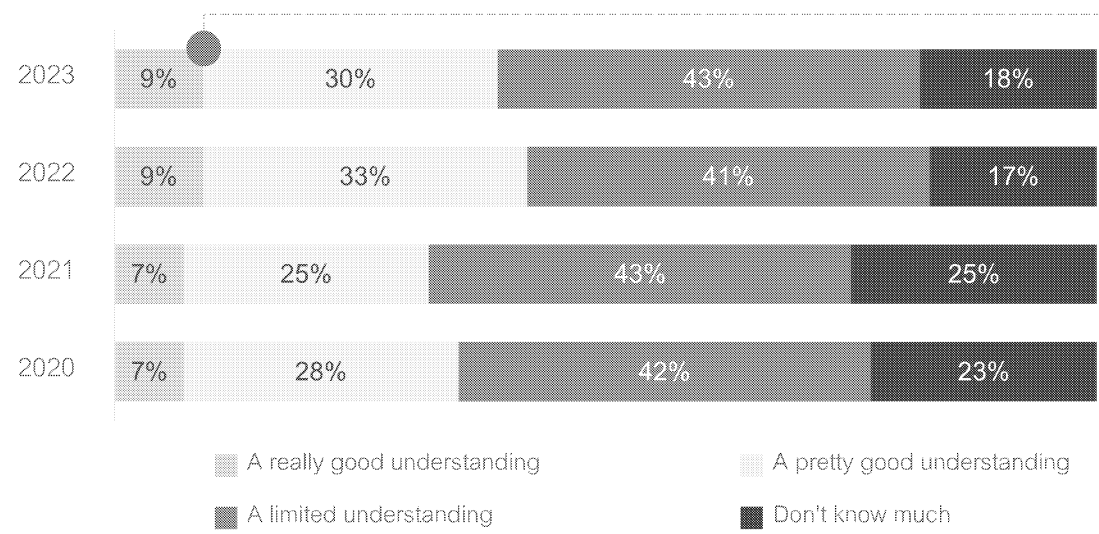
Note: these views are largely consistent by region or other subgroup, including by support for and knowledge about nuclear. (That is, no segment has a clearer understanding of the cost implications).

KNOWLEDGE AND INFORMATION SOURCES

Knowledge | **Self-rated knowledge about nuclear power**

Canadians don't feel particularly well-informed about nuclear power, and this has not improved since 2022. The minority who consider themselves knowledgeable (39%) is higher than in 2020 and 2021, but this may be because the question is now asked later in the survey after more information has been provided.

Q35 Do you feel you have a really good understanding, a pretty good understanding, a limited understanding or would you say you don't know much about nuclear power?



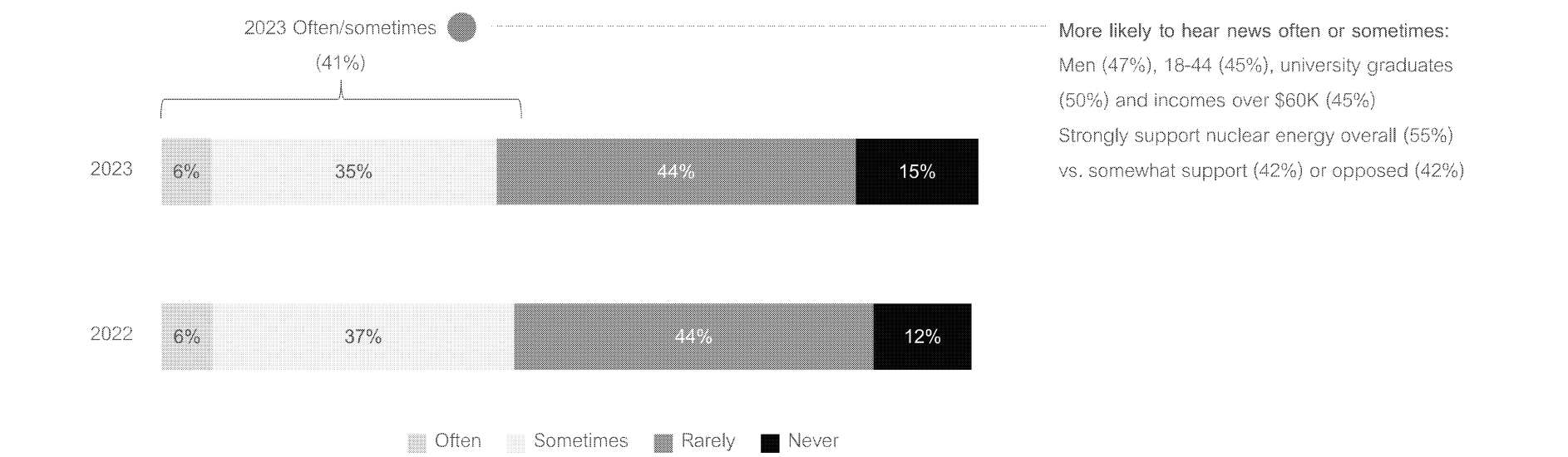
More likely to have a really or pretty good understanding:
 Men (51%, vs. 27% women), 18 to 44 (45%)
 University grads (47%), Income \$60K+ (44%)
 Strongly support nuclear energy overall (65%, vs. 39% somewhat support and 38% opposed)

Source of 2020 and 2021 data is Abacus poll for CNA
 CANADIAN NUCLEAR ASSOCIATION | PUBLIC ATTITUDES TO NUCLEAR POWER 2023
 INSIGHTS CREDIT: ENVIRONICS RESEARCH

Knowledge | **Awareness of news about nuclear**

Four in ten Canadians (41%) recall hearing news about nuclear power somewhat regularly (often or sometimes). This level is essentially unchanged from 2022 (both nationally and at the provincial level), indicating that coverage of nuclear energy made little dent in public awareness this past year.

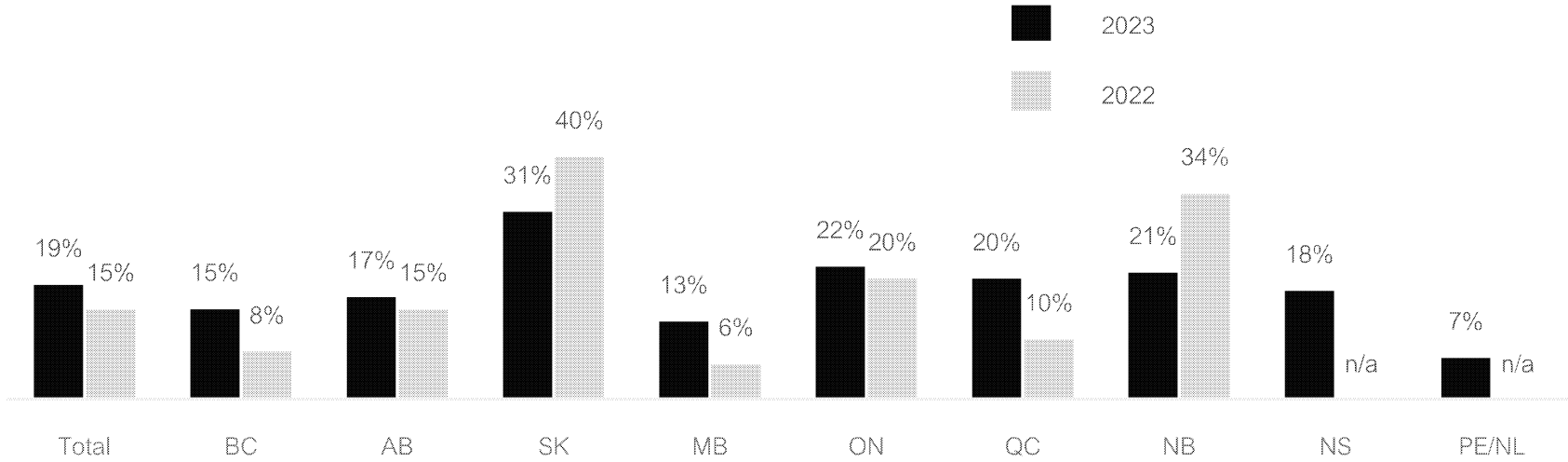
Q36 *How often do you see, hear or read anything in the news about nuclear power?*



Knowledge | **Recall of news about new nuclear projects**

Awareness of newly proposed nuclear power projects has inched up to almost one in five Canadians, driven by BC, Manitoba and Quebec. Recall softened in Saskatchewan and New Brunswick compared to 2022, but still remains at the high end.

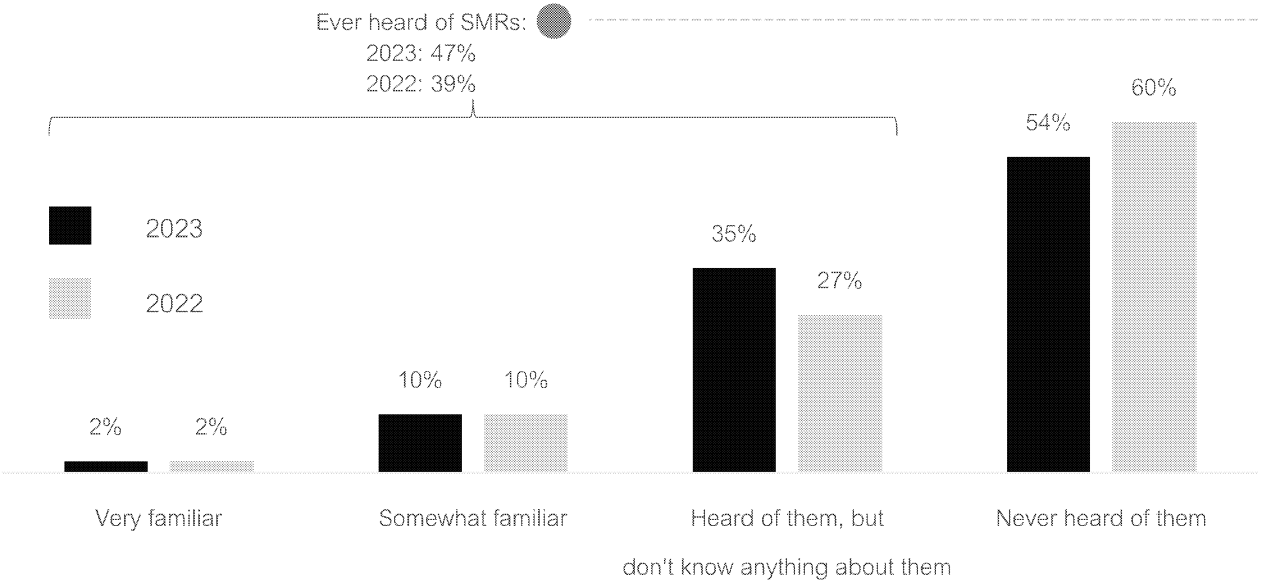
Q38 To confirm, have you seen, heard or read anything about newly proposed nuclear power projects in Canada?



Knowledge | **Familiarity with SMRs**

There continues to be very limited familiarity with SMRs. However, since 2022, the proportion of Canadians who have at least heard of them has increased to almost half (47%, up from 39% in 2022), and is most evident among those with moderate views (i.e., not the most knowledgeable nor supportive of nuclear).

Q36 How familiar are you with Small Modular Reactors or SMRs?



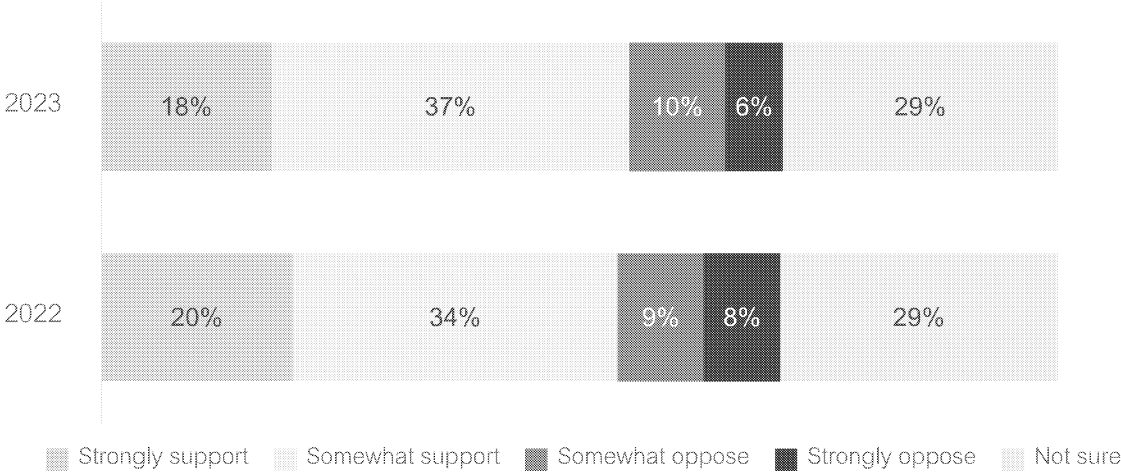
Since 2022, awareness of SMRs has increased most notably:

- In QC, BC and ON (yet remains highest in SK)
- Among those under age 60
- Among those who somewhat support nuclear overall and who say they have a pretty good (but not a really good) understanding of nuclear

Knowledge | **Support for SMR development**

Although awareness of SMRs has inched up, overall support for developing SMRs remains essentially unchanged (55% vs. 54% in 2022). As was the case in 2022, some of those opposed to nuclear energy (in response to the first survey question) shift towards uncertainty about SMRs, suggesting possible openness to the idea due to the information provided.

Q40 Small Modular Reactors (SMRs) are an emerging area of nuclear energy innovation, in Canada and around the world. SMRs have a smaller footprint that is well suited to rural and smaller communities; are more affordable than large reactors because they can be prefabricated in factories and installed on site; and are designed for enhanced safety.

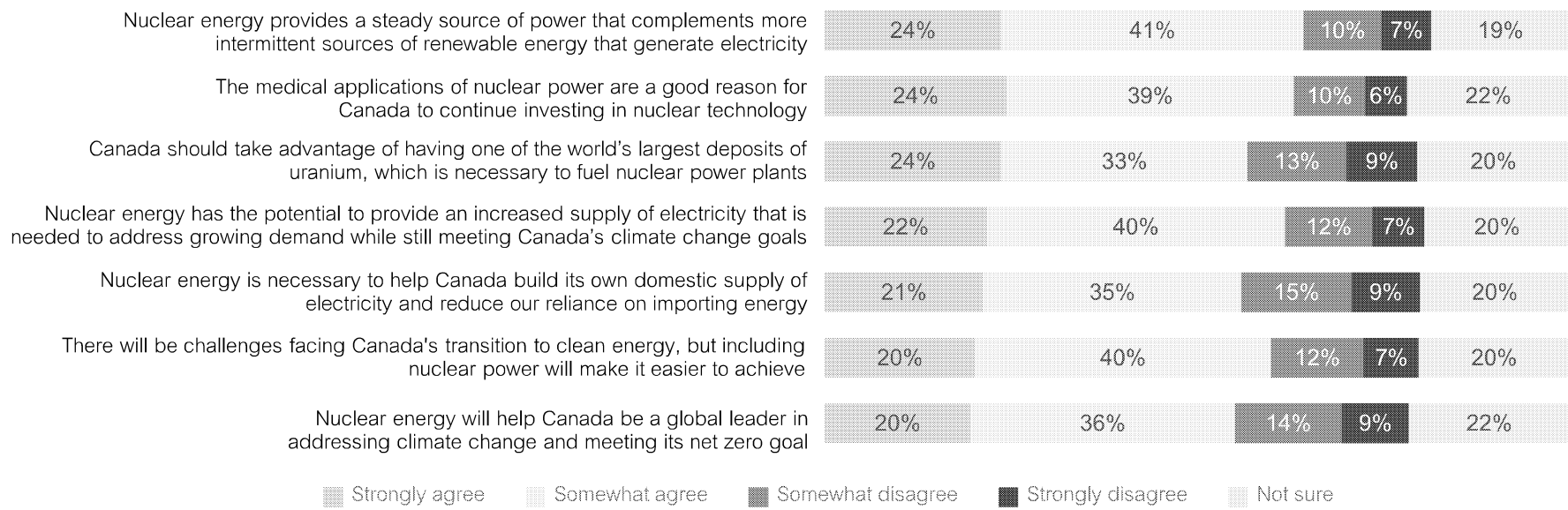


MESSAGING AND TRUSTED SOURCES

Messaging | **Agreement with messaging**

Reactions to potential messages are largely unchanged and remain uniform. As before, there is a slight preference for messages that address supply and reliability, which is now joined by agreement about the medical value of investing in nuclear power.

*Q41-47 Do you agree or disagree with each of the following statements, or do you not know enough to say? *Statements have been shortened here for brevity; see questionnaire for full text.*

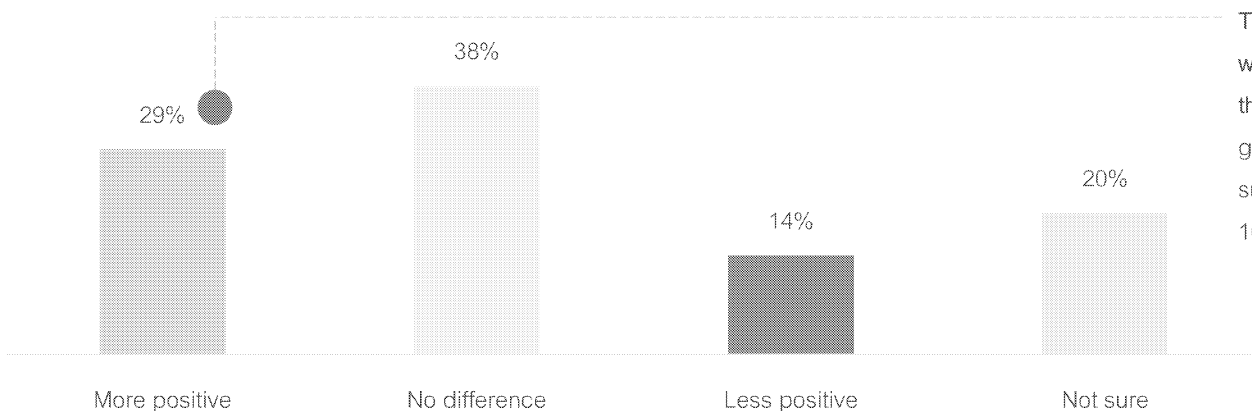


Trust | **Impact of provincial government support**

Three in ten say that active pursuit of nuclear developments by their provincial government makes them more favourable towards nuclear power; this skews to those already in favour of nuclear energy compared to those who are opposed.

Q48 [PROV=AB,SK,ON,NB] Currently, the government of [PROVINCE] is actively pursuing the development of nuclear power (through tax credits or investments to refurbish or build new facilities or implement nuclear technologies). Does this make you more or less positive about nuclear power in your province, or does it make no real difference? (New question, no trend data available)

[PROV=BC,MB,QC,NS,PE,NFLD] Some provincial governments in Canada are actively pursuing the development of nuclear power (through tax credits or investments to refurbish, build new facilities or implement nuclear technologies). If this was the case in your province, would this make you more or less positive about nuclear power, or would it make no real difference? (New question, no trend data available)



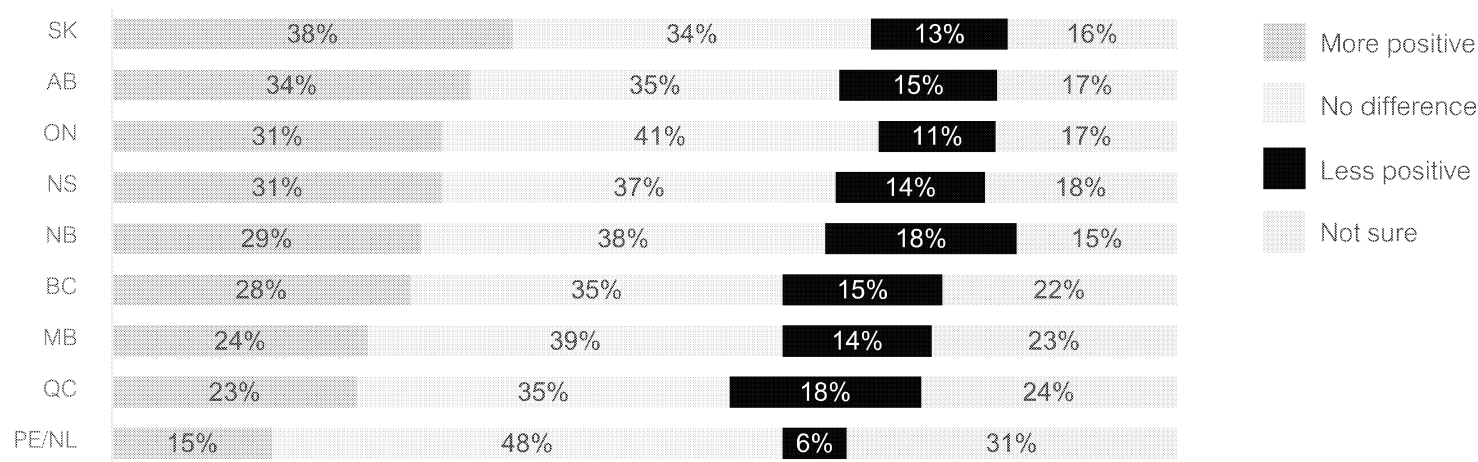
Those already in favour of new nuclear builds are more willing to say that they are positively influenced by knowing their province is pursuing nuclear development (70% of this group feel more positive, compared to 41% who somewhat support new nuclear power plants, 9% who oppose and 10% who are not sure).

Trust | **Impact of provincial government support**

Willingness to say their government's actions make them more positive about nuclear tends to be more common in provinces that currently have or are actively pursuing nuclear power (SK, AB, ON and NB) – suggesting it is a factor in acceptance.

Q48 [PROV=AB,SK,ON,NB] Currently, the government of [PROVINCE] is actively pursuing the development of nuclear power (through tax credits or investments to refurbish or build new facilities or implement nuclear technologies). Does this make you more or less positive about nuclear power in your province, or does it make no real difference? (New question, no trend data available)

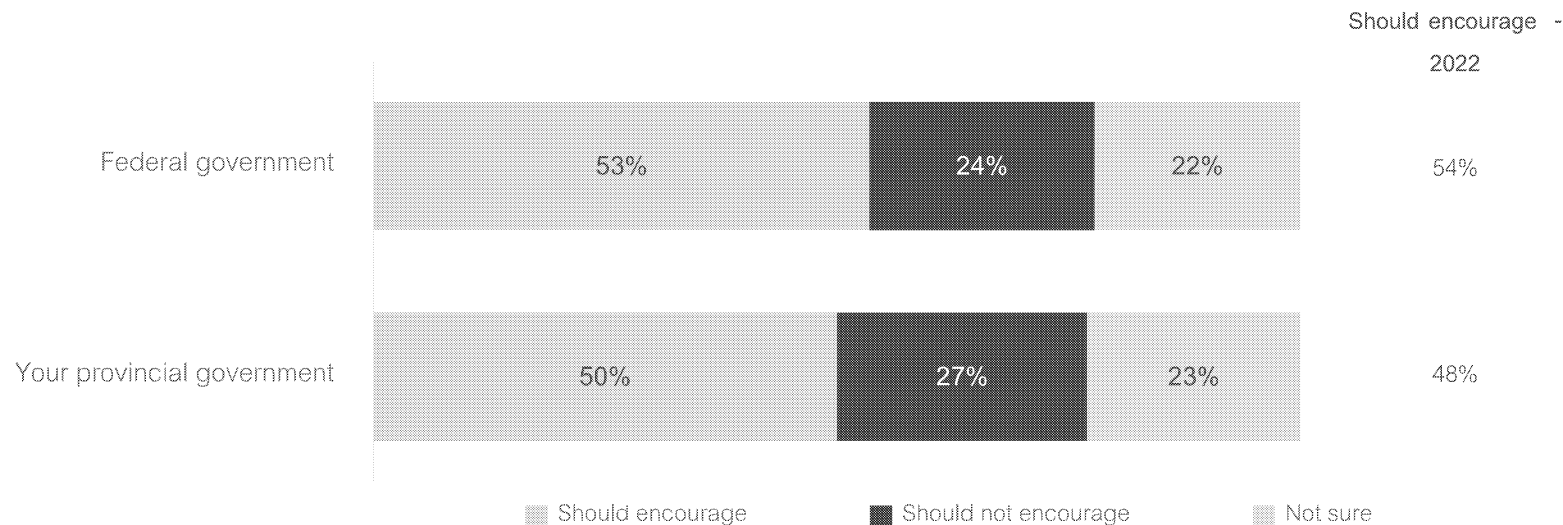
[PROV=BC,MB,QC,NS,PE,NFLD] Some provincial governments in Canada are actively pursuing the development of nuclear power (through tax credits or investments to refurbish, build new facilities or implement nuclear technologies). If this was the case in your province, would this make you more or less positive about nuclear power, or would it make no real difference? (New question, no trend data available)



Trust | **Role of government in development**

Roughly half of Canadians believe the federal government and their provincial government should actively encourage the development of nuclear energy, essentially unchanged from 2022. As before, residents of SK, AB and ON remain most interested in government support (at both levels) for nuclear.

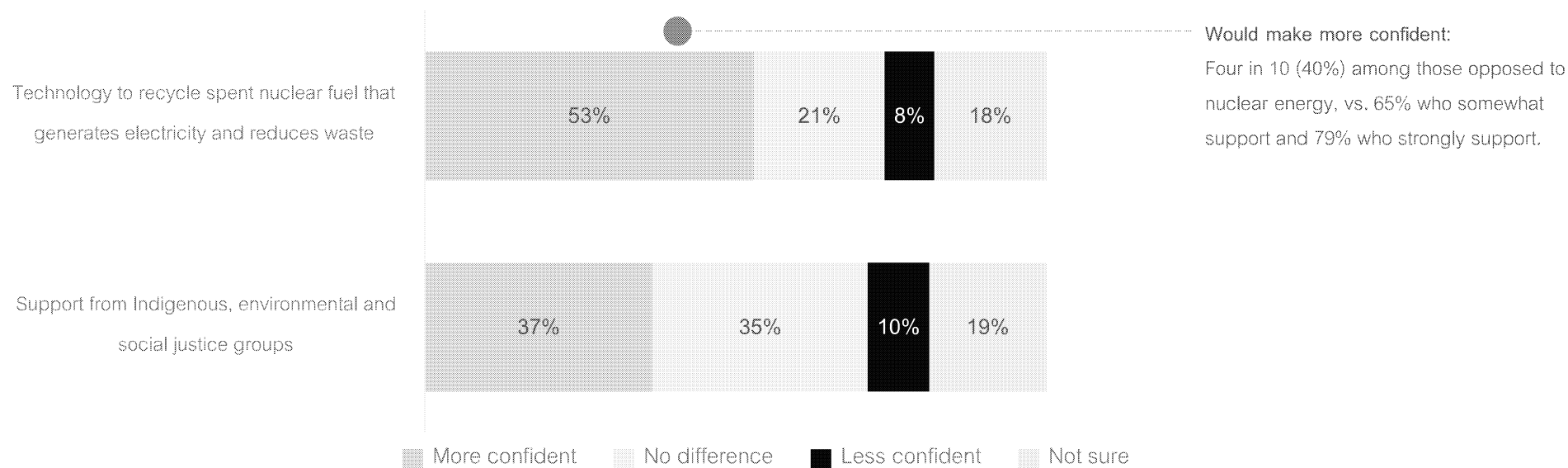
Q49-50 Do you think each of the following should or should not actively encourage the development of nuclear energy, through things like tax credits and investments in new technology?



Messaging | **Building confidence in nuclear**

Technology to address nuclear waste would make half of Canadians (including 4 in 10 who oppose nuclear energy) feel more confident in continued/expanded nuclear generation – since it addresses one of the overriding concerns. Support from Indigenous, environmental and social justice groups would have less impact on confidence levels.

Q51-52 Would each of the following make you feel more or less confident in the continued operation or expansion of nuclear energy generation, or would it make no difference? (New question, no trend data available)

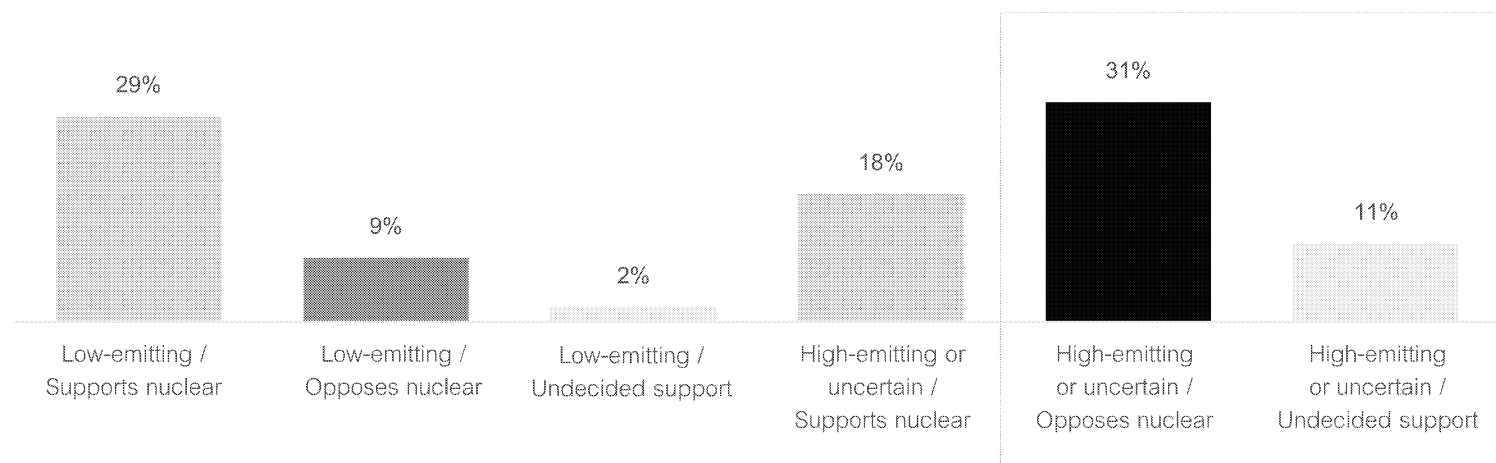


SEGMENT PROFILES

Targeting | **Nuclear support x emissions knowledge**

Where does opportunity exist to shift Canadians in favour of nuclear? There are roughly four in ten Canadians who do not (yet) understand that nuclear is low-emitting, although the extent to which this argument is sufficient to persuade is unclear.

Q9 Do you support or oppose nuclear energy as a way of providing electricity for Canada?
Q16 What level of carbon emissions do you think is produced by nuclear energy?



Targeting | **Nuclear support x emissions knowlege**

The challenge for the group of nuclear opponents who do not (yet) know that nuclear is low-emitting (31%) is that their profile of concern about security, safety, environmental impacts and cost looks similar to opponents already aware that nuclear is low-emitting, suggesting those barriers will still need to be overcome.

Key metrics	Low-emitting/ supports nuclear (29%)	Low-emitting/ opposes nuclear (9%)	Low-emitting/ undecided support (2%)	High-emitting / supports nuclear (18%)	High-emitting / opposes nuclear (31%)	High-emitting – undecided support (11%)
Attitudes						
Concern about impact of climate change – top 2 box (Q65)	63%	67%	56%	57%	66%	53%
Nuclear should play major role in net zero in Canada (Q23)	64%	12%	20%	41%	20%	11%
Canada should use nuclear alongside renewables to meet energy needs (Q25)*	82%	33%	38%	63%	27%	32%
Concern – top 2 box (extremely or definitely) (Q28)						
Storage and management of nuclear waste	53%	88%	59%	59%	79%	56%
Possibility of a nuclear accident	40%	82%	64%	59%	82%	66%
Environmental impact of nuclear energy on land and water	33%	74%	61%	50%	75%	53%
Cost to taxpayers of building new nuclear plants	40%	70%	42%	59%	72%	56%

Targeting | **Results among women (trended)**



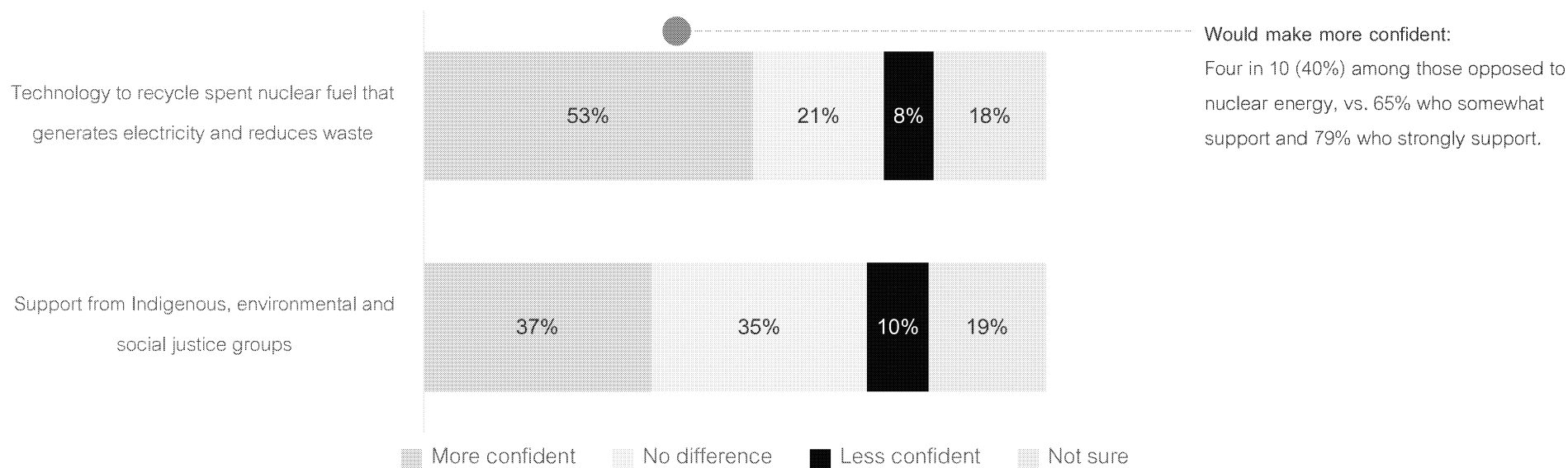
The 2022 report identified women as a key audience if support for nuclear energy is to grow. Since 2022, there is limited progress in women's awareness of or attitudes towards nuclear, and they remain more concerned than men about the potential risks.

		Women		Men	
Key metrics		2022	2023	2022	2023
Awareness	Really/pretty good understanding about nuclear power (Q35)	25%	27%	60%	51%
	Recall recent news about new nuclear power projects (Q38)	10%	14%	21%	25%
	Ever heard of SMRs (Q39)	28%	37%	51%	57%
Attitudes	Support nuclear for electricity in Canada – top 2 box (Q9)	32%	35%	63%	60%
	Nuclear produces low or no emissions (Q16)	30%	26%	61%	55%
	Nuclear should play major role in net zero in Canada (Q23)	22%	28%	44%	43%
	Support new nuclear power plants in Canada – top 2 box (Q31)	38%	41%	64%	61%
Concern (top 2 box)	Storage and management of nuclear waste	75%	69%	64%	62%
	Possibility of a nuclear accident	71%	70%	53%	57%
	Environmental impact of nuclear energy on land and water	62%	61%	44%	50%
	Cost to taxpayers of building new nuclear energy plants	54%	62%	44%	53%

Messaging | **Building confidence in nuclear**

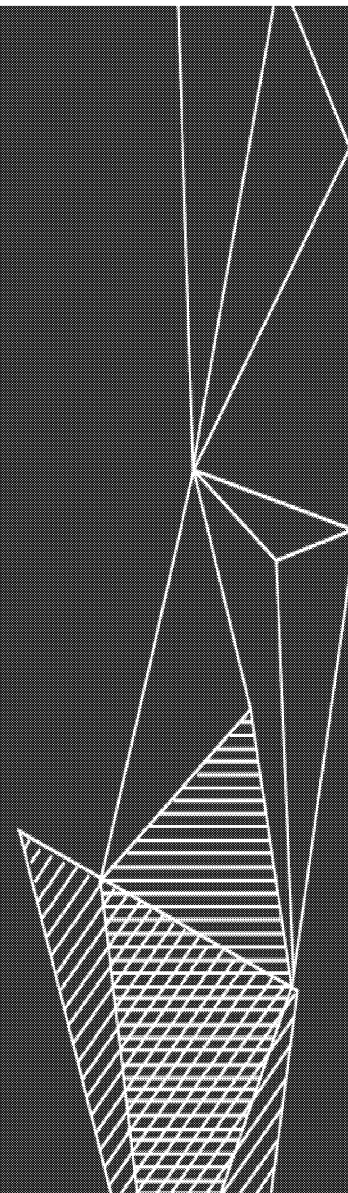
Technology to address nuclear waste would make half of Canadians (including 4 in 10 who oppose nuclear energy) feel more confident in continued/expanded nuclear generation – since it addresses one of the overriding concerns. Support from Indigenous, environmental and social justice groups would have less impact on confidence levels.

Q51-52 Would each of the following make you feel more or less confident in the continued operation or expansion of nuclear energy generation, or would it make no difference? (New question, no trend data available)



Thank you.

ENVIRONICS
RESEARCH



DRAFT SPRING 2023

Supply And Demand for Uranium and the Implications of Different Fuel Cycles

LEAD DEPARTMENT: Natural Resources Canada

SUPPORTING DEPARTMENT: Global Affairs Canada

SUMMARY

[key highlights and considerations for policy makers – max half a page]

BACKGROUND

Canada is a leader in uranium production, fuel supply (refinement/ conversion/ fabrication), and nuclear energy and technology, and has considerable existing uranium mining and milling capacity.

Canada's nuclear power industry has been self-reliant for decades by virtue of its vertically integrated domestic fuel and technology supply chain. This was most evident during the COVID pandemic and recently following the invasion of Ukraine. Most operating nuclear power reactors in the world and most prospective small modular reactors (SMRs) are/will be fueled by enriched uranium. Canadian CANDU nuclear reactors are an exception as they are fueled by unenriched “natural” uranium.

Globally, there are reactors that utilize reprocessed used nuclear fuel as fuel. These can serve as secondary supplies and offset the demand for fresh fuel – be it natural or enriched uranium products. In general, reprocessing can be beneficial for countries with limited uranium supplies, as they are able to make use of unspent energy in nuclear fuels that have already been used once in nuclear reactors. This can provide security of supply and is generally built into national policy frameworks.

The invasion of Ukraine has raised concerns about the security of the global nuclear fuel supply and put significant upward pressure on prices, which have increased 50% (highest since 2011).

CANADIAN URANIUM AND FUEL SUPPLY

Canada has historically held ample supply of domestic uranium resources, and so reprocessing was never deemed necessary nor cost-effective as a means of providing fuel for the reactor fleet. In 2021, 10% of the world's uranium was mined in Canada. Canada is the second largest uranium producer in the world, with production worth \$500M (2021). Of the uranium mined in Canada in 2021, 69% was exported for use in foreign nuclear power reactors and 31% used to fuel Canadian nuclear power reactors .¹

At the current levels of production and price, Canadian uranium deposits will last for another forty years.² There are known uranium resources of 694,000 tonnes of U₃O₈ (588,500 tU), but this is estimated to be higher with continuing exploration.³ Estimates indicate that Canadian uranium yield rates are 10 to 100 times superior to those in other uranium producing countries.⁴

¹ From Energy Fact Book 2022-2023.

² [Canadian Energy Security - Canada.ca](https://www.canada.ca/en/natural-resources/canadian-energy-security)

³ [Uranium in Canada | Canadian Uranium Production - World Nuclear Association \(world-nuclear.org\)](https://world-nuclear.org/information-library/uranium-in-canada)

⁴ [Canadian Energy Security - Canada.ca](https://www.canada.ca/en/natural-resources/canadian-energy-security)

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Canada can expand uranium mining, but uranium refining and conversion facilities are nearing capacity and require capital investments and lengthy regulatory approvals to expand, with some site-specific limitations.

At this time, all operating uranium mines and mills in Canada are located in northern Saskatchewan. Orano Canada (formerly Areva Resources Canada) and Cameco Corporation are the licensees of the active mining and milling facilities.

The active mining and milling facilities include:⁵

- Cigar Lake Mine
- Key Lake Mill
- McArthur River Mine
- McClean Lake Mill
- Rabbit Lake Mine and Mill

Table 1. Annual uranium production in Canada (tonnes U)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
McArthur River	7744	7356	7354	6928	6193	76	0	0	0	423
Cigar Lake	0	132	4345	6666	6925	6925	6925	3885	4693	6928
McClean Lake	0	43	0	0	0	0	0	0	0	0
Rabbit Lake	1587	1602	1621	428	0	0	0	0	0	0
Total	9331	9134	13,320	14,022	13,116	7001	6925	3885	4693	7351
cf. World	59,331	56,041	60,304	63,207	60,514	54,154	54,742	47,731	48,332	48,888

Source: World Nuclear Association⁶

Proposed uranium mining and milling projects:

- Wheeler River, Denison Mines Corporation
 - Proposing to develop an operation that would produce up to 5,400 tonnes of uranium oxide annually for 20 years.
- Rook I, NexGen Energy Ltd.
 - The proposed Rook I project includes underground and surface facilities to support the mining and processing of uranium ore. The main components include an underground mine, an onsite mill to process an average of 1,400 tonnes of ore per day, surface facilities to support the short- and long-term storage of waste rock and ore, an underground tailings management facility, water-handling infrastructure and an effluent treatment circuit, and additional infrastructure to support mining activities.

Currently, there are 5 licensed uranium processing and fuel fabrication facilities operating in Canada:⁷

- Blind River Uranium Facility (Canada's only refining facility)

⁵ [Uranium mines and mills \(cnsccs.gc.ca\)](https://www.cnsccs.gc.ca/uranium-mines-and-mills)

⁶ [Uranium in Canada | Canadian Uranium Production - World Nuclear Association \(world-nuclear.org\)](https://world-nuclear.org/uranium-in-canada)

⁷ [Uranium processing and fuel fabrication \(cnsccs.gc.ca\)](https://www.cnsccs.gc.ca/uranium-processing-and-fuel-fabrication)

s.13(1)(c)
s.21(1)(a)
s.21(1)(b)

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- Port Hope Conversion Facility (Canada’s only conversion facility)
- Cameco Fuel Manufacturing Inc.
- BWXT Nuclear Energy Canada Inc. - Toronto
- BWXT Nuclear Energy Canada Inc. - Peterborough

CANADIAN URANIUM AND FUEL DEMAND

To date, given Canada’s large high-grade uranium deposits, the low price of uranium, and the high cost of reprocessing spent fuel, the nuclear industry has not deemed it necessary nor cost-effective to reprocess spent fuel for Canada’s reactors.

To better understand future uranium needs, Natural Resources Canada solicited projections from SMR vendors and utilities on their anticipated deployments, [REDACTED] based on the IAEA SMR Booklet 2022 with technical specifications.

Table 2. Reactor deployments that underpin the fuel projections

Province, Reactor type, Location	Operation	Date (estimated)	Fuel Required
[REDACTED]			

Table 3. Fuel Composition by Reactor Type, indicating Previously or Currently Used Fuels (o), and Proposed or Theoretical Fuels (x).

Reactor Type	Natural U	Enriched U*	Reprocessed U**	MOX	Other Fuels†
PWR		o	o	o	
PHWR	o	o	o	x	x
BWR		o	x	x	
HTGR		o		x	o
MSR		o	x	x	o
SFR		o		o	x
GCR/AGR	o	o			
Heat Pipe Microreactor		x			x

*Enriched uranium: including LEU (Low-Enriched Uranium, up to 5%), LEU+ (Low-Enriched Uranium Plus, between 5 – 10%), and HALEU (High-Assay Low-Enriched Uranium, between 5% and 20%)

**Reprocessed Uranium fuels may include down blended natural uranium equivalents or re-enriched fuels. Reprocessed uranium composition depends on initial enrichment, but frequently has less than 1% U-235. Reprocessed uranium may be contaminated with traces of fission products and transuranics.

† Other fuels describe fuels not included in Natural U, Enriched U, Reprocessed U, or MOX categories, and fuels using non -standard materials, such as thorium-based fuels, composite fuels, metal alloy fuels, etc.

Pressurized Water Reactor (PWR) technologies typically make use of uranium dioxide UO_2 powder that is sintered into hard ceramic pellets typically enriched between 3 and 5% U-235. Some reactors can make use of reprocessed uranium or MOX fuels.

Pressurized Heavy Water Reactors (PHWR) of the CANDU type (large-scale nuclear currently deployed in Canada) typically use natural uranium (0.7% U-235) based sintered pellets. Studies have demonstrated that CANDU type reactors could use reprocessed U from LWRs or slightly enriched U (e.g., low-void reactivity fuel, LVRF). MOX-type fuel has been tested in research reactors. The design for the AWHR-300 in India is proposed to use thorium-based fuels, such as Th/U and Th/Pu MOX-type.

Boiling Water Reactor (BWR) technologies use fuels similar to PWRs, with fuels typically enriched to near 2.4% U-235.

High Temperature Gas Reactors (HTGR) are currently expected to use uranium-based oxides or carbides with HALEU at <20% U-235, but could make use of other alternative and recycled fuels, including U-Pu, Pu, MOX, and U-Th.

Molten Salt Reactors (MSR) can use a wide range of fuels, although the reference fuel salt is typically a molten mixture of lithium and beryllium fluoride (FLiBe) with dissolved low-enriched uranium (U-235)

DRAFT SPRING 2023

fluoride (UF4). MSRs may make use of spent fuel from other reactors, mixed uranium/plutonium oxide fuels, or other fuels including Th and U-233.

Sodium Fast Reactors (SFR) are currently expected to use uranium-based fuels, either in a mixed oxide form (MOX), U fuels with U-235 between 5 – 20%, or mixed metal alloys. Operational SFR in Russia have used enriched U or reprocessed U in their fuels.

Gas Cooled Reactors (GCR) can use UO₂ fuel with U-235 typically between 2.5% – 3.5%. The Magnox reactors (UK) used natural uranium.

Heat Pipe Microreactors (HPR) are microreactor designs which could use HALEU up to 19.75% U-235 in some designs, or Ceramic metal composite (CERMET) fuel with dispersed UOX, UN, or UC kernels dispersed, e.g., W-UC CERMET fuel.

Table 4. Projected Canadian Demand for Enriched Fuel

TIMELINE	ENRICHED FUEL* (in tonnes)							
	HALEU		LEU+		LEU			
Until 2030								
Until 2035								
*HALEU: High-Assay Low-Enriched Uranium, enriched between 5% and 20%. LEU+: Low-Enriched Uranium Plus, enriched between 5 – 10 %. LEU: Low-Enriched Uranium, enriched up to 5%.								

GLOBAL URANIUM SUPPLY AND DEMAND

Currently, some 60,000 tonnes of uranium are required annually to fuel the world's 410 operating nuclear power reactors. However, with countries increasingly expected to turn to nuclear power to address climate change, energy security and sustainable development, demand could be as high as 100,000 tonnes of uranium per year by 2040. That would require a near doubling of uranium mining and processing from current levels.⁸

Mines in 2021 supplied some 56,961 tonnes of uranium oxide concentrate (U3O8) containing 48,303 tU, 77% of the utilities' annual requirements. The balance is made up from secondary sources including stockpiled uranium held by utilities, and in the last few years of low prices those civil stockpiles have been built up again following their depletion over 1990-2005. Nuclear fuel supply may be from secondary sources including recycled uranium and plutonium from used fuel, as mixed oxide (MOX) fuel.⁹

In December 2023, at the 28th Conference of the Parties (COP28) to the United Nations Framework Convention in Dubai, 22 countries, including Canada, agreed to triple global nuclear power capacity by 2050 to help reach global net-zero emissions.

⁸ [IAEA Symposium Examines Uranium Production Cycle for Sustainable Nuclear Power | IAEA](#)
⁹ [Uranium Markets: World Nuclear Association - World Nuclear Association \(world-nuclear.org\)](#)

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Russian Impacts

Close allies, including the U.S., U.K., E.U., and France, rely on nuclear to power their economies, and view nuclear as key to advancing their climate plans.

Table 5. Global nuclear supply and Russian supply

	% of electricity supplied by nuclear power	% of nuclear fuel supplied by Russia
E.U.	25%	~25%
U.S.	20%	~20%
France	69%	~20%
U.K.	15%	?
Canada	15%	0%

GLOBAL REPROCESSING

Used nuclear fuel has long been reprocessed to extract fissile materials for recycling and to reduce the volume of high-level wastes. Several European countries, Russia, China and Japan have policies to reprocess used nuclear fuel, although government policies in many other countries do not see used fuel as a resource but rather a waste.¹⁰

Table 6. Key commercial reprocessing facilities globally

Facility	Country	Company	Method	Reprocessing Capacity (tonnes/year)
La Hague	France	Orano	PUREX	1600
RT-1 (Mayak)	Russia	Rosatom	PUREX	400
PREFRE (Tarapur)	India	NPCIL	PUREX	200
Kalpakkam	India	NPCIL	PUREX	100
Rokkasho	Japan	JNFL	PUREX	800

¹⁰ Processing of Used Nuclear Fuel - World Nuclear Association (world-nuclear.org)

Annex A: Elaborated criteria for the development of an analysis on an open or closed fuel cycle in Canada

IAEA Definition of Reprocessing: The separation of nuclear material from fission products in irradiated nuclear material.


Elaborated criteria for consideration

- Supply and demand for uranium and the implications of a closed fuel cycle on fuel supply in Canada, for Canadian reactors
 - Current use domestically and international of recycled fuel
 - Projected use and deployment timeline for the use of recycled fuel in Canada (Utilization of reprocessed material in Canadian reactors)
- Reprocessing technologies
 - Purex reprocessing
 - Molten salt electro-refining
 - Oxide electrowinning process
 - Fluoride volatility process
 - Technologies will dictate dual use list implications
- Power supply requirements
 - Industrial energy support
 - Forecasts
 - Cost of electricity
- Environmental effects
 - What waste forms would need to be managed from these projects?
 - Are any of them novel?
 - High level liquid waste in large volumes for example, would be problematic under current framework [NWMO DGR for CANDU bundles]
 - Do we currently have [proposed] solutions in place for any of the waste forms?
 - Wastes are almost certainly not going to be below the detection limit – still HLW
 - International waste situation [France]
 - Impacts of a closed, domestic, fuel cycle vs:
 - Once through
 - Closed
 - What are international examples?
 - Do these projects contribute to sustainable development goals?
- Economic and cost-benefit analysis for a plant
 - Macro-economics
 - Labor force requirements
 - Costs of inspections, sector costs
 - Major costs associated with:
 - Capital
 - Electricity
 - Op EX – benchmark with international examples
 - Taxation
 - IP payments

- Offsets: Sale price of material (current market price? – market price of enriched materials and of reprocessed materials)
 - Potential Canadian economic impact of
 - Domestic deployment only
 - Domestic deployment and export
 - No reprocessing
- Regulatory situation
 - Does the CNSC already have the expertise to regulate?
 - What additional capacity would the CNSC need?
 - NRCAN?
 - GAC?
 - IAAC?
 - International regulator
- Incentives for investors
 - What assurances do investors need from the GOC in order to consider funding to the needed level to develop the technology?
 - Do the needs of the nuclear industry require/suggest that there exists a demand for these government assurances? Is there a reason the government should consider providing incentives to investors of such a project?
- Resource and industrial development
 - Energy security
 - Long term energy supply
- International and regional relations on reprocessing [geopolitical]
 - Impact on other areas of international importance?
 - What do the provinces want/need from the GOC?
 - Implications for the joint convention
 - Implications within the broader G7 community
 - Japans contracts with the UK to reprocess fuel in the UK have been terminated
 - Japans plant is not yet running
 - UK has stopped reprocessing
 - France still has active contracts
 - Evaluate implications for the list of nuclear dual use items [nuclear suppliers group]
 - Safeguards and NPT:
 - NPT: To further the goal of non-proliferation and as a confidence-building measure between States parties, the Treaty establishes a safeguards system under the responsibility of the International Atomic Energy Agency (IAEA). Safeguards are used to verify compliance with the Treaty through inspections conducted by the IAEA. The Treaty promotes cooperation in the field of peaceful nuclear technology and equal access to this technology for all States parties, while safeguards prevent the diversion of fissile material for weapons use.

Used fuel reprocessing working group / Groupe de travail sur le retraitement des combustibles usés

April 26, 2024 2:11 PM

Subject	Used fuel reprocessing working group / Groupe de travail sur le retraitement des combustibles usés
From	Ravary, Liz
To	Tanya.Hinton@international.gc.ca; naina.thoppil@international.gc.ca; alison.grant@international.gc.ca; duck.kim@ec.gc.ca; mary.taylor@ec.gc.ca; Elizabeth.White-Senack@ised-isde.gc.ca; paul.okeefe@ised-isde.gc.ca; julia.cropley@cnscccsn.gc.ca; genevieve.boudrias@cnscccsn.gc.ca; lee.brunarski@cnscccsn.gc.ca; debora.quayle@hc-sc.gc.ca; marc.desrosiers@hc-sc.gc.ca; Daniel.Daigle@tc.gc.ca; david.lamarche@tc.gc.ca
Cc	Prosser, Kathleen; Yuen, Pui Wai; Fairchild, Jamie; Wilkinson, David; Wittmann, Tess (she, her elle, elle); Rector, Brianna (she, her elle, la); Poupore, Jessica; Beauregard-Tellier, Frédéric
Sent	December 18, 2023 3:57 PM
Attachments	 NRCanBrief _UsedFue...

Declassified by ATIP/
Déclassifié par l'ATIP
PROTECTED B / PROTÉGÉ B

Dear colleagues,

I am writing to invite representatives from your department to participate in a working level working group on the subject of used fuel reprocessing.

Canada does not have a policy or a formal internal analysis on commercial reprocessing, including used fuel processing. While nuclear energy and technology, and nuclear non-proliferation, are key to this area, this is a subject that crosses the mandates of many departments. The efforts of this working group, lead by NRCan, will generate a thorough and well documented internal analysis on used fuel reprocessing to support future decisions related to Canada’s nuclear fuel cycle.

This work does not constitute the development of a policy for used fuel reprocessing but is rather a consolidation of the federal government's efforts to understand the risks and benefits associated with the technology. A description of the planned analysis, and the rationale for this undertaking, can be found in the attached Brief.

If you could please have members of your team who are interested and able to participate complete the below poll, we would be grateful to launch this work before the holiday season.

<https://doodle.com/meeting/participate/id/avYOMAge>

Thank you for your support and expertise on the matter as we develop a better understanding of the risks and benefits of used fuel reprocessing from all perspectives within the Government of Canada.

Kind regards,

Frédéric Beauregard-Tellier
Director General, Nuclear Energy and Infrastructure Security Branch

Energy Systems Sector
Natural Resources Canada / Government of Canada
frederic.beauregardtellier@nrcan-rncan.gc.ca / Tel: 613-769-3208

Chers collègues,

Je vous écris pour inviter des représentants de votre département à participer à un groupe de travail sur le retraitement de combustible nucléaire usé.

Le Canada n'a pas de politique ni d'analyse interne formelle sur le retraitement commercial, y compris le traitement des combustibles usés. Bien que l'énergie et la technologie nucléaires, ainsi que la non-prolifération nucléaire, soient essentielles dans ce domaine, il s'agit d'un sujet qui recoupe les mandats de nombreux ministères. Les efforts de ce groupe de travail, dirigé par RNCAN, produiront une analyse interne approfondie et bien documentée sur le retraitement de combustible nucléaire usé afin d'étayer les décisions futures relatives au cycle du combustible nucléaire au Canada.

Ce travail ne constitue pas l'élaboration d'une politique pour le retraitement de combustible nucléaire usé, mais plutôt une consolidation des efforts du gouvernement fédéral pour comprendre les risques et les avantages associés à cette technologie. Une description de l'analyse prévue et de la raison d'être de cette entreprise se trouve dans le mémoire ci-joint (en anglais seulement).

Si vous pouviez demander aux membres de votre équipe qui sont intéressés et en mesure de participer de remplir le questionnaire ci-dessous, nous vous serions reconnaissants de lancer ce travail avant les fêtes de fin d'année.

<https://doodle.com/meeting/participate/id/avYOMAge>

Nous vous remercions de votre soutien et de votre expertise en la matière, car nous cherchons à mieux comprendre les risques et les avantages du retraitement de combustible nucléaire usé en tenant compte de tous les points de vue au sein du gouvernement du Canada.

Je vous remercie de votre collaboration,

Frédéric Beauregard-Tellier
Directeur général, direction de l'énergie nucléaire et de la sécurité des infrastructures
Secteur des systèmes énergétiques
Ressources naturelles Canada / Gouvernement du Canada
Frederic.beauregardtellier@nrcan-rncan.gc.ca / Tél: 613-769-3208

Reprocessing Brief – November 2023

A Framework for Used Fuel Reprocessing: an analysis to support future decisions related to Canada's nuclear fuel cycle.

ISSUE: Canada does not have a specific policy or a formal internal analysis on commercial reprocessing, including used fuel processing. A series of public statements qualifying used fuel processing under a variety of funding sources (investment tax credits, strategic innovation fund contribution) has also resurfaced this sensitive topic in the public and media domain. **As we look to build out the next generation of nuclear, it is important that the Government of Canada is well positioned to make informed decisions related to all aspects of nuclear energy, including advanced nuclear fuel cycles. The proposed framework will be a thorough and well documented internal analysis to support future policies/decisions on reprocessing.**

The proposed path forward will be particularly important if Canada realizes its full nuclear ambitions, as these installations will have a significant impact on the volumes of extracted resources and the corresponding used nuclear fuel, potentially influencing the value of a closed vs. open nuclear fuel cycle in the decades to come. Work done today in the development of a framework to understand reprocessing will enable future sound and rational choices about this evolving technology and its role in the nuclear energy landscape. **This work does not constitute the development of a policy for used fuel reprocessing, rather the documentation of the federal governments efforts to understand the risks and benefits associated with the technology.**

An advanced nuclear fuel cycle in Canada – considerations for an open or a closed fuel cycle.

The question on if to reprocess used nuclear fuel is that of an open or closed fuel cycle – a once through utilization of fuel [current status quo for CANDU reactors] or a cycle that implements recycling of fuel [advanced fuel cycle – requires reprocessing]. The consideration of implementing a closed fuel cycle is one for the long term;

- This exercise should not be considered as the Government of Canada taking any initiative towards the implementation of reprocessing, or a closed fuel cycle. This is an exercise in due diligence for long-term planning related to Canada's nuclear sector.
- The deployment of used nuclear fuel reprocessing is a sensitive topic of discussion due in large part to the proliferation risks and associated safeguards, and the novel, and likely complex, radioactive waste streams. The proposed analysis will evaluate both risks and benefits.

What are the objectives in completing this work?

- In Canada, matters that relate to nuclear activities and substances are under the jurisdiction of the Government of Canada. NRCAN is responsible for determining Canada's domestic nuclear energy policies, including those that concern radioactive waste and fuel. This would also include reprocessing.
- Current policies that relate to reprocessing include:
 - Policy for Radioactive Waste Management and Decommissioning
 - Policy on Enrichment
 - Nuclear Non-Proliferation Policy [GAC lead]

Proposed approach for development of a framework for reprocessing:

Reprocessing Brief – November 2023

In the 1973 uranium enrichment policy, the Government of Canada issued a policy statement that sets out its “attitude towards the establishment of uranium enrichment facilities in Canada”, and was based on a study that concluded in 1971. The statement indicates that if an enrichment plant proposal was shown to be in the national interest, the government would consider such proposals against a set of factors. Considering a proposal in the mid-1970s, an MC was prepared that outlines that these factors were assessed by an interdepartmental committee of the day, concluding that “the construction of an enrichment plant in Canada [to produce enriched uranium] for the export market is less attractive in 1976 than in 1971. **However, there is potential for a Canadian enrichment plant in future.**” This analysis demonstrated the utility of the technology agnostic, proposal specific, uranium enrichment policy.

Ongoing work proposes the use of a similar approach for developing a documented analysis for used fuel reprocessing in Canada. This utilizes the factors set out in the uranium enrichment policy as a baseline, updating them to generate a set of criteria that are more relevant to Canada’s modern frameworks and standards. Initial work will assess these criteria, outlined below, developing a corresponding set of discussion papers to lay the groundwork for any future policy development related to used fuel reprocessing. This will provide the Government of Canada with the detail and information necessary to make informed decisions related to reprocessing in Canada and determine strategies and paths forwards for any future public facing policy initiatives in the space, should the need exist.

The short list of criteria for consideration under the analysis framework for reprocessing in Canada:

- Energy Security - Supply and demand for uranium and the implications of different fuel cycles
- Reprocessing technologies
- Power supply requirements [Grid]
- Environmental effect
- Economic and cost-benefit analysis for a plant, competitiveness
- Regulatory situation
- Incentives for investors
- Resource and industrial development
- Non-Proliferation and safeguarding
- Import and Exports
- International and regional relations on reprocessing
 - Includes indigenous and host communities

Next steps and summary of approach

Short term (1-2 months):

Reprocessing Brief – November 2023

- Reach out to OGD colleagues (GAC, ECCC, CNSC, ISSED, TC, HC) to establish working level working group, commitment to participate and contribute.
- Kick-off meeting seeking consensus and comment on proposed workplan and criteria, establishing clear scope of work.
- Finalize criteria framework for internal analysis.

Medium term (3-6 months):

- Draft papers and analysis undertaken for each criterion.
- Consult and collaborate with relevant departments for each analysis – for example – GAC on non-proliferation, CNSC on regulatory frameworks.

Long term (6-10 months)

- Finalize analysis, develop executive summary document outlining conclusions, in consultation with relevant departments.
- Consolidate findings into analysis framework mirroring 1970s enrichment policy.
- Assessment of current internal and external conditions to determine if a public process is desired/needed:
 - If yes, proceed with planning for transparent, public facing policy-development process, utilizing completed analysis to inform discussion papers and engagement materials.
 - If no, circulate internal analysis with OGD colleagues and create formal note to file for NRCAN that articulates internal results.

Outcome at 10-12 months: informed internal analysis on commercial used fuel reprocessing in Canada over the short, medium, and long term, with well supported documentation that, should the need arise, can be used to develop a public facing position for the broader Government of Canada. Work to this point is maintained exclusively within the federal family, and remains consistent with, and cognizant of, other domestic and international objectives within the nuclear fuel cycle (accessing enriched materials to meet the immediate needs of SMR deployments). Any steps towards policy development would be sought from the government of the time, including consideration for an open and transparent engagement with the public, interested Canadians, Indigenous Peoples, and industry.

Additional materials:

- ANNEX A: Canada's Uranium Enrichment Policy
- ANNEX B: Work plan summary for the analysis related to used fuel reprocessing

RE: Moltex funding situation

April 26, 2024 1:58 PM

Subject	RE: Moltex funding situation
From	Anderson, Emma (she, her elle, la)
To	Wilkinson, David; Prosser, Kathleen; Yuen, Pui Wai
Sent	September 15, 2023 9:07 AM

PROTECTED A - PROTÉGÉ A

Hello,

We don't have any off-the shelf responses, but in general, both in Canada and internationally, there is agreement that there would still be a need for a deep geological repository for disposal of high-level waste created during these processes.

Best,

Emma

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: Friday, September 15, 2023 8:59 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Anderson, Emma (she, her | elle, la) <Emma.Anderson@nrcan-rncan.gc.ca>
Subject: RE: Moltex funding situation

PROTECTED A - PROTÉGÉ A

I agree with Kate's assessment that he's not asking us to answer the question.

D

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Friday, September 15, 2023 8:53 AM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Cc: Anderson, Emma (she, her | elle, la) <Emma.Anderson@nrcan-rncan.gc.ca>
Subject: RE: Moltex funding situation

PROTECTED A - PROTÉGÉ A

Apologies –

I thought it was an email *from* Laurie – it's just Rory's reference to the question they get from DGR intervenors. He's not asking us a question even. We can reply if you feel necessary, even just to acknowledge his email, but it's going to be the same canned response that we've been sharing with others that the GOC remains interested in exploring the benefits and risks. Looping in Emma on the DGR front – do any of our standard responses on DGR questions address the impacts of/of not reprocessing/recycling?

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Sent: Friday, September 15, 2023 8:42 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Subject: Fwd: Moltex funding situation

Sorry, thought I included this attachment in my previous email on this.

Sent from my iPhone

Begin forwarded message:

From: Rory O'Sullivan <[REDACTED]>
Date: September 7, 2023 at 3:36:44 PM EDT
To: "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>
Subject: Fw: Moltex funding situation

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Hi Pui,

I wanted to share this with you as things have progressed for us. I have kept Justin and his team broadly in the loop but perhaps it would be helpful for us to connect.

[REDACTED] If Moltex doesn't get to the point of demonstrating that technology, that question will still need answering.

Rory

From: Rory O'Sullivan
Sent: 07 September 2023 16:32
To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; [REDACTED]
<[REDACTED]>
Subject: Moltex funding situation

Hi Justin,

Here is a 2 pager of our issues, answering some of the questions you asked. I didn't follow up directly after the call with this as there wasn't much point putting time into the bigger picture ideas when there is a near term crunch.

Can you please pass this on to the DMA or ADM to discuss? Happy to have a call first if helpful.

Note that we do have a \$3m ask into ACOA.

Thanks and regards,

Rory O'Sullivan
Chief Executive Officer
+1 437 778 4232
[REDACTED]

Moltex Energy
75 Prince William Street | Unit 102 | Saint John | New Brunswick | Canada | E2L 2B2
+1 506 214 8551 | info@moltexenergy.com | www.moltexenergy.com

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RE: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

April 26, 2024 2:14 PM

Subject	RE: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing
From	Yuen, Pui Wai
To	Prosser, Kathleen
Cc	Hilborn, Jade (she, her elle, elle); Wilkinson, David
Sent	December 9, 2023 8:01 AM

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Kate for the additional clarification. I don't think we need to put intergovernmental below, so please remove for the final response.

Since we are now committing to sharing the article with MINO, can you confirm with Chelsea the steps for that before responding to [REDACTED]

Dave, if you don't mind, please send it out next week on my behalf once you've heard from DGO (and if there are any tweaks needed from the discussion).

Thanks!
PW

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 8 décembre 2023 08:22
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Subject: RE: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

UNCLASSIFIED - NON CLASSIFIÉ

Morning,

I wouldn't reply to the email thread you attached, he doesn't ask anything of us (other than to share with the Minister), so *at most* we could acknowledge it in this correspondence.

He doesn't actually ask about "international dialogue", he states "the intergovernmental consultations". What I've proposed is that we point to our *Canadian intergovernmental* discussions as the meaning behind this language, and as Tanya said we can't speak to the *international* intergovernmental conversations. Have edited below according to your comments.

-Kate

Dear [REDACTED]

Thank you for sharing your concerns. As mentioned in the letters, these important concerns are kept in mind throughout Canada's nuclear sector. Natural Resources Canada is responsible for domestic policy related to reprocessing, and so is not leading any conversation happening in international fora. We continue to have ~~intergovernmental~~ conversations with implicated government departments in Canada, as well as with other levels of government, recognizing that reprocessing is a sensitive technology. We are committed to the Treaty on the Non-Proliferation of Nuclear Weapons and reprocessing research and technology in Canada is and would be subject to IAEA safeguard verification.

Regardless of any potential future policy work by the Government, a proposal for commercial deployment of used fuel reprocessing would be subject to a rigorous regulatory review process with opportunities for the public to provide input. Public engagement is an important part of the democratic process that provides the opportunity to shape government policies, programs, services, and regulatory initiatives that improves the health and safety of Canadians. I'd also like to acknowledge receipt of your other email correspondence and assure that we do of course keep the senior leadership of our organization informed of significant developments in the areas of new nuclear technologies, as appropriate.

For further enquiries, please contact the following:

Email: nrcan_questions-questions@nrcan-rncan.gc.ca

Thank you for sharing your views on this important issue.

Sincerely,
Pui Wai

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Sent: Thursday, December 7, 2023 10:00 PM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: RE: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Kate.

A0068204_2-000522

s.19(1)

s.21(1)(a)

s.21(1)(b)

We don't really answer his question though, whether international dialogue is happening. We say that we are responsible for domestic discussions, but I fear that he may come back and ask perhaps Tanya to clarify from GAC's perspective in terms of what international dialogues are taking place and in what forum, if any (and I see that GAC is not able to disclose any dialogues.. so not ideal). Can we perhaps add a line that any deployment of commercial reprocessing would be subject to IAEA verification and safeguarding (basically along the lines that, there will be dialogue/ international scrutiny/safeguarding of it)

Also, are we responding to his other reply as well? (attached) If so, please prepare a flip friendly.

Thanks!

PW

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: 7 décembre 2023 16:02

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>

Subject: FW: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

UNCLASSIFIED - NON CLASSIFIÉ

Hi Pui Wai,

Please see below for the reply we drafted to [REDACTED] and GACs input from Tanya.

Thanks!

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>

Sent: Thursday, December 7, 2023 3:39 PM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>

Subject: RE: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

UNCLASSIFIED - NON CLASSIFIÉ

Hi Kate,

Thank for reaching out and sorry for the delay in getting back.

[REDACTED]

A0068204_3-000523

s.19(1)
s.21(1)(a)
s.21(1)(b)

Therefore, I think your draft is fine

Thanks
Tanya

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Monday, December 4, 2023 1:34 PM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Cc: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>
Subject: FW: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

UNCLASSIFIED - NON CLASSIFIÉ

Hi Tanya,

Interesting set of emails over the weekend! For your awareness, we also received the attached which I don't believe you were copied on. We've drafted the below response for Pui Wai's consideration, and would welcome any of your thoughts on this approach. Also happy to defer to you folks if you'd prefer, but as Pui Wai was the primary recipient we're proposing she reply, if briefly.

Happy to connect if that would be useful.

Best,
Kate

Dear

Thank you for sharing your concerns. As mentioned in the letters, these important concerns are kept in mind throughout Canada's nuclear sector. Natural Resources Canada is responsible for domestic policy related to reprocessing, and so is not leading any conversation happening in international fora. We continue to have conversations with implicated government departments in Canada, as well as with other levels of government, recognizing that reprocessing is a sensitive technology. We are committed to the Treaty on the Non-Proliferation of Nuclear Weapons and protecting the health and safety of Canadians when it comes to nuclear energy and the management of radioactive waste.

Regardless of any potential future policy work by the Government, a proposal for commercial deployment of used fuel reprocessing would be subject to a rigorous regulatory review process with opportunities for the public to provide input. Public engagement is an important part of the democratic process that provides the opportunity to shape government policies, programs, services, and regulatory initiatives that improves the health and safety of Canadians.

For further enquiries, please contact the following:

Email: nrcan_questions-questions_rncan@nrcan-rncan.gc.ca

A0068204_4-000524

Thank you for sharing your views on this important issue.

Sincerely,
Pui Wai

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: [REDACTED]
Sent: Saturday, December 2, 2023 5:53 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Susan O'Donnell <susanodo.ca@gmail.com>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca;
Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; [REDACTED]
Subject: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

UNCLASSIFIED - NON CLASSIFIÉ

Dear Director Yuen,

I have circulated to the US nonproliferation experts who signed the letters of concern to Prime Minister Trudeau about Canada's reprocessing policy the letters of response from Ministers O'Regan and Wilkinson that you kindly re-sent yesterday.

One of my co-signatories, [REDACTED] copied here, pointed out that Minister Wilkinson's letter included the sentence:

"The Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure and environmentally sustainable way. *Intergovernmental consultations on the implications of commercial reprocessing, including for non-proliferation, are ongoing*" (emphasis added).

We are very gratified to learn that.

Could you or Tanya Hinton at Global Affairs, who you copied and I have copied here, kindly inform us whether the intergovernmental consultations referred to are under the auspices of Nuclear Suppliers Group, the IAEA, bilateral with the US or in some other venue?

With very best regards,

[REDACTED]

A0068204_5-000525

From: "Yuen, Pui Wai" <puiwai.yuen@NRCan-RNCan.gc.ca>

Date: Friday, December 1, 2023 at 5:38 PM

To: [REDACTED], Susan O'Donnell
<susanodo.ca@gmail.com>

Cc: "Prosser, Kathleen" <Kathleen.Prosser@NRCan-RNCan.gc.ca>,

"Tanya.Hinton@international.gc.ca" <Tanya.Hinton@international.gc.ca>, [REDACTED]

[REDACTED] "Wilkinson, David" <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

Dear [REDACTED] and others,

Thank you for your follow-up, and please consider this a response to your recent collective inquiries on this topic. We are pleased to have received confirmation from [REDACTED] that the recent response from our Assistant Deputy Minister's Office on reprocessing was received in reply to your September 22, 2023, letter.

We have also been able to confirm that two previous responses on the topic of reprocessing were sent to [REDACTED] from our Minister's Office on August 13, 2021, from Minister O'Regan, and on January 5, 2022, from Minister Wilkinson. We have resent them to [REDACTED] and given that the responses were sent to him personally, we will leave it with [REDACTED] should he wishes to forward them.

Thank you for your patience.

Sincerely,
Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: [REDACTED]

Sent: 27 novembre 2023 08:29

To: Susan O'Donnell <susanodo.ca@gmail.com>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca;

Subject: Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

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dessous***

Thanks, Susan!

I look forward to receiving copies of the letters to me from Natural Resources Canada and will share them with the other US signatories of the three letters from US nonproliferation experts to Prime Minister Trudeau.

With very best regards,

From: Susan O'Donnell <susanodo.ca@gmail.com>

Date: Monday, November 27, 2023 at 5:01 AM

To: "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>

Cc: "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>,
"Tanya.Hinton@international.gc.ca" <Tanya.Hinton@international.gc.ca>,

Subject: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

Good morning Pui Wai and colleagues,

I'm following up on a point raised during our zoom meeting on November 17.

will be sending out notes and official follow-up in due course.

I appreciate your engagement, Pui Wai, Kathleen and Tanya on the reprocessing topic. As I mentioned at the meeting, what most concerns me is the lack of transparency by the government / public service about the risks of reprocessing. Canadians need to understand both the risks and the perceived benefits to be able to make informed opinions about it.

Pui Wai, at the meeting asked about the open letters to the PM from and colleagues in the U.S. raising concerns about the Moltex project and reprocessing. You stated that NRCan had responded twice to those letters. I mentioned that I had communicated with who had not received a response. Last week I checked again and he confirmed that he had not received a response.

We invited to our Nov. 17 meeting but he was unable to attend. I'm cc'ing him here along with who signed the last open letter and who were able to attend the meeting. I've also cc'd who was also at the meeting and is communicating with me about this.

Pui Wai you seemed certain that NRCan did respond to those open letters; by sending this email I'm not trying to put you on the spot but rather to clear up what's obviously a miscommunication. The letters that NRCan sent did not reach the intended recipient so something went awry somewhere.

If the NRCan responses were open letters could you please send them to us by reply email. If they were sent personally to could you please resend to him and he can forward them to

A0068204_7-000527

us if he so wishes.

Thanks everyone for your engagement on this important topic.

Susan

Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

Susan O'Donnell, PhD
Adjunct Research Professor
Lead investigator, the [CEDAR](#) project
Environment and Society Program
St. Thomas University
Fredericton, New Brunswick, Canada
susanodo.ca@gmail.com

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RE: Reprocessing Working Group Kick-Off Meeting Summary and Next Steps

April 26, 2024 2:28 PM

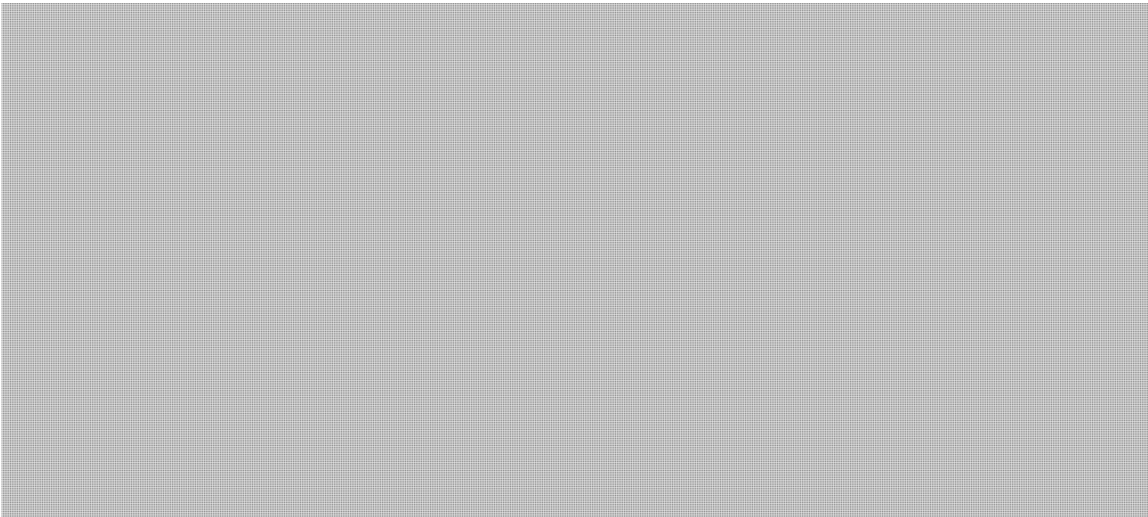
Subject	RE: Reprocessing Working Group Kick-Off Meeting Summary and Next Steps
From	Henley, Tessa
To	Wittmann, Tess (she, her elle, elle); Reinholz, David; Kent, Michael; Amalraj, Julian
Cc	Temnikov, Dimitri; Fairchild, Jamie; Wilkinson, David; Hilborn, Jade (she, her elle, elle); Yuen, Pui Wai; Hoult, Colin; Brunarski, Lee
Sent	April 15, 2024 2:56 PM

Declassified by ATIP/
Déclassifié par ATIP

Good afternoon Tess,

I hope your week's off to a good start. Please find below the CNSC's comments. We don't have any feedback to provide on the meeting summary.

CNSC Comments on NRCan Kick-Off Deck:



Thanks,
Tessa

Tessa Henley
(she, her, elle)

Policy Officer, International and Government Affairs Division
Canadian Nuclear Safety Commission
tessa.henley@cnscccsn.gc.ca

Agente des politiques, Division des affaires internationales et gouvernementales
Commission canadienne de sûreté nucléaire
tessa.henley@cnscccsn.gc.ca

-----Original Message-----
From: Wittmann, Tess (she, her | elle, elle)
Sent: Thursday, April 11, 2024 12:06 PM

To: Henley, Tessa ; Reinholz, David ; Kent, Michael ; Amalraj, Julian
Cc: Temnikov, Dimitri ; Fairchild, Jamie ; Wilkinson, David ; Hilborn, Jade (she, her | elle, elle) ; Yuen, Pui Wai ; Hoult, Colin ; Brunarski, Lee
Subject: RE: Reprocessing Working Group Kick-Off Meeting Summary and Next Steps

EXTERNAL EMAIL – USE CAUTION / COURRIEL EXTERNE – FAITES PREUVE DE PRUDENCE

PROTECTED B - PROTÉGÉ B

Hi Tessa,

COB April 15 works, thanks for letting us know.

Best,
Tess

-----Original Message-----

From: Henley, Tessa
Sent: Thursday, April 11, 2024 11:58 AM
To: Wittmann, Tess (she, her | elle, elle) ; Reinholz, David ; Kent, Michael ; Amalraj, Julian
Cc: Temnikov, Dimitri ; Fairchild, Jamie ; Wilkinson, David ; Hilborn, Jade (she, her | elle, elle) ; Yuen, Pui Wai ; Hoult, Colin ; Brunarski, Lee
Subject: RE: Reprocessing Working Group Kick-Off Meeting Summary and Next Steps

PROTECTED B - PROTÉGÉ B

Hi Tess,

The CNSC will be having a meeting next Monday to coordinate our comments, so would it be alright if we provide them by COB April 15?

We tried to meet earlier but many folks weren't available unfortunately.

Thanks,
Tessa

Tessa Henley
(she, her, elle)

Policy Officer, International and Government Affairs Division Canadian Nuclear Safety Commission
tessa.henley@cnsccsn.gc.ca

Agente des politiques, Division des affaires internationales et gouvernementales Commission
canadienne de sûreté nucléaire tessa.henley@cnsccsn.gc.ca

-----Original Message-----

From: Wittmann, Tess (she, her | elle, elle)
Sent: Thursday, April 11, 2024 11:49 AM
To: tanya.hinton@international.gc.ca; naina.thoppil@international.gc.ca; Kim,Duck (ECCC) ; jennifer.mckay@ec.gc.ca; catalin.obreja@ec.gc.ca; Elizabeth.White-Senack@ised-isde.gc.ca; laura.nourallah@ised-isde.gc.ca; Reinholz, David ; Kent, Michael ; Henley, Tessa ; Amalraj, Julian ; marc.desrosiers@hc-sc.gc.ca; Daniel.Daigle@tc.gc.ca; Rector, Brianna (she, her | elle, la) ; Poupore, Jessica ; matthew.dalzell2@prairiescan.gc.ca; anne.ballantyne@prairiescan.gc.ca; Rosaasen, Canute (PrairiesCan) ; Cox, Jenny ; Edwards, Geoff
Cc: Temnikov, Dimitri ; Fairchild, Jamie ; Wilkinson, David ; Hilborn, Jade (she, her | elle, elle) ; Yuen, Pui Wai ; Hoult, Colin

A0068205_2-000530

Subject: RE: Reprocessing Working Group Kick-Off Meeting Summary and Next Steps

EXTERNAL EMAIL – USE CAUTION / COURRIEL EXTERNE – FAITES PREUVE DE PRUDENCE

Declassified by ATIP/
PROCESSED BY ATIP / DÉCLASSIFIÉ PAR ATIP

Good afternoon,

Sending a gentle reminder that comments on these documents are due COB April 12, 2024. We look forward to hearing your thoughts.

Thanks again,
Tess

-----Original Message-----

From: Wittmann, Tess (she, her | elle, elle)

Sent: Thursday, March 28, 2024 4:44 PM

To: tanya.hinton@international.gc.ca; naina.thoppil@international.gc.ca; duck.kim@ec.gc.ca; jennifer.mckay@ec.gc.ca; catalin.obreja@ec.gc.ca; Elizabeth.White-Senack@ised-isde.gc.ca; laura.nourallah@ised-isde.gc.ca; david.reinholz@cnscccsn.gc.ca; michael.kent@cnscccsn.gc.ca; tessa.henley@cnscccsn.gc.ca; julian.amalraj@cnscccsn.gc.ca; marc.desrosiers@hc-sc.gc.ca; Daniel.Daigle@tc.gc.ca; Rector, Brianna (she, her | elle, la) ; Poupore, Jessica ; matthew.dalzell2@prairiescan.gc.ca; anne.ballantyne@prairiescan.gc.ca; Rosaasen, Canute (PrairiesCan) ; Cox, Jenny ; Edwards, Geoff

Cc: Temnikov, Dimitri ; Fairchild, Jamie ; Wilkinson, David ; Prosser, Kathleen ; Hilborn, Jade (she, her | elle, elle) ; Yuen, Pui Wai ; Hoult, Colin

Subject: Reprocessing Working Group Kick-Off Meeting Summary and Next Steps

Dear colleagues,

Thank you again for your participation in the working group on used fuel reprocessing.

The following two documents are attached to this email:

1. Reprocessing Working Group Kick-Off – Please see the new slides 12-20 for the Elaborated Criteria and roles.
2. Feb.23 Kick-Off Meeting Summary

We invite you to share your comments on these documents by April 12, 2024, especially on the elaborated criteria and roles, to establish consensus going forward.

NRCAN will soon be sending out invitations for the kickoff meetings for each subgroup be based on identified participants in the power point document.


Thank you for your support and expertise on the matter.

Kind regards,
Tess

A0068205_3-000531

FW: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt

April 29, 2024 12:32 PM

Subject	FW: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Wilkinson, David; Wittmann, Tess (she, her elle, elle)
Sent	November 28, 2023 2:39 AM
Attachments	 194268 MIN SIGN...

Attached is the signed copy from the previous correspondence.

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: "Prosser, Kathleen" <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Date: 2023-10-03 2:57 p.m. (GMT+01:00)
To: Tanya.Hinton@international.gc.ca
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt

Hi Tanya -

The timelines for our docket have this moving past our DGO on October 11th, so I'd like to have it in front of my Director by EOD Thursday to get it moving before the end of the week - if at all possible it would be great to have your edits by 2 pm Thursday.

On what letters have been sent before, I have the attached from January 2022 but nothing signed in response to the earlier letters in 2021. Can certainly note the letter from Jan 2022 but wouldn't want to reference anything else as we don't have the records on our end confirming it was ever sent..

-Kate

Kathleen Prosser, PhD.

(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

-----Original Message-----

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Friday, September 29, 2023 5:06 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

Hi Kate

Thanks for sharing. It's a good draft. I do have a few suggested edits, but would like to run them by my Director. When do you need input by?
I was also wondering if you were ever able to confirm that the previous letter was sent? I know Dan was never able to track down a signed version, so I'm now wondering if it in fact it was never sent. If it was, you could perhaps note that in your reply (but of course, I leave that to NRCan)

Tanya

-----Original Message-----

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: September 29, 2023 3:14 PM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

**Declassified by ATIP/
DÉCLASSIFIÉ PAR L'APR**

Hi Tanya,

Attached is an early draft for your review, this hasn't gone through any of the approval chains yet but welcome your thoughts.

Thanks!
-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada Division de l'uranium et des
déchets radioactifs | Ressources naturelles Canada _____

-----Original Message-----

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Friday, September 29, 2023 2:10 PM
To: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Daniel.Barbarie@international.gc.ca;
Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen

A0068206_2-000533

<Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>;
Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-
RNCan.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

Sorry to Daniel and Dan. I added the wrong person!

Grateful if GAC could be consulted on your reply, as our Minister was also forwarded the letter.

Thanks
Tanya

-----Original Message-----

From: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Sent: September 28, 2023 4:19 PM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>; Barbarie, Daniel -IGN
<Daniel.Barbarie@international.gc.ca>; Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen
<Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>;
Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-
RNCan.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

**Declassified by ATIP/
Déclassifié par l'ATIP**

Hi Tanya,

Thanks for reaching out. I believe it's in Dave and Kate's capable hands as we speak. Looking for
them to confirm.

Jamie

(he/him/il/lui)
Senior Advisor | Conseiller principale
Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs
Telephone | Téléphone: 343.543.6983
NEW: Jamie.Fairchild@NRCan-RNCan.gc.ca

-----Original Message-----

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Thursday, September 28, 2023 3:41 PM
To: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Daniel.Barbarie@international.gc.ca;
Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>
Subject: FW: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

Hello

Just wondering if NRCan will plan to take the lead on responding to this, as you did in the past?
I also note that the letter suggests they never received the previous reply, which is a bit curious.

Tanya

A0068206_3-000534

-----Original Message-----

From: Graham, Mark -IGD <Mark.Graham@international.gc.ca>
Sent: September 28, 2023 1:46 PM
To: Bournillat, Frankie -DCC <Frankie.Bournillat@international.gc.ca>; Thoppil, Naina -IGN <Naina.Thoppil@international.gc.ca>; Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt

Thanks Frankie. I have looped in IGN colleagues, but the lead for a response would probably lie with NRCan who could reach out to us as appropriate.

Mark

-----Original Message-----

From: Bournillat, Frankie -DCC <Frankie.Bournillat@international.gc.ca>
Sent: September 28, 2023 1:35 PM
To: EXTOTT (IGD) <igd@international.gc.ca>; *IGD <D-IGD@international.gc.ca>
Subject: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt

REQUEST / DEMANDE : Record A06255-2023 has been assigned to DRAFT a reply for MINA signature. Please advise us as soon as possible if this tasking has been misdirected. / L'enregistrement A06255-2023 a été assigné à votre direction générale pour la rédaction d'une réponse pour la signature de MINA. Si cette demande a été adressée au mauvais endroit, veuillez nous en avertir dès que possible.

CORRESPONDENT / CORRESPONDANT : [REDACTED]

SUBJECT / OBJET : Non-proliferation and disarmament / Non-prolifération et désarmement

DESCRIPTION : Request for a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate plutonium from CANDU spent fuel (no record of September 22, 2023, email addressed to MINA at her parl.gc.ca addy)

LANGUAGE / LANGUE : Draft replies must be in the same official language as the incoming correspondence (in both official languages if received as such). / La réponse doit être dans la même langue officielle que la correspondance reçue (dans les deux langues officielles si elle est reçue comme telle).

DEADLINE / ÉCHÉANCIER : 2023-10-19.

DELIVERY / LIVRAISON : Attach approved draft (Word) to MCMS record. Close all bureau and divisional routings. Open new routing and assign to DCC/Editor with Task: "Edit." Save the record. If no access to MCMS, send by email to *DCC Editors - Réviseurs. / Joignez l'ébauche approuvée (Word) à l'enregistrement SGCM. Fermez tous les acheminements à la direction générale et à la direction. Ajoutez un nouvel acheminement à DCC/Editor, avec la tâche « Edit ». Sauvegardez l'enregistrement. Si vous n'avez pas accès au SGCM, veuillez transmettre par courriel à *DCC Editors - Réviseurs.

APPROVAL, TEMPLATE AND OTHER INSTRUCTIONS:

A0068206_4-000535

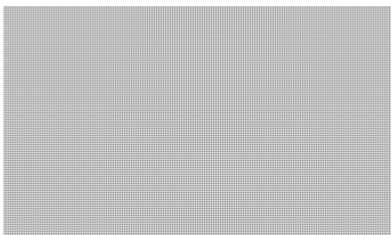
<http://modus/services/int-ser/comm/7097897-7097899.aspx?lang=eng>

APPROBATION, GABARIT ET AUTRES INSTRUCTIONS :

<http://modus/services/int-ser/comm/7097897-7097899.aspx?lang=fra>



January 5, 2022



The Prime Minister's Office has forwarded to me a copy of your correspondence of December 3, 2021, regarding plutonium separation from CANDU spent fuel. Thank you for taking the time to write.

As the former Minister of Natural Resources indicated in his response of August 13, 2021, to your previous correspondence, our climate plan includes an array of measures and investments in renewable and next-generation technologies, including technologies that will bring more clean, non-emitting power onto our grids, encourage cleaner modes of transportation such as zero-emission vehicles and transit, and make our homes, businesses, and industries more energy-efficient.

As part of this plan, the Government of Canada is working closely with partners to ensure that any future development of Small Modular Reactor technology can be done safely. Canada has a long history of safe and responsible development of nuclear energy, which plays an important role in Canada's current energy mix. Small Modular Reactors represent a new field of innovation and a potential tool to reduce emissions while creating jobs and stimulating economic growth. Several provincial governments, including New Brunswick, Ontario, Alberta and Saskatchewan, as well as Indigenous communities and organizations, have expressed a clear interest in using Small Modular Reactor technologies to reduce their greenhouse gas emissions, decarbonize heavy industry and spur economic development.

The Government of Canada is also working closely with like-minded countries such as the United States and the United Kingdom to realize this important opportunity for Canada. The strong interest and collaboration among governments and stakeholders in advancing new nuclear technologies, while ensuring international non-proliferation norms are respected, is encouraging. The Government of Canada's efforts position Canada as a global leader in the safe and responsible development of nuclear energy, with nuclear safety, security and non-proliferation as our guiding principles.

Canada

The Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure and environmentally sustainable way. Intergovernmental consultations on the implications of commercial reprocessing, including for non-proliferation, are ongoing.

The reprocessing of used CANDU fuel, as proposed by Moltex, has the potential to power existing and future nuclear reactors while potentially reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository. If this technology proves viable, it would allow Canada to extract additional energy from a used resource, potentially providing Canadians with emissions-free energy for years to come while reducing long-lived radioactive waste. Canada's investment in Moltex enables research that will allow a better understanding of the technology, including both benefits and risks that must be considered as part of any policy approval by the Government of Canada on reprocessing.

We recognize that nuclear reprocessing is a technology that raises sensitive non-proliferation concerns. The international community, including Canada, remains attentive to ensuring that reprocessing technologies do not negatively impact our shared nuclear non-proliferation priorities. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, in line with our multilateral engagements with the Nuclear Suppliers Group, as well as rigorous safeguards verification by the International Atomic Energy Agency.

Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of International Atomic Energy Agency safeguards to provide assurances that nuclear materials and technology are used solely for peaceful purposes.

The pathway to net zero by 2050 is the challenge of our time. To be successful, we must consider all potential options and solutions emerging from across the different energy sectors. We appreciate hearing your perspectives on these important issues.

Yours sincerely,



The Honourable Jonathan Wilkinson, P.C., M.P.

c.c.: **Distribution**

Canada

- 3 -

c.c.: **Distribution**




The Honourable Mélanie Joly, P.C., M.P.
Minister of Foreign Affairs
melanie.joly@international.gc.ca

The Honourable Steven Guilbeault, P.C., M.P.
Minister of Environment and Climate Change
ministre-minister@ec.gc.ca

Canada


RE: ADM Correspondence

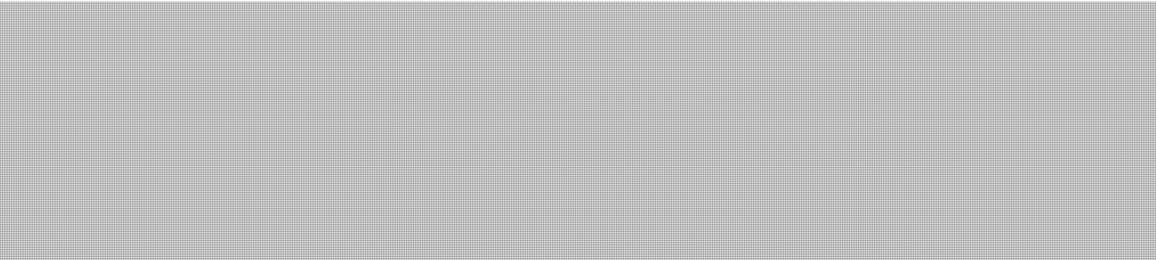
April 29, 2024 12:21 PM

Subject	RE: ADM Correspondence
From	ESS Correspondence / SSE Correspondance (NRCan/RNCan)
To	Lampsos, Nayla; ESS Correspondence / SSE Correspondance (NRCan/RNCan)
Cc	NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan); Ottaway, Chelsea
Sent	November 17, 2023 5:29 PM
Attachments	<div> 2023 11 02   203954 - INCOMING</div>

UNCLASSIFIED - NON CLASSIFIÉ

Good afternoon Nayla,

Please find attached the incoming for docket [203954 \(gcdocs.gc.ca\)](#) – confirming that the email address is of the writer is  The following individuals were copied on the incoming:



Thank you,

Andre

From: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>
Sent: Friday, November 17, 2023 5:12 PM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>
Subject: FW: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Good afternoon,

Would you please make sure that the email address provided on this letter is correct?

Also, not sure if in the incoming the signatories were listed with their respective emails so we may cc them.

Then I will certainly request from the addressee a confirmation that he has well received the response to his inquiry.

Thank you,

Nayla

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Sent: Friday, November 17, 2023 1:42 PM

To: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>

Cc: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Subject: FW: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Good Afternoon Nayla

One of our team members reached out to advise us that [REDACTED] did not receive the attached correspondence. Is it possible to have ADMO reach out again and ask the recipient to confirm receipt?

Thank you
Chantal

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Friday, November 17, 2023 1:07 PM

To: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: FW: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Hi Chelsea,

We were on a call with Nuclear Waste Watch this morning and one of the members indicated that [REDACTED] had not received the correspondence that was sent (attached and below). Would it be possible to have ADMO reach out again and ask for him to confirm receipt? Happy to chat if you have any questions.

Thanks!
-Kate

Kathleen Prosser, PhD.
(she/her/elle)

A0068210_2-000541

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: ESS-ADMO / SSE-BSMA (NRCAN/RNCAN) <ess-admo-sse-bsma@nrcan-rncan.gc.ca>
Sent: Thursday, November 2, 2023 10:53 AM
To: [REDACTED]
Cc: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>
Subject: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Dear [REDACTED] and co-signatories,

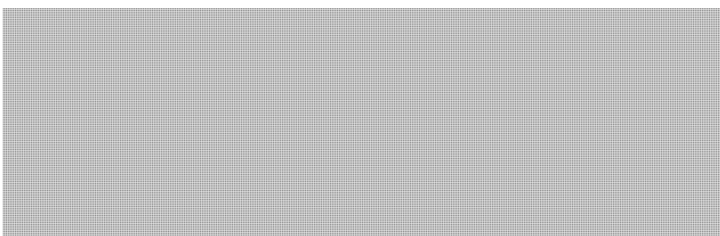
Thank you for your correspondence of September 22, 2023. Please find attached a response to your inquiry.



Natural Resources
Canada

Ressources naturelles
Canada

November 2, 2023



Dear [REDACTED] and co-signatories:

Thank you for your correspondence of September 22, 2023, addressed to the Minister of Energy and Natural Resources, the Honourable Jonathan Wilkinson, as well as Prime Minister Trudeau and other ministers, about the reprocessing of used CANDU fuel. I am responding on behalf of Minister Wilkinson.

Protecting the health and safety of Canadians and the environment is a top priority when it comes to the Government's approach to nuclear energy and radioactive waste. All radioactive waste in Canada is currently being safely managed according to Canadian legislation and in respect of international standards at facilities that are licensed and monitored by Canada's independent nuclear regulator – the Canadian Nuclear Safety Commission (CNSC). The CNSC reviews all nuclear projects carefully to determine their effects on the environment and on the people living or working in nearby communities.

To ensure that all radioactive waste in Canada is managed safely for generations to come, Natural Resources Canada (NRCan) recently released Canada's modernized Policy for Radioactive Waste Management and Decommissioning. It ensures that the safe management of radioactive waste in Canada continues to align with international standards and best practices, and that Canada's policy framework reflects the values and principles of Canadians following extensive engagement.

Canada

- 2 -

The Government of Canada is aware of the draft document on used nuclear fuel reprocessing prepared by the CANDU Owners Group through subject matter expert participation in small modular reactor (SMR) related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

While the government is not currently developing a reprocessing policy, it is monitoring the research and development of technologies related to the reprocessing of used CANDU fuel in Canada, and it remains receptive to understanding the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and non-proliferation – prior to its deployment.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some SMR technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment of used fuel reprocessing would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the *Treaty on the Non Proliferation of Nuclear Weapons*, including the full implementation of IAEA safeguards to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.

Thank you for sharing your views on this important matter.

s.19(1)

- 3 -

Yours sincerely,

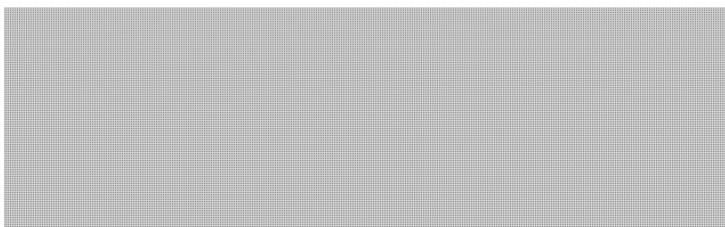


Debbie Scharf
Assistant Deputy Minister
Energy Systems Sector
Natural Resources Canada



Natural Resources
Canada

Ressources naturelles
Canada



Dear [REDACTED] and co-signatories:

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Protecting the health and safety of Canadians and the environment is a top priority when it comes to the Government's approach to nuclear energy and radioactive waste. All radioactive waste in Canada is currently being safely managed according to Canadian legislation and in respect of international standards at facilities that are licensed and monitored by Canada's independent nuclear regulator – the Canadian Nuclear Safety Commission (CNSC). The CNSC reviews all nuclear projects carefully to determine their effects on the environment and on the people living or working in nearby communities.

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Canada

- 2 -

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While the government is not currently developing a reprocessing policy, it is monitoring the research and development of technologies related to the reprocessing of used CANDU fuel in Canada, and it remains receptive to understanding the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and non-proliferation – prior to its deployment.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some SMR technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment of used fuel reprocessing would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the *Treaty on the Non-Proliferation of Nuclear Weapons*, including the full implementation of IAEA safeguards to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.

Thank you for sharing your views on this important matter.

s.19(1)

- 3 -

Yours sincerely,

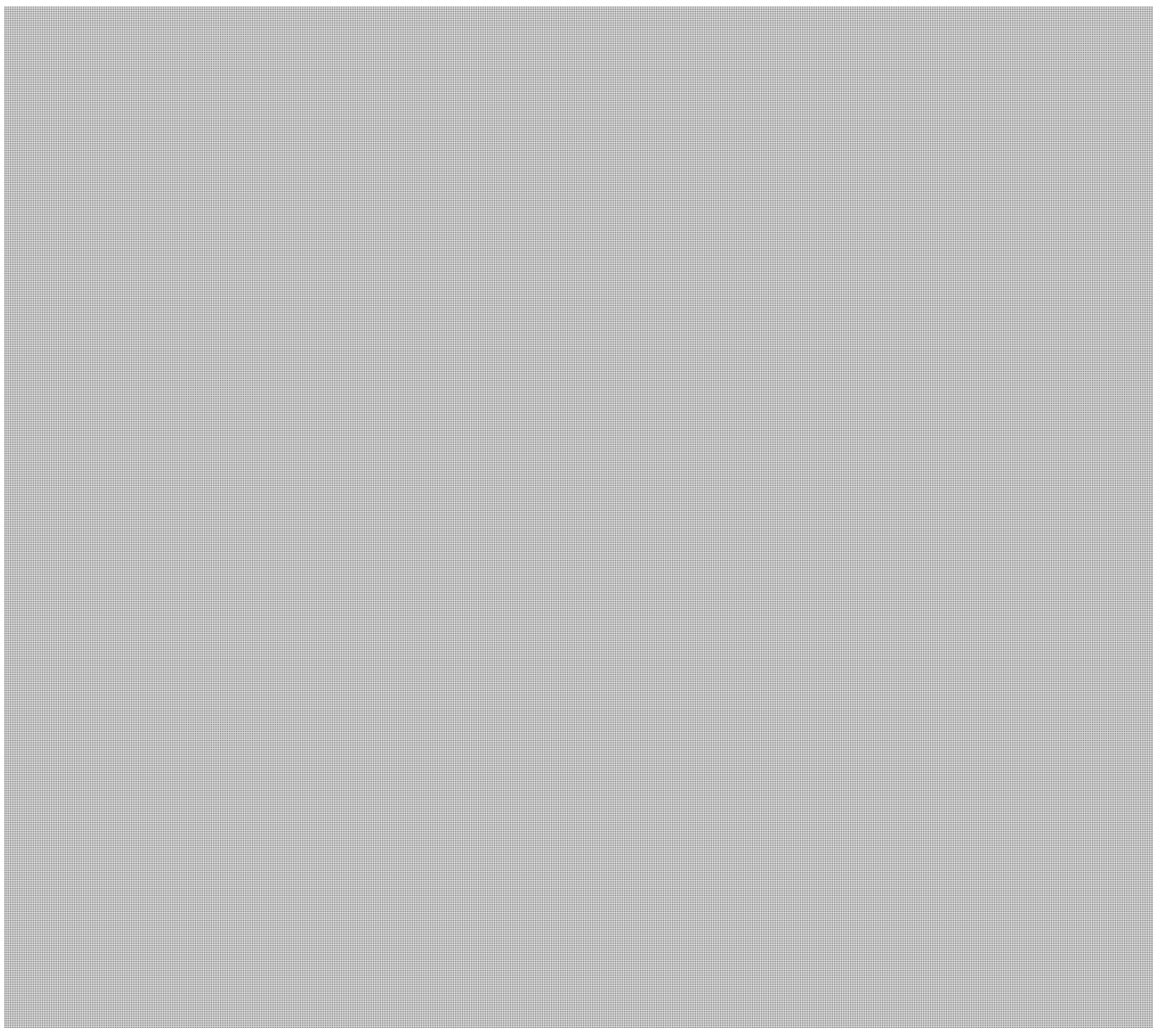
Debbie Scharf
Assistant Deputy Minister
Energy Systems Sector
Natural Resources Canada

Cc:



s.19(1)


- 4 -



A0068210_10-000549

203954 / FW: Open Letter to Prime Minister Trudeau and senior cabinet officials concerning government-funded proposals to allowing plutonium separation in Canada

April 29, 2024 12:22 PM

Subject	203954 / FW: Open Letter to Prime Minister Trudeau and senior cabinet officials concerning government-funded proposals to allowing plutonium separation in Canada
From	<u>Wilkinson, Jonathan - M.P.</u>
To	Office of the Minister / Bureau du Ministre
Sent	September 22, 2023 9:36 AM
Attachments	 Fourth Letter to ...

From: [REDACTED]

Sent: September 22, 2023 7:48 AM

To: Trudeau, Justin - Député <justin.trudeau@parl.gc.ca>; Wilkinson, Jonathan - M.P. <Jonathan.Wilkinson@parl.gc.ca>; rumina.velshi@cnsccsn.gc.ca; Joly, Mélanie - M.P. <Melanie.Joly@parl.gc.ca>; chrystia.freeland@fin.gc.ca; Guilbeault, Steven - Député <Steven.Guilbeault@parl.gc.ca>; info@pco-bcp.gc.ca

Cc: [REDACTED]

Subject: Open Letter to Prime Minister Trudeau and senior cabinet officials concerning government-funded proposals to allowing plutonium separation in Canada

Dear Prime Minister Trudeau,
Minister of Natural Resources Jonathan Wilkinson,
President of the Nuclear Safety Commission Rumina Velshi,
Minister of Foreign Affairs Mélanie Joly
Deputy Prime Minister and Minister of Finance Chrystia Freeland
Minister of Environment and Climate Change, Steven Guilbeault
Clerk of the Privy Council and Secretary to the Cabinet John Hannaford

Please find attached a letter from 12 US nonproliferation experts (including one teaching at the University of British Columbia) concerning the on-going consideration by the Canada's government of proposals to separate plutonium in Canada.

If, in response to this letter, you are interested in further information from members of our group, please feel free to communicate to us via my e-mail address below.

Sincerely yours,

[REDACTED]

A0068211_1-000550

s.19(1)



A0068211_2-000551

Approval Routing Slip / Fiche d'acheminement pour approbation

Docket / Dossier :

☐ Internal / Interne ☒ External / Externe

Purpose / But Signature ☐ Information ☐ Decision/Approval ☒ Recommendation/ ☐ Other/ ☐
 Décision/Approbation Recommandation Autre

For / Pour Minister/ ☐ Deputy Minister/ ☐ Associate Deputy Minister/ ☒ Other/ _____
 Ministre Sous-ministre Sous-ministre délégué Autre

Sector / Secteur __ESS__ Contact __Kathleen Prosser 5743435588__ Due Date/ _____
 (name/nom – tel./tél.) Date d'échéance

Title (English): 203954 - ADM Direct Reply

Titre (français) :

Priority / Priorité Urgent ☐ Time-sensitive/Sensible au facteur temps ☐ Non-urgent ☒

(If urgent, state the reason and deadline / Si urgent, indiquez la raison et la date limite)

Security Designation / Désignation de sécurité Unclassified ☒ Protected A ☐ Protected B ☐ Confidential ☐ Secret ☐ Cabinet Confidence/Confidence of the King's Privy Council ☐
 Non-classifié Protégé A Protégé B Confidentiel Document confidentiel du Cabinet/Renseignements confidentiels du Conseil privé du Roi

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If OTHER, please explain: _____
 Si AUTRE, veuillez expliquer :

Sector(s) consulted / Secteur(s) consulté(s)

<input type="checkbox"/> Audit and Evaluation Branch / Direction de l'audit et de l'évaluation	<input type="checkbox"/> Lands and Minerals Sector / Secteur des terres et des minéraux
<input type="checkbox"/> Canadian Forest Service / Service canadien des forêts	<input type="checkbox"/> Legal Services / Services juridiques
<input type="checkbox"/> Communications and Portfolio Sector / Secteur des communications et du portefeuille	<input type="checkbox"/> Nòkwewashk / Nòkwewashk
<input type="checkbox"/> Corporate Management and Services Sector / Secteur de la gestion et des services intégrés	<input type="checkbox"/> Office of the Chief Scientist / Bureau du scientifique principal
<input type="checkbox"/> Energy Efficiency Technology Sector / Secteur de l'efficacité énergétique et de la technologie de l'énergie	<input type="checkbox"/> Strategic Policy and Innovation Sector / Secteur de la politique stratégique et innovation
<input type="checkbox"/> Energy Systems Sector / Secteur des systèmes énergétiques	<input type="checkbox"/> Trans Mountain Expansion Implementation Sector / Secteur de la mise en place du projet d'agrandissement du réseau de Trans Mountain
<input type="checkbox"/> Fuels Sector / Secteur des carburants	<input checked="" type="checkbox"/> Other government department(s) / Autre(s) ministère(s) : ____GAC_____

Approvals / Approbations	Signature	Date
Director/Direct(eur/rice)	Pui Wai Yuen	
Director General/Direct(eur/rice) général(e)	Fred Beauregard-Tellier	November 1, 2023
Assistant Deputy Minister/Sous-ministre adjoint(e)	Debbie Scharf	November 2, 2023
Comments/Commentaires :		

OPEN LETTER TO PRIME MINISTER JUSTIN TRUDEAU

22 September 2023

To: Prime Minister Justin Trudeau
justin.trudeau@parl.gc.ca

Jonathan Wilkinson, Minister of Natural Resources jonathan.wilkinson@parl.gc.ca
Rumina Velshi, President, Nuclear Safety Commission, rumina.velshi@cnsccsn.gc.ca
Mélanie Joly, Minister of Foreign Affairs, melanie.joly@parl.gc.ca
Chrystia Freeland, Deputy Prime Minister and Minister of Finance, chrystia.freeland@fin.gc.ca
Steven Guilbeault, Minister of Environment and Climate Change, Steven.Guilbeault@parl.gc.ca
John Hannaford, Clerk of the Privy Council and Secretary to the Cabinet, info@pco-bcp.gc.ca

Re: Our Request for a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate plutonium from CANDU spent fuel

Dear Prime Minister Trudeau and other concerned senior officials of the Government of Canada,

In 2021, a number of us sent three letters to you regarding our nuclear weapons proliferation concerns about your government's funding of a proposal by a nuclear startup, Moltex, to reprocess CANDU spent fuel. Moltex proposes to use the recovered plutonium to fuel a molten-salt reactor to be built on the site of the 40-year-old Point Lepreau Nuclear Generating Station in New Brunswick. We were even more concerned about Moltex's proposal to use Canada as an export hub for those technologies.¹

The Prime Minister's office informed us on 23 June 2021 that the matter had been referred to the Minister of Foreign Affairs and the Minister of Natural Resources. We have received no response from either.

Recently, however, we learned, through an Access to Information Act request by a Canadian academic, that, despite the strong opposition of Moltex,² the Ministry of Natural Resources launched a policy-making process on reprocessing in collaboration with the international CANDU Owners Group and in consultation with the Ministry of Foreign Affairs and the Nuclear Safety Commission.³

We are gratified to learn of this development. We also were gratified to see you join with the other leaders of the G7 countries in Hiroshima on 19 May 2023 in stating that, "We also commit to prioritizing efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world."⁴

Moltex has claimed that it does not intend to separate out pure plutonium and hence its product will be "proliferation resistant," i.e. not usable to make nuclear weapons. This was argued in the US two decades ago for a very similar process, pyroprocessing, but a 2009 review by experts from six US national nuclear laboratories concluded,⁵

"the additional proliferation resistance of these alternative processes...over PUREX [the technology used by the US and other weapon states to separate pure plutonium for weapons] in particular is small. The reason is the ease, given the resources available to a state, with which the various

plutonium-bearing materials or the reprocessing process itself could be converted to produce separated plutonium.”

A recent review by a US National Academy of Sciences committee, on which two of us served, reached the same conclusion after hearing a presentation from Moltex’s CEO:⁶

“While these technologies may provide some benefit in delaying direct use of the materials, there was consensus among the committee members that none provided significant proliferation resistance at this time.”

We doubt Moltex’s reprocessing project will be commercially successful. Commercial reprocessing has failed economically over and over again. In the US, a small commercial reprocessing plant, subsidized by the federal government and the State of New York, operated from 1966 and 1972. It was shut down for safety improvements in 1972, but rather than spend the funds for upgrading the plant, the owner abandoned the project, and the site became a multi-billion-dollar federally-funded radioactive cleanup project that continues today.⁷ In the UK, government-owned British Nuclear Fuels Limited built and operated larger plants into bankruptcy, resulting in a hundred billion pound government-funded radioactive cleanup project.⁸

The processing technology used in these earlier plants was developed in the US nuclear-weapons program and is quite simple. The technology proposed by Moltex appears to be based on the more complex pyroprocessing technology developed by the Idaho National Laboratory, which has spent hundreds of millions of dollars over two decades thus far in its attempts to use it to reprocess a mere two tons of spent fuel.⁹

There is likewise every reason to be skeptical of Moltex’s reactor technology.¹⁰

How the funds of Canada’s taxpayers are spent is not our affair, however. Our concern is that that Canada’s government, while pledging to “efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world,” is actually funding a project to *increase* the production and accumulation of weapons-usable plutonium for civil purposes around the world.

We have been equally critical of U.S. programs to promote reprocessing. The Biden Administration has failed to rein in a Trump Administration-launched program to promote reprocessing in the Department of Energy.¹¹

It is especially distressing that Canada and the United States should have forgotten the painful lessons from their partnership in facilitating India’s program to separate plutonium ostensibly for nuclear power. Some of the plutonium India produced and separated with that assistance was used in the plutonium-fueled prototype bomb India tested in 1974, precipitating the South Asian nuclear arms race.¹²

An undated internal briefing memo for the Deputy Minister of Natural Resources, included in that Ministry’s Access to Information Act release, claimed,

“reprocessing is currently being carried out internationally by several nations using processes similar to the Moltex WATSS process, but which more completely separate plutonium from the other materials and contaminants in the fuel, and do so successfully while following international safeguards protocols, and under the purview of the IAEA.”

This is false. Only Japan has plans to carry out reprocessing under international safeguards. The other states that conduct commercial-scale reprocessing (China, France, India, Russia) are nuclear-armed states that are not obligated to accept IAEA safeguards. But as the examples of India and North Korea show, states can claim peaceful purposes but then use the plutonium for nuclear weapons.

As the G7 statement recognized, reprocessing is not necessary for nuclear energy and nonproliferation policy should focus on “efforts to reduce the production and accumulation of weapons-usable nuclear material for civil purposes around the world,” not increase it.

If invited, some of us would be happy to provide a detailed briefing on these issues as input to your government’s policymaking process.

Given the gravity of the issues involved, this is a public letter as were our previous letters to you.

Sincerely,

Peter Bradford, former chair of New York and Maine utility regulatory commissions and former U.S. Nuclear Regulatory Commissioner (1977-82)

Thomas M. Countryman, Chairman, Arms Control Association, Assistant Secretary of State for International Security and Nonproliferation (2011-2017)

Steve Fetter, Professor of Public Policy, University of Maryland,* former principal assistant director, Office of Science and Technology Policy, the White House (2009-12, 2015-17)

Robert Gallucci, Professor, Georgetown University,* former Ambassador at Large and Assistant Secretary of State for Political-Military Affairs

Richard L. Garwin, IBM Fellow Emeritus, IBM Thomas J. Watson Research Center,* member U.S. President's Science Advisory Committee (1962–65, 1969–72)

Victor Gilinsky, Nonproliferation Policy Education Center; Nuclear Regulatory Commissioner (1975-79)

Alan J. Kuperman, Associate Professor, and Coordinator of the Nuclear Proliferation Prevention Project, University of Texas at Austin

Edwin Lyman, Director of Nuclear Power Safety, Union of Concerned Scientists

Allison M Macfarlane, Director, School of Public Policy and Global Affairs, University of British Columbia*; Chair, US Nuclear Regulatory Commission (2012-13) |

Henry Sokolski, Executive Director, Nonproliferation Policy Education Center; Deputy for Nonproliferation Policy, Office of the Secretary of Defense (1989-93)

Sharon Squassoni, Research Professor of the Practice of International Affairs, George Washington University, former State Department and Arms Control and Disarmament Agency official.

Frank N. von Hippel, Professor of Public and International Affairs, emeritus Program on Science and Global Security, Princeton University* and contact for communications, fvhippel@princeton.edu

* For identification only.

¹ Our previous letters were sent on 25 May, 27 July and 24 November 2021.

² “Moltex would likely not have come to Canada if a reprocessing policy had been mandated at the time,” Rory O’Sullivan, CEO, Moltex Energy, Comment “Re: Natural Resources Canada's Draft Policy on Radioactive Waste Management and Decommissioning,” 24 March 2022, Access to Information Act release, Natural Resources Canada, 8 August 2023.

³ *Policy Development on Reprocessing* (Ministry of Natural Resources Canada, 2021), Access to Information Act release, Natural Resources Canada, 8 August 2023.

⁴ https://www.international.gc.ca/world-monde/international_relations-relations_internationales/g7/documents/2023-05-19-g7_leaders_vision-g7_vision_dirigeants.aspx?lang=eng.

⁵ *Proliferation Risk Reduction Study of Alternative Spent Fuel Processing* (Brookhaven National Laboratory, 2009), <https://www.bnl.gov/isd/documents/70289.pdf>.

⁶ *Merits and Viability of Different Nuclear Fuel Cycles and Technology Options and the Waste Aspects of Advanced Nuclear Reactors* (National Academy Press, 2023) p. 211, <https://www.nationalacademies.org/our-work/merits-and-viability-of-different-nuclear-fuel-cycles-and-technology-options-and-the-waste-aspects-of-advanced-nuclear-reactors>.

⁷ https://en.wikipedia.org/wiki/West_Valley_Demonstration_Project, <https://www.chbwv.com>, <https://www.energy.gov/em/articles/doe-issues-draft-request-proposal-west-valley-demonstration-project-phase-1b-contract>.

⁸ <https://www.nao.org.uk/reports/the-nuclear-decommissioning-authority-progress-with-reducing-risk-at-sellafield/>.

⁹ <https://blog.ucsusa.org/edwin-lyman/the-pyroprocessing-files/>.




¹⁰ <https://thebulletin.org/2022/06/molten-salt-reactors-were-trouble-in-the-1960s-and-they-remain-trouble-today/>.

¹¹ Letter to the Biden Administration, “13 US Nonproliferation Experts Request a Review of the Department of Energy’s Promotion of Civilian Plutonium Separation,” 20 June 2021, see also Jungmin Kang, Masafumi Takubo, Frank von Hippel, “Some fuels never learn. US Energy Department returns to costly and risky plutonium separation technologies,” *Bulletin of the Atomic Scientists*, 14 Sept. 2023, <https://thebulletin.org/2022/09/some-fuels-never-learn-us-energy-department-returns-to-costly-and-risky-plutonium-separation-technologies/>.

¹² George Perkovich, *India’s Nuclear Bomb: The Impact on Global Proliferation* (University of California Press, 1999).

FW: ADM Correspondence

April 29, 2024 12:20 PM

Subject	FW: ADM Correspondence
From	NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)
To	Wilkinson, David; Yuen, Pui Wai; Hilborn, Jade (she, her elle, elle)
Cc	NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan); Ottaway, Chelsea
Sent	December 1, 2023 8:20 AM
Attachments	<div> RE ADM Correspo...  2023 11 02 </div>

UNCLASSIFIED - NON CLASSIFIÉ

Good morning

Please see attached and below from ADMO. I am following up with EDU re: other responses not received and will include you in the communication.


Chantal

From: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>
Sent: Thursday, November 30, 2023 7:27 PM
To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Bremner, Chantal <chantal.bremner@nrcan-rncan.gc.ca>
Cc: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>; Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>
Subject: FW: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Good afternoon,

Please find below the answer to your attached email.

Attached as well is the correspondence sent to  in Nov. 2022

Thank you,

Nayla

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Sent: Friday, November 17, 2023 1:42 PM

To: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>

Cc: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Subject: FW: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Good afternoon, Nayla

One of our team members reached out to advise us that [REDACTED] did not receive the attached correspondence. Is it possible to have ADMO reach out again and ask the recipient to confirm receipt?

Thank you,
Chantal

From: [REDACTED]

Sent: Wednesday, November 29, 2023 1:37 PM

To: ESS-ADMO / SSE-BSMA (NRCAN/RNCAN) <ess-admo-sse-bsma@nrcan-rncan.gc.ca>

Cc: [REDACTED]

Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>

Subject: Re: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

Thank you! I have received the message of 2 November 2023, signed by Debbie Scharf, Assistant Deputy Minister, Energy Systems Sector, Natural Resources Canada. (The e-mail to which I am responding here was not signed.)

With regard to substance, the last paragraph of Assistant Deputy Minister Scharf's letter of 2 November 2023 says:

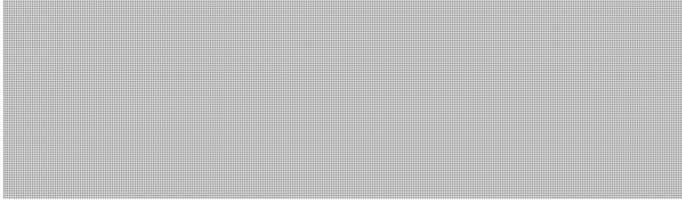
"Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment of used fuel reprocessing would be subject to a regulatory review with opportunities for the public to provide input."

Was there such a regulatory review with opportunities for the public to provide input before

A0068279_2-000558

or after Natural Resources Canada provided Moltex with CN\$50 million to develop its technology to reprocess CANDU spent fuel for plutonium recycle and make Canada a hub for exporting that technology? Our letters to Prime Minister Trudeau of 25 May, 27 July 2021, 24 November 2021 and 23 September 2023 all urged that there should be a nonproliferation review of that proposal.

Sincerely yours,

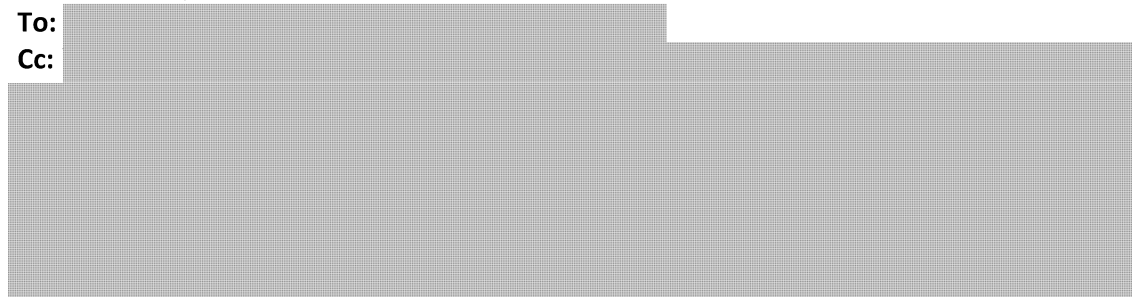


From: "ESS-ADMO / SSE-BSMA (NRCAN/RNCAN)" <ess-admo-sse-bsma@nrcan-rncan.gc.ca>

Date: Monday, November 20, 2023 at 3:55 PM

To:

Cc:



"Lampsos, Nayla" <nayla.lampsos@nrcan-rncan.gc.ca>

Subject: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Dear [REDACTED] and co-signatories,

Thank you for your correspondence of September 22, 2023. Please find attached a response to your inquiry.

It would be appreciated if you could please acknowledge receipt of this communication.

This email originated from outside of NRCan. **Do not click links or open attachments unless you recognize the sender and believe the content is safe.** For information on how to recognize and report phishing emails, please visit the [Phishing Spot](#) on the NRCan Intranet.

Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour plus d'informations sur la façon de reconnaître et de signaler les courriels d'hameçonnage, veuillez visiter le site [hameçonnage](#) sur l'intranet de RNCan.

FW: **ADMO Question**: ADM Correspondence

April 29, 2024 12:35 PM

Subject	FW: **ADMO Question**: ADM Correspondence
From	Wittmann, Tess (she, her elle, elle)
To	Yuen, Pui Wai; Wilkinson, David
Sent	November 27, 2023 9:33 AM

UNCLASSIFIED - NON CLASSIFIÉ

Here is the email chain, this is all I would know about this.

Tess

From: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>

Sent: Monday, November 20, 2023 2:24 PM

To: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: RE: **ADMO Question**: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Tess!

From: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>

Sent: Monday, November 20, 2023 1:21 PM

To: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: RE: **ADMO Question**: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Hey Jade!

I've added the cc list at the bottom of the letter here to be relayed up: [Document Overview: 203954 - ADM Direct Reply.docx \(gcdocs.gc.ca\)](#)

Best,
Tess

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Monday, November 20, 2023 12:39 PM

To: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>

Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>

Subject: FW: **ADMO Question**: ADM Correspondence

Hey Tess,

For your action - can you update the gc docs document to have all these folks cc'd at the bottom of the letter? Then you just need to let Jade know and she can relay it up.

A0068279_4-000560

Thanks!

Kate

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: "NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)"
<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Date: 2023-11-20 5:33 p.m. (GMT+01:00)

To: "Prosser, Kathleen" <Kathleen.Prosser@NRCan-RNCan.gc.ca>, "Yuen, Pui Wai"
<puiwai.yuen@NRCan-RNCan.gc.ca>, "Hilborn, Jade (she, her | elle, elle)" <jade.hilborn@nrcan-rncan.gc.ca>

Cc: "NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)"
<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>, "Ottaway, Chelsea"
<chelsea.ottaway@NRCan-RNCan.gc.ca>, "Ravary, Liz" <liz.ravary@nrcan-rncan.gc.ca>

Subject: FW: **ADMO Question**: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Nayla would like to know if the: signatories' names be added at the bottom of the letter?

If so, would you like to send me revised letter?

Thanks
Chantal

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Sent: Monday, November 20, 2023 11:19 AM

To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)
<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Cc: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Clarotto, Lauren
<lauren.clarotto@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; ESS
Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Subject: **ADMO Question**: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Good morning NEISB,

Could you please address ADMO's question below?

Should the signatories names be added at the bottom of the letter?

If so, would you like to send me revised letter?

Thank you,

Evan

A0068279_5-000561

From: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>
Sent: Friday, November 17, 2023 6:11 PM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>
Subject: RE: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Thank you for confirming.

Should the signatories names be added at the bottom of the letter?

If so, would you like to send me revised letter?

Thank you,

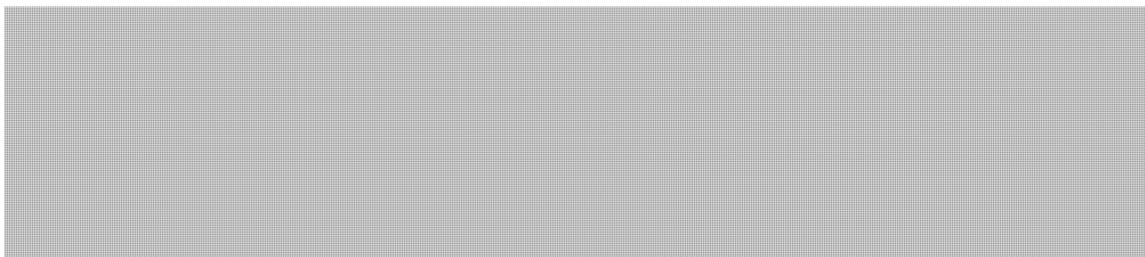
Nayla

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Sent: Friday, November 17, 2023 5:30 PM
To: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>; ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>
Subject: RE: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Good afternoon Nayla,

Please find attached the incoming for docket [203954 \(gcdocs.gc.ca\)](https://gcdocs.gc.ca) – confirming that the email address is of the writer is [REDACTED] The following individuals were copied on the incoming:



Thank you,

Andre

From: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>
Sent: Friday, November 17, 2023 5:12 PM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

A0068279_6-000562

sscorrespondance@nrcan-rncan.gc.ca>

Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea

<chelsea.ottaway@NRCan-RNCan.gc.ca>; Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>

Subject: FW: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Good afternoon,

Would you please make sure that the email address provided on this letter is correct?

Also, not sure if in the incoming the signatories were listed with their respective emails so we may cc them.

Then I will certainly request from the addressee a confirmation that he has well received the response to his inquiry.

Thank you,

Nayla

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Sent: Friday, November 17, 2023 1:42 PM

To: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>

Cc: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Subject: FW: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Good Afternoon Nayla

One of our team members reached out to advise us that [REDACTED] did not receive the attached correspondence. Is it possible to have ADMO reach out again and ask the recipient to confirm receipt?

Thank you
Chantal

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Friday, November 17, 2023 1:07 PM

To: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: FW: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

Hi Chelsea,

We were on a call with Nuclear Waste Watch this morning and one of the members indicated that [REDACTED] had not received the correspondence that was sent (attached and below). Would it

be possible to have ADMO reach out again and ask for him to confirm receipt? Happy to chat if you have any questions.

Thanks!

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: ESS-ADMO / SSE-BSMA (NRCAN/RNCAN) <ess-admo-sse-bsma@nrcan-rncan.gc.ca>

Sent: Thursday, November 2, 2023 10:53 AM

To: [REDACTED]

Cc: Lampsos, Nayla <nayla.lampsos@nrcan-rncan.gc.ca>

Subject: ADM Correspondence

UNCLASSIFIED - NON CLASSIFIÉ

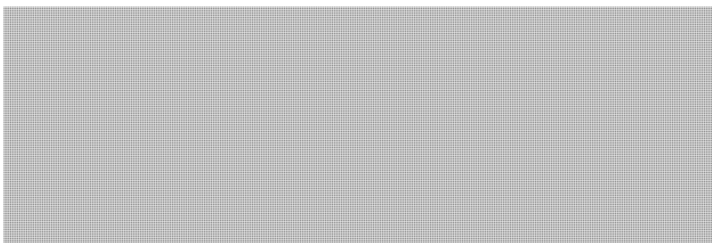
Dear [REDACTED] and co-signatories,

Thank you for your correspondence of September 22, 2023. Please find attached a response to your inquiry.



Natural Resources
Canada

Ressources naturelles
Canada



Dear [REDACTED] and co-signatories:

Thank you for your correspondence of September 22, 2023, addressed to the Minister of Energy and Natural Resources, the Honourable Jonathan Wilkinson, as well as Prime Minister Trudeau and other ministers, about the reprocessing of used CANDU fuel. I am responding on behalf of Minister Wilkinson.

Protecting the health and safety of Canadians and the environment is a top priority when it comes to the Government's approach to nuclear energy and radioactive waste. All radioactive waste in Canada is currently being safely managed according to Canadian legislation and in respect of international standards at facilities that are licensed and monitored by Canada's independent nuclear regulator – the Canadian Nuclear Safety Commission (CNSC). The CNSC reviews all nuclear projects carefully to determine their effects on the environment and on the people living or working in nearby communities.

To ensure that all radioactive waste in Canada is managed safely for generations to come, Natural Resources Canada (NRCan) recently released Canada's modernized Policy for Radioactive Waste Management and Decommissioning. It ensures that the safe management of radioactive waste in Canada continues to align with international standards and best practices, and that Canada's policy framework reflects the values and principles of Canadians following extensive engagement.

Canada

- 2 -

The Government of Canada is aware of the draft document on used nuclear fuel reprocessing prepared by the CANDU Owners Group through subject matter expert participation in small modular reactor (SMR) related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

While the government is not currently developing a reprocessing policy, it is monitoring the research and development of technologies related to the reprocessing of used CANDU fuel in Canada, and it remains receptive to understanding the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and non-proliferation – prior to its deployment.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some SMR technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment of used fuel reprocessing would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the *Treaty on the Non-Proliferation of Nuclear Weapons*, including the full implementation of IAEA safeguards to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.

Thank you for sharing your views on this important matter.

- 3 -

Yours sincerely,

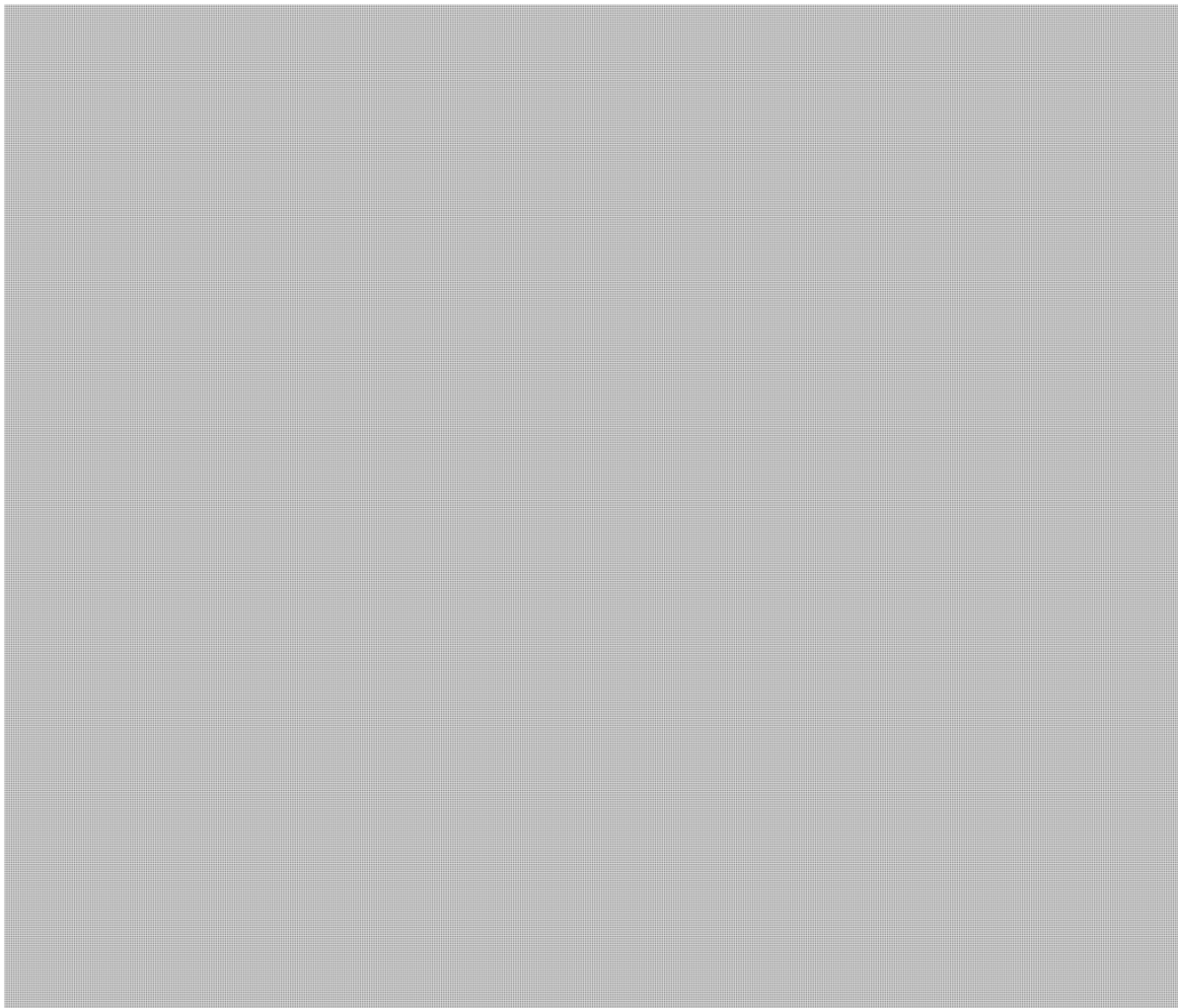
Debbie Scharf
Assistant Deputy Minister
Energy Systems Sector
Natural Resources Canada

Cc:



s.19(1)


- 4 -



A0068279_12-000568

FW: Confirmation and Meeting Details for Roundtable Discussion on Reprocessing - Friday, November 17th, 10 am Eastern

April 29, 2024 11:26 AM

Subject	FW: Confirmation and Meeting Details for Roundtable Discussion on Reprocessing - Friday, November 17th, 10 am Eastern
From	Prosser, Kathleen
To	Hilborn, Jade (she, her elle, elle)
Cc	Wilkinson, David; Wittmann, Tess (she, her elle, elle); Fairchild, Jamie
Sent	November 11, 2023 9:26 AM
Attachments	 Roundtable -on-Repro...

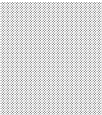
UNCLASSIFIED - NON CLASSIFIÉ

FYI

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Nuclear Waste Watch <nuclearwastewatch@gmail.com>
Sent: Friday, November 10, 2023 9:46 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: Confirmation and Meeting Details for Roundtable Discussion on Reprocessing - Friday, November 17th, 10 am Eastern



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November 10, 2023

Thank you for accepting our invitation to join the roundtable discussion on Friday, November 17th about reprocessing nuclear fuel waste in Canada.

Nuclear Waste Watch is convening a roundtable of civil society, academic and government representatives to share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. The objective of the roundtable session is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The meeting details are:

Date / Time: Friday, November 17, 10 a.m. to 11:30 a.m EST

Join Zoom Meeting [https://us02web.zoom.us/j/89207615696?](https://us02web.zoom.us/j/89207615696?pwd=YnZLQkFpQ3dpdm5Ybm9VekRyZ1pvZz09)
[pwd=YnZLQkFpQ3dpdm5Ybm9VekRyZ1pvZz09](https://us02web.zoom.us/j/89207615696?pwd=YnZLQkFpQ3dpdm5Ybm9VekRyZ1pvZz09)

Meeting ID: 892 0761 5696 Passcode: 2023

We currently have 17 confirmed participants (see attached) representing a range of civil society organizations and academics and government participants representing Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission. Common interests include the security, disarmament and nuclear weapons proliferation and / or environmental impacts of nuclear fuel waste and reprocessing.

The meeting will be 90 minutes with the opportunity for follow-up email communications. The agenda will begin by introducing and setting the meeting objectives, followed by brief overviews and roundtable discussion on the following topics:

1. Reprocessing Nuclear Fuel Waste and Government Policy in Canada
2. Nuclear Fuel Waste Reprocessing and Radioactive Wastes
3. Reprocessing and Proliferation and Security Concerns
4. General Discussion
5. Meeting wrap-up

We look forward to and sincerely appreciate your engagement in this important discussion. If you have any questions or comments in advance, please don't hesitate to be in touch.

Sincerely,

Nuclear Waste Watch Radioactive Waste Policy Review Steering Group

Please see attached for Meeting Connection Details and List of Confirmed Participants (as of November 10th)

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NUCLEAR WASTE WATCH ACTION DÉCHETS NUCLÉAIRES

November 10, 2023

Thank you for accepting our invitation to join the roundtable discussion on Friday, November 17th about reprocessing nuclear fuel waste in Canada.

Nuclear Waste Watch is convening a roundtable of civil society, academic and government representatives to share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. The objective of the roundtable session is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The meeting details are:

Date / Time: **Friday, November 17, 10 a.m.** to 11:30 a.m EST

Join Zoom Meeting <https://us02web.zoom.us/j/89207615696?pwd=YnZLQkFpQ3dpdm5Ybm9VekRyZ1pvZz09>

Meeting ID: 892 0761 5696 Passcode: 2023

We currently have 17 confirmed participants (see attached) representing a range of civil society organizations and academics and government participants representing Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission. Common interests include the security, disarmament and nuclear weapons proliferation and / or environmental impacts of nuclear fuel waste and reprocessing.

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3. Reprocessing and Proliferation and Security Concerns
4. General Discussion
5. Meeting wrap-up

We look forward to and sincerely appreciate your engagement in this important discussion. If you have any questions or comments in advance, please don't hesitate to be in touch.

Sincerely, the Nuclear Waste Watch Radioactive Waste Policy Review Steering Group:



Dr. Susan O'Donnell
Coalition for Responsible Energy Development in
New Brunswick

Nuclear Waste Watch is inviting you to a scheduled Zoom meeting.

Topic: Roundtable on Reprocessing Nuclear Waste

Time: Nov 17, 2023 10:00 AM Eastern Time (US and Canada)

Join Zoom Meeting

<https://us02web.zoom.us/j/89207615696?pwd=YnZLQkFpQ3dpdm5Ybm9VekRyZ1pvZz09>

Meeting ID: 892 0761 5696

Passcode: 2023

One tap mobile

+16475580588,,89207615696# Canada

+17789072071,,89207615696# Canada

Dial by your location

• +1 647 558 0588 Canada

• +1 778 907 2071 Canada

• +1 780 666 0144 Canada

• +1 204 272 7920 Canada

• +1 438 809 7799 Canada

• +1 587 328 1099 Canada

• +1 647 374 4685 Canada

Find your local number: <https://us02web.zoom.us/u/kqX1xobjjs>

CONFIRMED ROUNDTABLE PARTICIPANTS (AS OF NOVEMBER 10)

Name	Affiliation	Sector
Susan O'Donnell	Coalition for Responsible Energy Development - New Brunswick	Civil Society
Kathleen Prosser	Advisor, Small modular reactors and radioactive waste, Natural Resources Canada	Government
Pui Wai Yuen	Director, Uranium and Radioactive Waste Division, Natural Resources Canada	Government
Elaine Kanasevich	Director, Non-Proliferation and Export Controls Division	Government
Andrew McAllister	Director, Nuclear Processing Facilities	Government
Tanya Hinton	Senior Advisor, Global Affairs Canada	Government

FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

April 29, 2024 11:07 AM

Subject	FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Wilkinson, David; Hilborn, Jade (she, her elle, elle); Fairchild, Jamie; Wittmann, Tess (she, her elle, elle)
Sent	November 9, 2023 11:27 AM

Declassified by ATIP /
Déclassifié par l'AIIPP
PROTECTED B - PROTÉGÉ B

Meeting note you were looking for, big thanks to Tess for drafting!



MEETING NOTE - NWW November 2023 .docx

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Nuclear Waste Watch <nuclearwastewatch@gmail.com>
Sent: Thursday, October 26, 2023 3:27 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

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Attention- Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-**
dessous***

October 26, 2023

Pui Wai Yuen Director
Uranium and Radioactive Waste Division
Kathleen Prosser Advisor
Small modular reactors and radioactive waste

Natural Resources Canada

Dear Pui Wai and Kathleen,

Earlier this month an email was sent from Nuclear Waste Watch to yourselves and others, inviting you to participate in a roundtable discussion of approximately 20 civil society and government representatives about reprocessing nuclear fuel waste. We understand from your followup with Susan O'Donnel that you did not receive these invitations, and for that we are profoundly sorry.

Due to those communication difficulties and to the non-availability of some key participants, we have shifted the date by two weeks to Friday, November 17th. Our apologies for any inconvenience, especially to those who have already confirmed for the earlier date. We were very pleased to receive your confirmation that you will be available on November 17th.

The roundtable discussion will share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. Civil society groups and nuclear weapons proliferation experts have raised concerns about the potential of reprocessing in Canada. The roundtable session objective is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The revised meeting details are:

Date / Time: Friday, November 17, 10 a.m. to 11:30 a.m Eastern

Connection: Virtual Meeting via ZOOM (details to follow)

Invited participants include a range of civil society organizations and academics interested in the security, disarmament and nuclear weapons proliferation and / or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission

We are requesting confirmation of your participation by November 10th. If you cannot attend, please respond as soon as possible with the name of a colleague from your organization who can participate. A list of confirmed participants will be sent with the zoom link a week prior to the meeting.

The meeting will be 90 minutes with the opportunity for followup email communications. The agenda is:

- Very brief introductions and Meeting Objectives
- Reprocessing Nuclear Fuel Waste and Government Policy in Canada
- Nuclear Fuel Waste Reprocessing and Radioactive Wastes
- Reprocessing and Proliferation and Security Concerns
- Meeting wrap-up

We look forward to hearing confirmation of your engagement in this important discussion. If you have any questions or comments in advance, please don't

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s.19(1)

hesitate to be in touch.

Sincerely,

Dr. Susan O'Donnell
Coalition for Responsible Energy
Development in New Brunswick

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Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour plus d'informations sur la façon de reconnaître et de signaler les courriels d'hameçonnage, veuillez visiter le site [hameçonnage](#) sur l'intranet de RNCan.

A0068283_3-000575



MEETING NOTE TO THE URWD DIRECTOR

URWD DIRECTOR SPEAKING ENGAGEMENT WITH NUCLEAR WASTE WATCH

MEETING DETAILS

- **DATE/TIME:** Friday, November 17, 2023, 10:00 a.m. – 11:30 a.m. TBD
- **LOCATION:** Virtual Zoom Room, link TBD
- **AGENDA:**
 1. Very brief introductions and Meeting Objectives
 2. Reprocessing Nuclear Fuel Waste and Government Policy in Canada
 3. Nuclear Fuel Waste Reprocessing and Radioactive Wastes
 4. Reprocessing and Proliferation and Security Concerns
 5. Meeting wrap-up

*We will only attend relevant sessions to URWD and not the entire event
- **PARTICIPANTS:**
 - Susan O'Donnell, Representative from the Coalition for Responsible Energy Development in New Brunswick on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy
 - [REDACTED] Coordinator, Nuclear Waste Watch
 - Others TBD: Invited participants include a range of civil society organizations and academics interested in the security, disarmament, and nuclear weapons proliferation and/or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission.

ISSUE

Nuclear Waste Watch is organizing an invitation-only webinar roundtable and Q&A with 15-20 participants from civil society groups and academics to share perspectives, background and updates about potential reprocessing of nuclear fuel waste in Canada.

KEY BACKGROUND

- Nuclear Waste Watch is a national network of Canadian public interest groups and organizations concerned about radioactive waste and nuclear power. They initially believed NRCan was developing a policy on reprocessing of nuclear fuel waste with the CANDU Owners' Group. This has since been corrected through correspondence.
- On December 15, 2022, Nuclear Waste Watch launched a campaign to formally demand that Canada include a ban on plutonium reprocessing in its Policy for radioactive waste management and decommissioning. NRCan did not include reprocessing within the scope of the policy, except that should reprocessing be deployed, the resulting waste would fall under the policy.

SECURITY CLASSIFICATION

- Pui Wai Yuen and Frédéric Beauregard-Tellier last met with Nuclear Waste Watch in September 2023 on their views on the draft Integrated Strategy for radioactive waste before the acceptance of it by the Minister of Energy and Natural Resources.

POINTS TO REGISTER

- NRCAN, along with other federal organizations are here today to hear your views on reprocessing of nuclear fuel waste.
- NRCAN is aware of the reprocessing draft document prepared by the CANDU Owners Group. This document is an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- NRCAN is not establishing a policy on used nuclear fuel reprocessing.
- The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons.

Q&A

If pressed on COG reprocessing policy document..

- NRCAN is aware of this draft document.
- This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document.
- This document is a proposal from industry's perspective of what a reprocessing could look like - it does not represent a policy of or by the federal government.

If pressed on a Government of Canada reprocessing policy..

- NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing.
- Moltex Energy Ltd received funding through Innovation, Science and Economic Development Canada (ISED) to research and better understand waste streams and handling processes resulting from reprocessing, as well as proliferation risks and any additional safeguards requirements beyond the current protocols for Canada's existing facilities to inform decisions on reprocessing policy.
- We remain receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act, as well as safeguards verification by the International Atomic Energy Agency (IAEA).
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons

If pressed on the Integrated strategy..

- This Strategy is an important element of ensuring Canada has continually effective and world-leading disposal and management plans for radioactive waste of all levels. It is vital that governments, industry and

SECURITY CLASSIFICATION

communities work together to advance priorities related to this economic activity — including reconciliation with Indigenous Peoples.

- The Strategy reflects international best practices and is informed by more than two years of extensive engagement with Indigenous Peoples and Canadians across the country.
- We expect waste owners will work together to update the Strategy, in collaboration with Indigenous Peoples, community partners and other involved parties, and submit their recommendations for review and consideration in 2028. We also expect that waste owners will meet with Natural Resources Canada officials on an annual basis to report on their progress in implementing the Strategy, including outlining a plan for their continued collaboration.


If pressed on nuclear non-proliferation policy..

- The pathway to net zero by 2050 is the challenge of our time. We must consider all potential options and solutions emerging from across the different energy sectors. We appreciate hearing different perspectives on these important issues.
- We recognize that nuclear reprocessing is a technology that raises sensitive non-proliferation concerns. We remain attentive to ensuring that Canada does not negatively impact its shared nuclear non-proliferation priorities.
- All activities in Canada involving radioactive materials, including research activities, are governed by our nuclear non-proliferation commitments and safely regulated by the Canadian Nuclear Safety Commission
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act, in line with our multilateral engagements with the Nuclear Suppliers Group, as well as rigorous safeguards verification by the International Atomic Energy Agency.

<i>Drafted by:</i>	<i>Teresa Wittmann</i>
<i>Consulted with:</i>	<i>ESS</i>
<i>Approved by:</i>	<i>[ADM(s) name]</i>
<i>Approval date:</i>	<i>[date of ADM's approval]</i>

FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing

April 29, 2024 10:59 AM

Subject	FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Wittmann, Teresa; Wilkinson, David; Hilborn, Jade (she, her elle, elle)
Sent	October 5, 2023 4:10 PM
Attachments	 Draft Email Response ...

Hi Pui Wai,

See attached draft email Tess pulled together to get back to Susan with names for their event.

-Kate

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: "Wilkinson, David" <david.wilkinson@NRCan-RNCan.gc.ca>

Date: 2023-10-05 4:05 p.m. (GMT-05:00)

To: "Prosser, Kathleen" <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: "Wittmann, Teresa" <teresa.wittmann@nrcan-rncan.gc.ca>

Subject: FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing

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Hi Kate,

Some changes included. Mostly stylistic. Feel free to adjust as needed and then go ahead and send it to Pui Wai.

Thanks,

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Thursday, October 5, 2023 3:10 PM

To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Cc: Wittmann, Teresa <teresa.wittmann@nrcan-rncan.gc.ca>

Subject: FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED B - PROTÉGÉ B

A0068284_1-000580

Hey Dave,

We need to get back to NWW on who will be attending the webinar. Tess has drafted the attached email for Pui Wai to send. If you want to take a look please feel free, would be great to have it in front of Pui Wai before COB. Please send it on once you're done.

Cheers,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Wittmann, Teresa <teresa.wittmann@nrcan-rncan.gc.ca>
Sent: Thursday, October 5, 2023 2:28 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED B - PROTÉGÉ B

Sounds good! I have attached an updated copy.
Tess

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Thursday, October 5, 2023 2:13 PM
To: Wittmann, Teresa <teresa.wittmann@nrcan-rncan.gc.ca>
Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Thank you! Could you please add language asking to clarify the date (2 or 3rd??), and add a request for the agenda again in the part where we can't attend the whole event that would be great. I would also add a bit about scheduling restraints limiting our ability to meet for the full 90 minutes.

I'll take another quick look and we'll get this to Pui Wai today or tomorrow.

Thanks!
-Kate

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: "Wittmann, Teresa" <teresa.wittmann@nrcan-rncan.gc.ca>
Date: 2023-10-05 1:57 p.m. (GMT-05:00)
To: "Prosser, Kathleen" <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED B - PROTÉGÉ B

A0068284_2-000581

Hey Kate!

I've attached a draft email response.

One part confused me. The Sept. 29 email from Susan writes that the event is Nov. 2, while the Sept. 22 email indicated a Nov. 3 event. I left a date out of the email because of this.

I also copied your title from Teams but let me know if it is inaccurate. I also copied the language from your last sentence as I like how it sounded 😊.

Happy to change anything.

Best,
Tess

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Thursday, October 5, 2023 1:29 PM
To: Wittmann, Teresa <teresa.wittmann@nrcan-rncan.gc.ca>
Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED B - PROTÉGÉ B

Thank you so much!

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Wittmann, Teresa <teresa.wittmann@nrcan-rncan.gc.ca>
Sent: Thursday, October 5, 2023 1:28 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED B - PROTÉGÉ B

Hey Kate!

I'm on it 😊. I will send a draft to you shortly.

Tess

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Thursday, October 5, 2023 1:27 PM
To: Wittmann, Teresa <teresa.wittmann@nrcan-rncan.gc.ca>
Subject: FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED B - PROTÉGÉ B

A0068284_3-000582

Hi Tess – can I ask you to draft an email to respond to the below invitation? We will be indicating that myself and Pui Wai will attend, and indicating we will only be able to attend during the relevant portion of the round table and not the whole event. We already met with NWW on the policy and the strategy so trying to be mindful of not obligating ourselves to more than is reasonable while remaining open, transparent, and engaging meaningfully.

Thanks!!

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Susan O'Donnell <susanodo.ca@gmail.com>
Sent: Friday, September 29, 2023 7:00 AM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: [REDACTED] Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Good morning Pui Wai,

[REDACTED]

Thank you for indicating NRCAN's willingness to participate in the roundtable on Nov. 2. We will aim to send you an agenda as soon as possible. We're a large volunteer organizing committee so of course this takes time on our end.

Kind regards,
Susan
CRED-NB

On Thu, 28 Sept 2023 at 19:16, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Hi Susan,

Apologies for the delayed response. [REDACTED]

Thank you for confirming the date and time of the roundtable – we will need a little bit more time to confirm which representatives from NRCAN will be in attendance and unfortunately won't be able to get back to you by the end of September. We'll, however, aim to provide you with the names next week and will be in touch. We appreciate your patience and understanding. In the meantime, if you could provide an agenda at your convenience that may also assist us in determining which representatives would be best to have at the event.

Thank you.

s.19(1)

Kind regards,

Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: 22 septembre 2023 11:25

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: [REDACTED] Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Hello again Pui Wai,

Thank you for suggesting November 2 and 3 as your preferred dates for participating in the roundtable on used nuclear fuel reprocessing policy organized by Nuclear Waste Watch. We've fixed the date: Friday, November 3. The meeting will be 90 minutes starting at 9am Eastern. We will supply the zoom link, agenda, and list of invited participants over the next weeks. Could you please confirm that NRCan will participate in the roundtable and if you would like one or two representatives to be invited? We would appreciate knowing the name(s) by the end of September, if possible.

Thank you and kind regards,

Susan

CRED-NB

On Fri, 15 Sept 2023 at 10:15, Susan O'Donnell <susanodo.ca@gmail.com> wrote:

Good morning Pui Wai,

Thank you for your email and information.

Kind regards,

Susan

CRED-NB

On Fri, 15 Sept 2023 at 10:00, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Dear Dr. O'Donnell,

My colleague Justin Hannah shared with me your kind invitation to participate in the Nuclear Waste Watch webinar roundtable, I am responding on behalf of the Nuclear Energy and Infrastructure Security Branch within Natural Resources Canada.

NRCan is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The

A0068284_5-000584

Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the [Treaty on the Non-Proliferation of Nuclear Weapons](#), including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of [Canada's Policy for Radioactive Waste Management and Decommissioning](#).

NRCAN is aware of the draft document prepared by the CANDU Owners Group referenced below through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

We do not have any further updates beyond the above to provide on this topic. However, we would be happy to participate in the webinar and to engage on the subject with Nuclear Waste Watch should you still wish. If so, please work with my subject matter expert Kathleen Prosser copied above, to arrange a time for the roundtable, with November 2 and 3 presently being our preferred dates.

Thank you again for the invitation.

Kind regards,

Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: September 8, 2023 11:25 AM

A0068284_6-000585

s.19(1)

To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>

Cc: [REDACTED]

Subject: Invitation to speak about proposed policy on used nuclear fuel reprocessing

*****Caution** - email originated from outside of NRCan. **Read the warning below /**
Attention- Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-**
dessous***

Dear Justin Hannah,

Good morning. I represent the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy. I'm cc'ing [REDACTED]

Nuclear Waste Watch is organizing a webinar roundtable of civil society groups and academics about the proposed reprocessing policy that NRCan is developing with the CANDU owners group and others. We are inviting you to speak at the roundtable, to give us an update on the policy development and engage in Q&A. We are planning an invitation-only roundtable with about 15-20 participants, by zoom.

Please let us know your availability the week of October 30 to November 3, and please confirm receipt of this email.

Thank you for considering our invitation and kind regards,
Susan O'Donnell
representative, CRED-NB

This email originated from outside of NRCan. **Do not click links or open attachments unless you recognize the sender and believe the content is safe.** For more information, please visit [How to Identify Phishing](#) emails on the NRCan Intranet.
Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour de plus amples renseignements, veuillez consulter [Comment identifier des courriels d'hameçonnages](#) dans l'intranet des RNCan.

A0068284_7-000586

Declassified by ATIP/
Déclassé par l'ATIP
PR 6163-516 PR 6163-516 B

Draft Email Response to the Coalition for Responsible Energy Development in New Brunswick (CRED-NB)
on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy

October 5, 2023

Dear Susan,

Thank you for your well wishes.

As previously indicated, we are interested in attending and look forward to you confirming a date as soon as possible so that we can ensure our availability. Please keep myself as well as I am writing to indicate the two representatives from NRCan that will be in attendance for the NWW roundtable on used nuclear fuel reprocessing policy. This includes the following:

◆ Pui Wai Yuen, Director, Uranium and Radioactive Waste Division

◆ Kathleen Prosser, Policy Analyst, Uranium and Radioactive Waste Division, apprised of the date so that we can confirm it in our calendars to attend.

Please note that in our previous correspondence there is reference to the event being held on both November 2, 2023, and on November 3, 2023. Please clarify the confirmed date.

We are excited to participate, but our ability to attend the entire 90-minute event may be limited and we are expecting only due to scheduling restraints, so we are only able to attend for the relevant portion of the round table on reprocessing. As such, if we could see the agenda as soon as possible that would also be greatly appreciated for our planning. Having already met with NWW on the policy and the strategy, we are trying to be mindful of not obligating ourselves to more than is reasonable while remaining open, transparent, and engaging meaningfully.


We appreciate this opportunity and look forward to the event. Thank you for all the hard work in organizing this.

Kind regards,

Formatted: Normal, No bullets or numbering

FW: MIN APPROPRIATE ACTION | MESURE APPROPRIÉE MIN - DOCKET | DOSSIER 203954 - Enclosing a letter from 12 US non-proliferation experts requesting a nuclear weapons proliferation risk assessment of the Canadian- government-funded proposal to separate pluton

April 29, 2024 10:43 AM

Subject	FW: MIN APPROPRIATE ACTION MESURE APPROPRIÉE MIN - DOCKET DOSSIER 203954 - Enclosing a letter from 12 US non-proliferation experts requesting a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate pluton
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Hilborn, Jade (she, her elle, elle); Wilkinson, David; Wittmann, Teresa
Sent	October 5, 2023 9:32 AM
Attachments	 194268 MIN SIGN...

UNCLASSIFIED - NON CLASSIFIÉ

Morning Pui Wai,

Please see the link below for the reply to the “12 scientists” who write on reprocessing – indicating this is their fourth such letter. I’ve attached the only signed reply that we have from previous correspondence, which would have been written by NED late 2021/early 2022.

Happy to chat if you have questions.

-Kate

203954 - ADM Direct Reply.docx

<https://gcdocs.gc.ca/nrcan-rncan/lisapi.dll/link/85909780>

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l’uranium et des déchets radioactifs | Ressources naturelles Canada

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

[<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>](mailto:neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca)

Sent: Friday, September 22, 2023 11:44 AM

A0068285_1-000588

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrca-rncan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Cecchi, Abby <abby.cecchi@nrca-rncan.gc.ca>; Hannah, Justin <Justin.Hannah@nrca-rncan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrca-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>
Subject: FW: MIN APPROPRIATE ACTION | MESURE APPROPRIÉE MIN - DOCKET | DOSSIER 203954 - Enclosing a letter from 12 US non-proliferation experts requesting a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate pluton

UNCLASSIFIED - NON CLASSIFIÉ

For action (I am not sure which team should lead, but it seems like both are implicated)

Incoming attached for reference

[203954 \(gcdocs.gc.ca\)](#)

Due Oct 11

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrca-rncan.gc.ca>
Sent: Friday, September 22, 2023 11:26 AM
To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrca-rncan.gc.ca>
Cc: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Stirrett-Wood, Bruce <bruce.stirrettwood@nrca-rncan.gc.ca>; ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrca-rncan.gc.ca>
Subject: MIN APPROPRIATE ACTION | MESURE APPROPRIÉE MIN - DOCKET | DOSSIER 203954 - Enclosing a letter from 12 US non-proliferation experts requesting a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate pluton

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Lead: ESS-NEISB

ECIO due date: October 11, 2023

Routed to NEISB for appropriate action.

Please provide DG approved materials to ECIO via email with the completed [Routing Slip](#) attached.

Thank you,

Evan

From: EDU / UDHD (NRCan/RNCan) <edu-udhd@nrca-rncan.gc.ca>
Sent: Friday, September 22, 2023 11:09 AM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrca-rncan.gc.ca>
Subject: MIN APPROPRIATE ACTION | MESURE APPROPRIÉE MIN - DOCKET | DOSSIER 203954 - Enclosing a letter from 12 US non-proliferation experts requesting a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate plutonium

UNCLASSIFIED - NON CLASSIFIÉ

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(Le français suit.)

Lead Sector: ESS

Appropriate Action: MINO has left it to the Sector to decide the appropriate response for this docket (Min Reply, ADM Direct Reply, Direct Reply, or Note to File).

Action: Please use the appropriate template (Ministerial Correspondence Template, ADM Direct Reply or DirectReply) and save your draft response in the GCDOCS folder 203954.

Notes:

- The lead sector must advise EDU where a Standard Reply applies.
- For rerouting a docket, please use the instructions found here: Reroutes of ministerial correspondence.
- Extensions must be requested at least 3 days in advance of the due date (send an email to EDU using the Extension Request Form (<https://gcdocs.gc.ca/nrcan-rncan/llisapi.dll/Overview/6020496>)).
- If you wish to share additional information with the Minister's Office on this docket, please create a Note to File.

Due Date: To EDU by October 13, 2023

Thank you.

Secteur responsable : SE

Mesure appropriée : Le Cabinet du ministre s'en remet au secteur afin de décider la réponse à prendre avec ce dossier (Réponse Ministérielle, Réponse Directe SMA, Réponse Directe, ou Note au dossier).

Action : Veuillez utiliser le modèle approprié (Modèle de correspondance ministérielle, SMA réponse directe ou Réponse directe) et sauvegarder votre ébauche de réponse dans le fichier GCDOCS 203954.

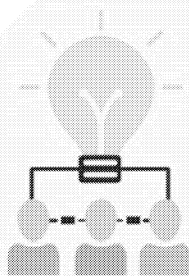
Nota :

- Le secteur responsable doit informer l'UDHD lorsqu'il est nécessaire d'utiliser une réponse type.
- Pour réacheminer un dossier, veuillez utiliser les instructions qui se trouvent ici : Réacheminement de la correspondance ministérielle.
- Les prolongations de délais doivent être demandées au moins 3 jours avant la date d'échéance (envoyez un courriel à l'UDHD en utilisant le Formulaire de demande de prolongation (<https://gcdocs.gc.ca/nrcan-rncan/llisapi.dll/Overview/6020496>)).
- Si vous souhaitez communiquer des renseignements complémentaires au sujet de ce dossier au Cabinet du ministre, veuillez rédiger une Note au dossier.

Date d'échéance : À l'UDHD d'ici le 13 octobre 2023

Merci.

The EDU Team | L'Équipe UDHD
edu-udhd@nrcan-rncan.gc.ca



Concerns or issues with processing executive documents? Suggestions for improving the current tools and/or procedures? Send an email to the EDMP Project Manager (Nathalie.Hurtubise@nrcan-rncan.gc.ca) today!

Préoccupations ou problèmes liés au traitement des documents de la haute direction? Suggestions pour améliorer les outils et/ou procédures? Envoyez un courriel au chef de projet (Nathalie.Hurtubise@nrcan-rncan.gc.ca) du PMDHD aujourd'hui!

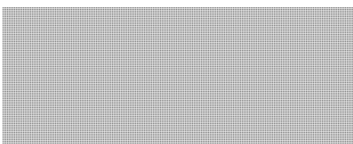
Minister
of Natural Resources



Ministre
des Ressources naturelles

Ottawa, Canada K1A 0E4

January 5, 2022



Dear [REDACTED]

The Prime Minister's Office has forwarded to me a copy of your correspondence of December 3, 2021, regarding plutonium separation from CANDU spent fuel. Thank you for taking the time to write.

As the former Minister of Natural Resources indicated in his response of August 13, 2021, to your previous correspondence, our climate plan includes an array of measures and investments in renewable and next-generation technologies, including technologies that will bring more clean, non-emitting power onto our grids, encourage cleaner modes of transportation such as zero-emission vehicles and transit, and make our homes, businesses, and industries more energy-efficient.

As part of this plan, the Government of Canada is working closely with partners to ensure that any future development of Small Modular Reactor technology can be done safely. Canada has a long history of safe and responsible development of nuclear energy, which plays an important role in Canada's current energy mix. Small Modular Reactors represent a new field of innovation and a potential tool to reduce emissions while creating jobs and stimulating economic growth. Several provincial governments, including New Brunswick, Ontario, Alberta and Saskatchewan, as well as Indigenous communities and organizations, have expressed a clear interest in using Small Modular Reactor technologies to reduce their greenhouse gas emissions, decarbonize heavy industry and spur economic development.

The Government of Canada is also working closely with like-minded countries such as the United States and the United Kingdom to realize this important opportunity for Canada. The strong interest and collaboration among governments and stakeholders in advancing new nuclear technologies, while ensuring international non-proliferation norms are respected, is encouraging. The Government of Canada's efforts position Canada as a global leader in the safe and responsible development of nuclear energy, with nuclear safety, security and non-proliferation as our guiding principles.

Canada

The Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure and environmentally sustainable way. Intergovernmental consultations on the implications of commercial reprocessing, including for non-proliferation, are ongoing.

The reprocessing of used CANDU fuel, as proposed by Moltex, has the potential to power existing and future nuclear reactors while potentially reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository. If this technology proves viable, it would allow Canada to extract additional energy from a used resource, potentially providing Canadians with emissions-free energy for years to come while reducing long-lived radioactive waste. Canada's investment in Moltex enables research that will allow a better understanding of the technology, including both benefits and risks that must be considered as part of any policy approval by the Government of Canada on reprocessing.

We recognize that nuclear reprocessing is a technology that raises sensitive non-proliferation concerns. The international community, including Canada, remains attentive to ensuring that reprocessing technologies do not negatively impact our shared nuclear non-proliferation priorities. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, in line with our multilateral engagements with the Nuclear Suppliers Group, as well as rigorous safeguards verification by the International Atomic Energy Agency.

Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of International Atomic Energy Agency safeguards to provide assurances that nuclear materials and technology are used solely for peaceful purposes.

The pathway to net zero by 2050 is the challenge of our time. To be successful, we must consider all potential options and solutions emerging from across the different energy sectors. We appreciate hearing your perspectives on these important issues.

Yours sincerely,



The Honourable Jonathan Wilkinson, P.C., M.P.

c.c.: **Distribution**

Canada

- 3 -

c.c.: **Distribution**

The Honourable Mélanie Joly, P.C., M.P.
Minister of Foreign Affairs
melanie.joly@international.gc.ca

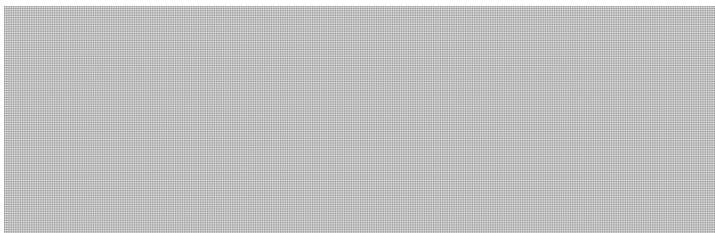
The Honourable Steven Guilbeault, P.C., M.P.
Minister of Environment and Climate Change
ministre-minister@ec.gc.ca

Canada



Natural Resources
Canada

Ressources naturelles
Canada



Dear [REDACTED] and co-signatories:

Thank you for your correspondence of September 22, 2023, addressed to the Minister of Energy and Natural Resources, the Honourable Jonathan Wilkinson, as well as Prime Minister Trudeau and other ministers, about the reprocessing of used CANDU fuel. I am responding on behalf of Minister Wilkinson.

Protecting the health and safety of Canadians and the environment is a top priority when it comes to the Government's approach to nuclear energy and radioactive waste. All radioactive waste in Canada is currently being safely managed according to Canadian legislation and in respect of international standards at facilities that are licensed and monitored by Canada's independent nuclear regulator – the Canadian Nuclear Safety Commission (CNSC). The CNSC reviews all nuclear projects carefully to determine their effects on the environment and on the people living or working in nearby communities.

To ensure that all radioactive waste in Canada is managed safely for generations to come, Natural Resources Canada (NRCan) recently released Canada's modernized Policy for Radioactive Waste Management and Decommissioning. It ensures that the safe management of radioactive waste in Canada continues to align with international standards and best practices, and that Canada's policy framework reflects the values and principles of Canadians following extensive engagement.

Canada

- 2 -

The Government of Canada is aware of the draft document on used nuclear fuel reprocessing prepared by the CANDU Owners Group through subject matter expert participation in small modular reactor (SMR) related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

While the government is not currently developing a reprocessing policy, it is monitoring the research and development of technologies related to the reprocessing of used CANDU fuel in Canada, and it remains receptive to understanding the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and non-proliferation – prior to its deployment.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some SMR technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment of used fuel reprocessing would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the *Treaty on the Non-Proliferation of Nuclear Weapons*, including the full implementation of IAEA safeguards to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.

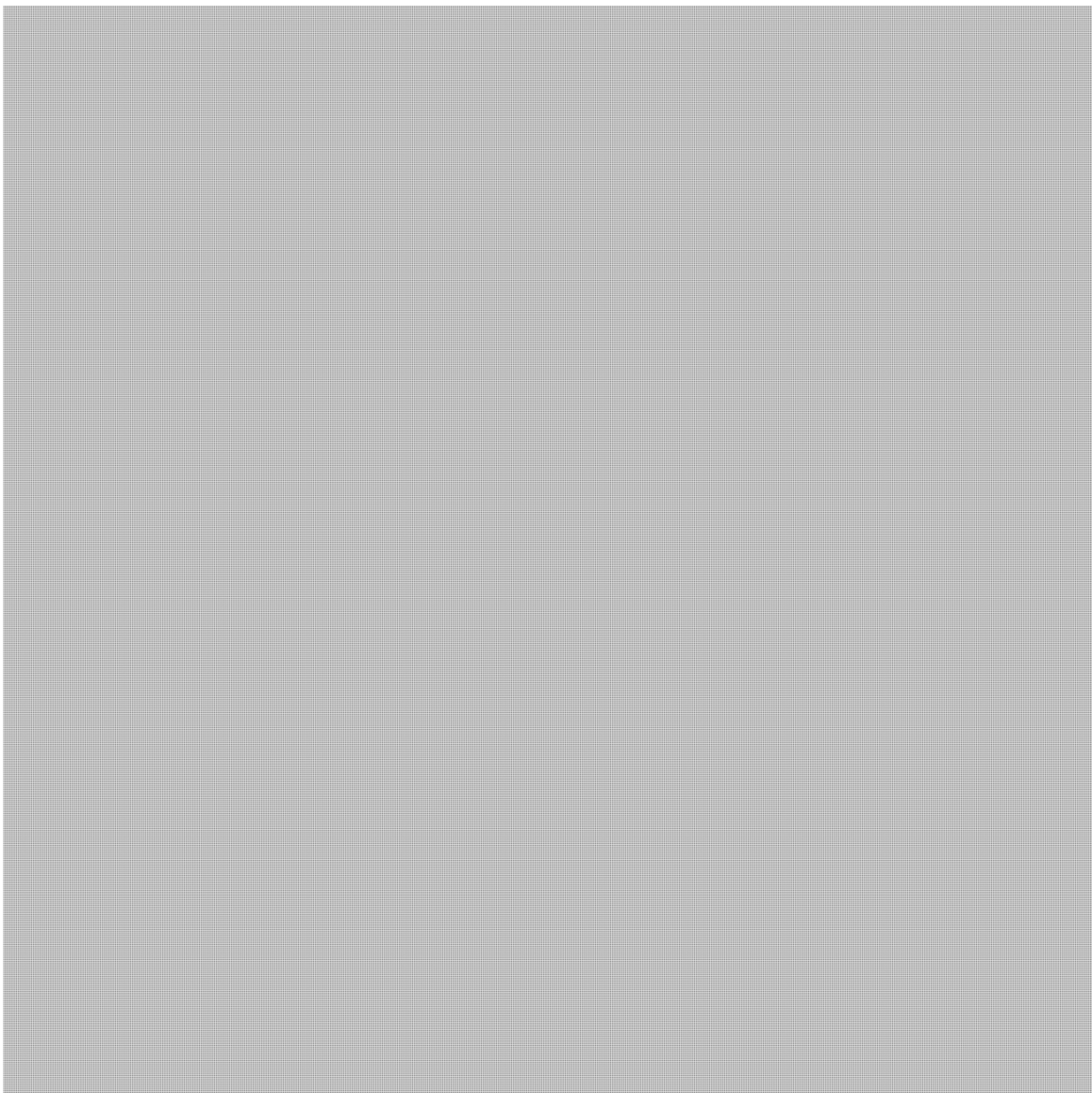
Thank you for sharing your views on this important matter.

- 3 -

Yours sincerely,

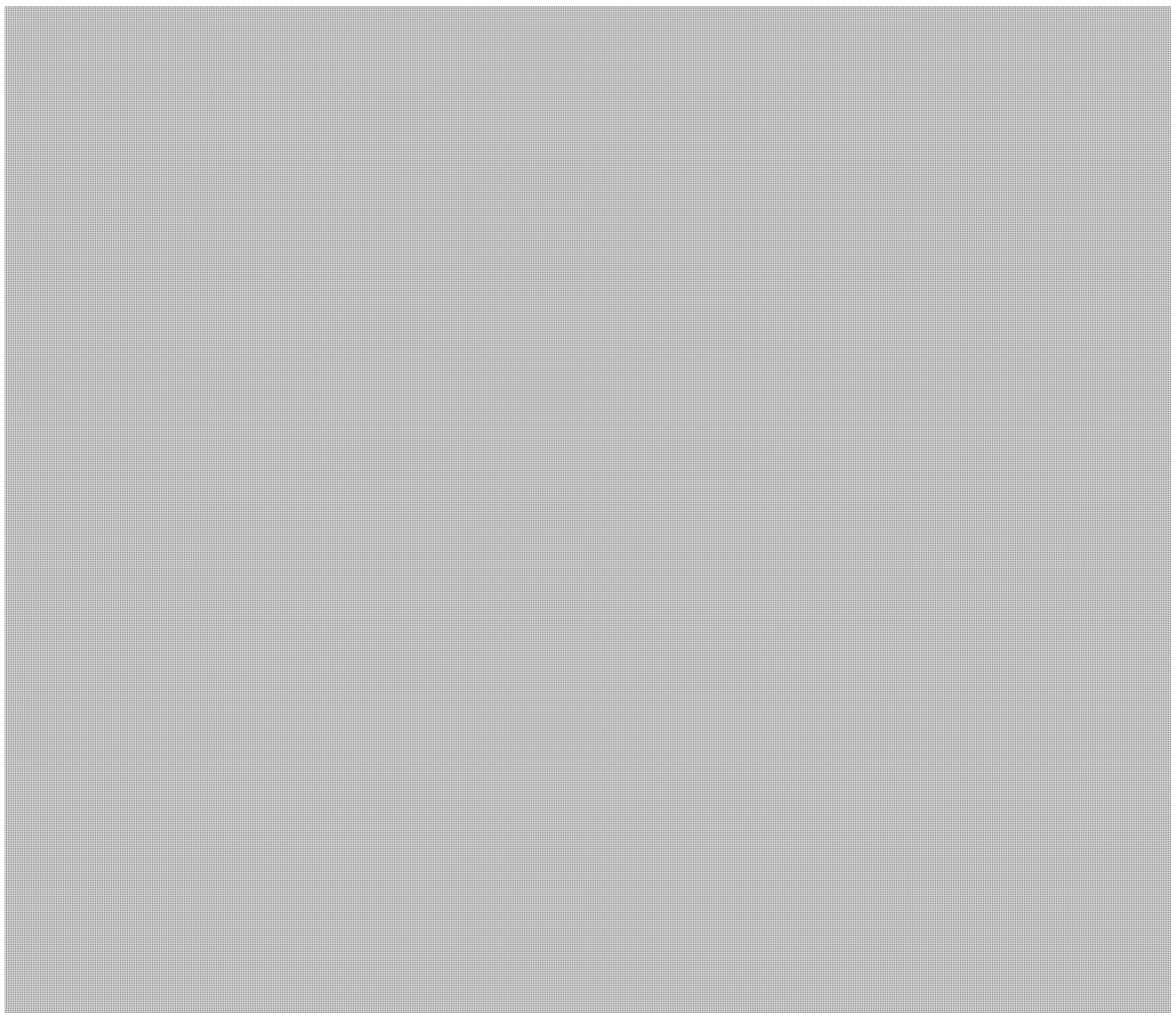
Debbie Scharf
Assistant Deputy Minister
Energy Systems Sector
Natural Resources Canada

Cc:



s.19(1)

- 4 -




A0068285_11-000598

s.19(1)

FW: NWW roundtable chat

April 29, 2024 10:35 AM

Subject	FW: NWW roundtable chat
From	Yuen, Pui Wai
To	Prosser, Kathleen
Cc	Wilkinson, David; Fairchild, Jamie
Sent	January 9, 2024 5:13 PM
Attachments	 E-DOCS-#71 99280-v1-...

UNCLASSIFIED - NON CLASSIFIÉ

Hi Kate,

Could you please take a look to see if we have any comments to add? We could always send it to [REDACTED] separately as well to give us more time.

I think it went into our junk mail as well since I don't see it in my inbox.

Thanks!
PW

From: McAllister, Andrew <Andrew.McAllister@cnscccsn.gc.ca>
Sent: 9 janvier 2024 13:50
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>; Kanasewich, Elaine <Elaine.Kanasewich@cnscccsn.gc.ca>
Subject: RE: NWW roundtable chat

Good afternoon colleagues,

Not sure that NRCan and GAC are in the same situation as us, but the meeting summary from the NGO roundtable on reprocessing ended up in our junk email folder.

I've attached CNSC's suggested edits to the meeting summary which we thought was overall well done. We will be passing these on to [REDACTED] by tomorrow.

Cheers,

Andrew

-----Original Appointment-----

From: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>
Sent: November 14, 2023 1:55 PM
To: Yuen, Pui Wai; Kanasewich, Elaine; McAllister, Andrew; Tanya.Hinton@international.gc.ca; Prosser, Kathleen
Cc: Bourassa, Pascale; Wilkinson, David

A0068286_1-000599

Subject: NWW roundtable chat

When: November 17, 2023 9:45 AM-11:45 AM (UTC-05:00) Eastern Time (US & Canada).

Where: Microsoft Teams Meeting

Good afternoon.

As discussed, this will hopefully be useful to share relevant information on the margins of the NWW roundtable.

Thanks,

Lee

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**November 2023 Reprocessing Roundtable
 Summary report – December 20, 2023 DRAFT**

Background

Nuclear Waste Watch is a national network of Canadian organizations concerned about high level radioactive waste and nuclear power. In November 2023, Nuclear Waste Watch convened a virtual roundtable of civil society, academic and government representatives to share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. The objective of the roundtable session was to better understand the perspectives and concerns of participants about reprocessing. Participants agreed the session recording would not be posted or shared. This summary report can be shared with colleagues but is not intended for public posting or public distribution.

Participants

Civil society:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- Susan O'Donnell, Representative, Coalition for Responsible Energy Development in New Brunswick
- [REDACTED]
- [REDACTED]
- [REDACTED]

Academic:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Government:

- Kathleen Prosser, Advisor, Small modular reactors and radioactive waste, Natural Resources Canada
- Pui Wai Yuen, Director, Uranium and Radioactive Waste Division, Natural Resources Canada
- Elaine Kanasewich, Director, ~~Non-Proliferation and Export Controls Division~~ International Safeguards Division, Canadian Nuclear Safety Commission
- Andrew McAllister, Director, Nuclear Processing Facilities, Canadian Nuclear Safety Commission
- Tanya Hinton, Senior Advisor, Global Affairs Canada

Summary of comments

Civil society participants

- Civil society groups participated actively in the Natural Resources Canada (NRCan) consultation on a new radioactive waste policy. Nuclear Waste Watch formed a steering committee which convened roundtables, held webinars, provided resource materials, and encouraged the public to participate.
- After NRCan released a draft policy, the steering committee produced an alternative radioactive waste policy which included forbidding the deployment of reprocessing technology in Canada. It noted the considerable evidence that reprocessing spent nuclear fuel creates nuclear weapons proliferation risks and international relations concerns, and operating experience shows that reprocessing facilities are highly contaminating of the local environment.
- Canada released a final radioactive waste policy that incorporated very few suggestions from civil society. We were concerned that it did not adequately address the topic of reprocessing. The policy states: *"Reprocessing, the purpose of which would be to extract fissile material from nuclear fuel waste for further use, is not presently employed in Canada, and so is outside the scope of this Policy; if ever brought forward, the radioactive waste from such a project would fall within the scope of this Policy."*
- Interest in reprocessing policy was raised following Canada's financial support in 2021 for the Moltex project in New Brunswick. Moltex proposes to build a reprocessing unit to extract plutonium from the used nuclear fuel / high level waste produced by the CANDU reactor at the NB Power Point Lepreau nuclear site.
- Access to Information (ATI) requests produced documents revealing that: the CNSC wants NRCan to develop a policy on reprocessing so it will be able to regulate proposed reprocessing technology; the industry wants a policy to permit reprocessing; and research on reprocessing is currently underway at the Chalk River labs.

- Canada has a history of reprocessing and related research at Chalk River, starting from around 1947. None of these projects have been posted on the impact assessment registry, despite the legal requirement for projects on federal lands to be made accessible for public comment.
- Whether or not Canada embarks on commercial reprocessing is a decision of significant consequences for civil society. It is essential for the question to be widely debated and discussed before any decision is made.
- An industry driven process will more or less dictate what the government policy is going to have to be. Public consultations are pretenses for public input, and they make no difference in policy development. The government is having backroom discussions with industry about a reprocessing policy.
- Including reprocessing in the nuclear fuel chain increases total radioactive releases and creates a new health burden for workers and members of the public. Gaseous products from reprocessing include radioactive forms of hydrogen, carbon and noble gases. Experience with commercial reprocessing plants in other countries found that those off gases are a real problem. Reprocessing facilities around the world remain toxic waste dumps that are incredibly expensive to clean up.
- Reprocessing does not reduce the need for long term isolation and management of fuel waste. The fission products in liquid reprocessing waste are particularly problematic because they require additional processing that is both technically challenging and very expensive.
- Reprocessing is pitched as recycling, and that it will somehow deal with the nuclear waste problem. It does not: the residual waste produced will still need long term isolation from the environment.
- The NWMO has signalled that they will be accepting SMR waste. There is a concern that reprocessing waste and the waste from the novel reactors will be added to the list of what the NWMO intends to bring into these regions where the proposed deep geological repository (DGR) is planned.
- Centralising all of Canada's CANDU waste could be the first step to a reprocessing operation. There is a high level of concern and suspicion in the DGR siting communities and regions about what the full agenda might be for any potential proposed site for a DGR; this concern is very directly linked to the reprocessing agenda.
- Should a reprocessing operation be added to a waste storage centralization site (including waste centralized for shallow storage, which the NWMO has reserved the option to pursue) there will be a very different security environment created for that area and that region.

- The lack of government information about the potential risks of reprocessing, considering that funding has already been allocated to develop it, is undemocratic. Most Canadians are completely uninformed, as are parliamentarians. MPs and the public are hearing that the Moltex project is wonderful because it will make our nuclear waste disappear, which is untrue.
- Reprocessing creates weapons usable material. There is considerable concern about the international geopolitical implications if Canada decides to go down this road.
- Highly enriched uranium can be denatured; for any type of weapons usable uranium, the concentration of fissile material can be lowered to the point where it is not weapons usable. Plutonium cannot be denatured by any method that we know.
- Reprocessing is a way of taking away the radioactive firewall between bombs and reactors. The plutonium created in a reactor is not accessible because of the blast of deadly radiation that prevents any human being from handling it without robotic equipment. Reprocessing removes that firewall and therefore makes the plutonium much more accessible.
- Research from U.S. nuclear laboratories is clear that reactor grade plutonium is weapons usable. Very effective and powerful nuclear weapons can be made using reactor grade plutonium. The need for safeguards to protect against the diversion applies equally to all grades of plutonium.
- The Government of Canada puts great certainty stress on its Non-Proliferation Treaty obligations and IAEA safeguards, neither of which prevents a non-nuclear weapons state from separating plutonium. Canada says it is committed to a fissile materials cut off treaty, so why is it considering reprocessing?
- Response to an ATI request revealed that misinformation is being shared within the government. For example, a memo to the NRCAN Assistant Deputy Minister says that a process similar to the one Moltex is proposing has already been done safely and under IAEA safeguards in several other countries, which is absolutely false. That information is provided to decision makers without any opportunity to counteract it.

Academic participants

- It is not clear how academic experts can connect with the government to share their expertise on reprocessing and learn more about reprocessing policy development. It was clarified that should a policy be developed, it would be NRCAN's responsibility because the NRCAN minister has oversight on policy related to radioactive waste.

- Given the implications around weapons proliferation, at a minimum one might expect there will be a moratorium on work in this space until the Government of Canada has a chance to think this through because this seems completely outside of the realm of anything Canada has contemplated so far and is probably outside of the expertise of the relevant agencies.
- Moltex has not revealed a lot about its reprocessing proposal. The recent announcement of a “breakthrough” did not include any technical details. The process seems to be close to pyroprocessing, but Moltex may claim it is different from pyroprocessing. M.V. Ramana and Jungmin Kang recently wrote a paper on how much waste would be produced from the Moltex project and the proliferation aspects, published in the *Bulletin of Atomic Scientists*.
- Pyroprocessing is a general term used to distinguish it from processes that use aqueous solutions. There is a family of different pyroprocessing options. Moltex may vary in certain respects from the pyroprocessing calamity at the Idaho National Laboratory in the U.S., but the all the main issues associated with these non-aqueous techniques are similar, all rooted in the same basic engineering.
- Based on the experience at the Idaho National Laboratory, there are no advantages of this technology worthy of repeating. That experiment has failed to effectively deal with the limited stockpile of irradiated fuel that it was set out to manage in the late 1990s. Canada should take a closer look at the actual experience with this technology, rather than what the boosters claim about it, which is completely out of sync with the reality.
- The biggest volume waste stream from the U.S. pyroprocessing experiment is the uranium separated in the spent fuel. It was discovered that the uranium is not decontaminated but has substantial amounts of plutonium sticking to it. It is a big waste management headache.
- The kind of chemical forms these reprocessing wastes are going to be is unknown. What is certain is that there will be a lot of waste, and it will be necessary to find a repository for it, which might be complicated because of the chemical forms in which it comes out. It shows how absurd the claims are that this is something that would actually benefit nuclear waste management.
- There is no effective approach yet for safeguarding pyroprocessing for a number of technical reasons. It is more difficult to verify the absence of diversion of significant quantities of nuclear material from pyroprocessing than it is from an aqueous reprocessing, partly because aqueous reprocessing has a step where there is accountability of whatever you put into it. It is not clear at all that the IAEA can develop a safeguards approach for pyroprocessing that meet its own timeliness and quantity goals for verifying the absence of diversion.
- Claims that a technology like pyroprocessing – which has inherent impurities and is not perfect separation – somehow gives additional proliferation resistance and makes the process less of a concern are simply not true. The major reason is that most of the other

actinides that are separated, along with plutonium, are themselves a proliferation concern. It is a complete fallacy that this process has any kind of proliferation resistance, and it is as bad or worse than aqueous reprocessing.

Government participants

- Canada's policy on radioactive waste management and decommissioning was released earlier this year. The new policy elaborates the roles and responsibilities of both the federal government and the waste owners, Indigenous engagement, and open and transparent engagement. The waste from reprocessing will fall under the radioactive waste policy.
- The government is not currently developing a reprocessing policy but is monitoring closely the research and development of the technologies related to reprocessing and the use of used nuclear fuel in Canada. The government remains receptive to understanding the science, benefits and risks associated with potential technology that could reprocess used nuclear fuel.
- The government's focus has been on the research. Government wants to better understand what the different regimes would mean with the different handling processes, and the research would provide that information.
- In response to a question about where the government is getting their information from, the response was that the appropriate people in the government are tracking and reading academic experts on the topic.
- The document produced by the CANDU Owners Group on reprocessing is strictly an industry-led document. It is their way of sharing with the government their views of what a potential policy could look like, and it is good that they are thinking about these things. The different exchanges that the government may have with industry is part of the work to better understand different perspectives.
- The government remains neutral on the commercial deployment of used fuel reprocessing as part of Canada's nuclear fuel cycle. The ongoing research will help them understand the risks and benefits of these technologies and support their ability to assess the technology and inform if there is a need for policy to be developed in this area.
- A decision has not been made to develop a policy. A policy on reprocessing in Canada would require consideration by the federal government of all relevant factors, including the safety, the security, sustainability, and particularly nonproliferation implications, prior to any deployment.
- No commercial facilities exist for reprocessing in Canada. Any deployment or any potential reprocessing facilities in Canada will be subject to the regulatory framework under the

Nuclear Safety and Control Act, as well as safeguards verification by the International Atomic Energy Agency. Any proposal for commercial deployment of used fuel reprocessing will be subject to regulatory review with opportunities for the public to provide input.

- Government is encouraging the vendors to have early discussions with the NWMO as they are building towards the design of the safety case for the project. The government wants to make sure that any novel or different types of fuel waste can be suitable for the DGR.
- Any plans or existing research related to the nuclear fuel cycle, including reprocessing, triggers obligations towards safeguards. The International Atomic Energy Agency is aware of the current research undertaken at Canadian Nuclear Laboratories. The facilities are ~~government is~~ providing the adequate reporting. Inspectors are welcome to come and explore and do any verification that they see fit at facilities conducting research related to reprocessing, including that being conducted at CNL. There is extensive reporting and knowledge of the activities not only at CNL but any other research institute, or university located in Canada undertaking or wishing to undertake anything to do with reprocessing.
- Clarified that fuel and other related research at Canadian Nuclear Laboratories has followed the federal lands assessment process and is within their licensing basis.
- The small modular reactor explosion of technologies is presenting challenges which include the fuel cycle itself. Safeguards are constantly evolving to address these emerging issues.
- The vendor themselves, as well as the CNSC and other countries, are collaborating with ~~the~~ the IAEA on projects called safeguards by design. In the design phase, the aspects needed to help promote safeguards are actually designed into the reactors themselves to facilitate safeguards inspections. Government is working to ensure that the safeguards and their application evolve as appropriate as the technology progresses.
- Canada has nuclear export controls and nuclear cooperation agreements, which are bilateral treaties, that include Non-Proliferation for commitments for any trade in the nuclear sphere, and there are rules around reprocessing within these agreements. Any trade and exports that Canada does in the nuclear sphere requires IAEA safeguards, and the recipient countries would have to be providing assurances of their peaceful use.
- If at some point the government decides to develop a policy, the expectation is that there will be an opportunity during the policy development to engage the public interest, Canadians, Indigenous peoples. The caveat is that although government participants will advocate for an opportunity for the public to comment, governments change, and different governments can have different mandates or priorities.

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

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- In response to a question about the letters sent to Prime Minister Trudeau from U.S. non-proliferation experts, it was clarified that the government had sent response letters. Note: after the meeting, it was confirmed that letters had been sent but not received and the letters were resent.

DRAFT FOR REVIEW

FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

April 29, 2024 10:17 AM

Subject	FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts
From	Wilkinson, David
To	Ottaway, Chelsea
Cc	Yuen, Pui Wai
Sent	November 28, 2023 1:28 PM
Attachments	 FW A06255-2...  {D2023-11-27T14-15...

Hello,

Following up on your chat with PW. The two Min responses in question are highlighted below (very similar numbers). If they can simply be resent, that is best, and then confirmation to us so we know and can follow-up accordingly with [REDACTED]

Thanks,

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
 Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
 Natural Resources Canada / Ressources naturelles Canada

From: Wilkinson, David

Sent: Tuesday, November 28, 2023 12:32 PM

To: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>

Cc: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

Hello,

So it looks like we have 1) Signed response from Min O'Regan on August 13, 2021, attached (192468), provided by Chantal yesterday; 2) Signed response from Min Wilkinson on January 5, 2022, attached (194268); and 3) the most recent response from our ADM dated November 2, 2023 (203954). We have an actual email trail for the recent ADM reply, because the outgoing email with attached PDF response is copied to the docket folder.

Is there any way to obtain the actual outgoing email for the two Min-level responses, so we know in

fact that the Min signed letters were emailed to [REDACTED] and co-signatories say they've never received the two previous Min replies.

Thanks,

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>

Sent: Monday, November 27, 2023 2:30 PM

To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

Chantal says looks like it was sent. Signed letter attached.

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Sent: Monday, November 27, 2023 1:31 PM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

Hi Pui Wai,

The response must have been resent on Nov 20, after Tess updated it to add the co-signatories. Hence why [REDACTED] has received it. Either way, it looks like they've received it, which is great.

In my last email I requested that Jade look into the system to confirm if the 2021 response was ever sent out, but I also indicated that it looks like it was not based on the folder not having a min signed version. Assuming Jade confirms it was never sent, please see draft response below.

Dave

Good afternoon [REDACTED] Susan and [REDACTED]

Thank you for confirming receipt of the response from our Assistant Deputy Minister's Office. Regretfully, it seems that no earlier response on the topic was provided in regards to the letter from 2021. The response you received on November 20 should be considered applicable to both instances. Please accept my apologies.

Sincerely,

A0068287_2-000610

[pw signature]

From: [REDACTED]
Sent: 27 novembre 2023 12:23
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; [REDACTED]
 [REDACTED]; Susan O'Donnell <susanodo.ca@gmail.com>
Subject: Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

*****Caution** - email originated from outside of NRCan. **Read the warning below /**
Attention- Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-**
dessous***

Good morning Pui Wai and Tanya Hinton et al. -

This is to inform you that the letter from NRCan dated November 20 2023 was indeed received by [REDACTED] and cosignatories, in response to the letter sent to the Prime Minister earlier this year on September 22, 2023.

There is as yet no record of the earlier letter from NRCan responding to the three 2021 letters from [REDACTED] and a smaller number of cosignatories. It is quite possible that that letter ended up being filtered out by their email software as "suspicious".

Cheers,

On Nov 27, 2023, at 5:01 AM, Susan O'Donnell <susanodo.ca@gmail.com> wrote:

Good morning Pui Wai and colleagues,

I'm following up on a point raised during our zoom meeting on November 17. [REDACTED] will be sending out notes and official follow-up in due course.

I appreciate your engagement, Pui Wai, Kathleen and Tanya on the reprocessing topic. As I mentioned at the meeting, what most concerns me is the lack of transparency by the government / public service about the risks of reprocessing. Canadians need to understand both the risks and the perceived benefits to be able to make informed opinions about it.

Pui Wai, at the meeting [REDACTED] asked about the open letters to the PM from [REDACTED] and colleagues in the U.S. raising concerns about the Moltex project and reprocessing. You stated that NRCan had responded twice to those letters. I mentioned that I had communicated with [REDACTED] who had not received a response. Last week I checked again and he confirmed that he had not received a response.

We invited [REDACTED] to our Nov. 17 meeting but he was unable to attend. I'm cc'ing him here along with [REDACTED] who signed the last open letter and who were able to attend the meeting. I've also cc'd [REDACTED] who was also at the meeting and is communicating with me about this.

A0068287_3-000611

Pui Wai you seemed certain that NRCan did respond to those open letters; by sending this email I'm not trying to put you on the spot but rather to clear up what's obviously a miscommunication. The letters that NRCan sent did not reach the intended recipient so something went awry somewhere.

If the NRCan responses were open letters could you please send them to us by reply email. If they were sent personally to [REDACTED] could you please resend to him and he can forward them to us if he so wishes.

Thanks everyone for your engagement on this important topic.

Susan

Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

Susan O'Donnell, PhD
Adjunct Research Professor
Lead investigator, the [CEDAR](#) project
Environment and Society Program
St. Thomas University
Fredericton, New Brunswick, Canada
susanodo.ca@gmail.com

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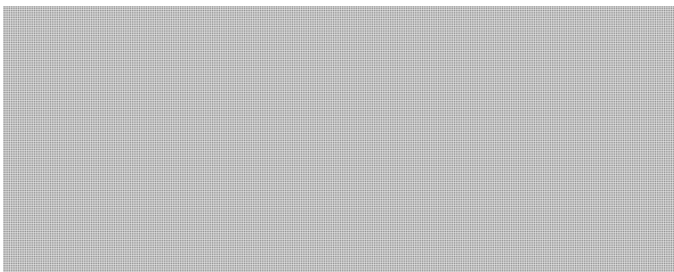
Minister
of Natural Resources



Ministre
des Ressources naturelles

Ottawa, Canada K1A 0E4

August 13, 2021



Dear [REDACTED] and Co-signatories:

The Prime Minister's Office has forwarded to me a copy of your correspondence of May 25, 2021, regarding Canadian support for extracting plutonium from spent nuclear fuel.

We cannot lose focus nor lose ground on the growing threat that climate change presents to the planet and to the health and livelihoods of all Canadians. For this reason, on December 11, 2020, the Government released A Healthy Environment and a Healthy Economy, the federal plan to build a better future. This plan builds on the work done to date and efforts that are underway and continues down the path that Canadians, governments, and businesses have been setting. It is a key pillar in our commitment to creating over one million jobs, restoring employment to pre-pandemic levels, and climate action and clean growth are a cornerstone of this commitment.

The climate plan includes a wide array of measures and investments in renewable and next-generation technologies. This includes technologies that will bring more clean and non-emitting power onto our grids, encourage cleaner modes of transportation such as zero-emission vehicles and transit, and make our homes and businesses more energy efficient.

Budget 2021, released in April 2021, is a plan for a green recovery. It is a plan that fights climate change, helps more than 200,000 Canadians make their homes greener, and builds a net-zero economy by investing in world-leading technologies that make industry cleaner and reduce pollution. It also helps Canada reach its goal of conserving 25% of our lands and oceans by 2025 and creates good middle-class jobs in the green economy along the way.

Canada

- 2 -

The Government of Canada is also working closely with partners to advance the safe development of small modular reactor (SMR) technology. Canada has a long history of safe and responsible development of nuclear energy, which plays an important role in Canada's current energy mix. Nuclear energy accounts for 15% of our current supply of electricity, including approximately 60% of our supply in Ontario and approximately 40% in New Brunswick. The sector also contributes approximately \$17 billion per year to Canada's gross domestic product and accounts for 76,000 jobs across the country, including over 200 small- and medium-sized enterprises.

SMRs represent a new field of innovation and a potential tool to reduce emissions and create jobs and economic growth. Several provincial governments, including New Brunswick, Ontario, Alberta, and Saskatchewan, as well as Indigenous communities and organizations, have expressed a clear interest in using SMR technologies to reduce their greenhouse gas emissions, decarbonize heavy industry, and spur economic development. The Government of Canada is working closely with these partners and like-minded countries such as the United States and the United Kingdom to capitalize on this important opportunity. In fact, in December 2020, the Government launched Canada's SMR Action Plan, which outlines a series of concrete actions that over 100 partners are taking to advance the development of SMR technologies.

I remain encouraged by the strong interest and collaboration that I have seen among governments and stakeholders in advancing new nuclear technologies, and I believe that the Government of Canada's efforts are helping to position Canada as a global leader in the safe and responsible development of nuclear energy.

Thank you for sharing your views on one of these new technologies. The pathway to net-zero emissions by 2050 is the challenge of our time. To be successful, we must consider all potential options and solutions emerging from across the different energy sectors, and we appreciate hearing your perspectives on this important issue.

The Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure and environmentally sustainable way while meeting Canada's non-proliferation obligations. Reprocessing used CANDU fuel, as proposed by Moltex Energy, has the potential to power existing and future nuclear reactors while reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository. If this technology proves viable, it would allow Canada to extract energy further from a used resource, potentially providing Canadians with emissions-free energy for years to come while reducing long-lived radioactive waste.

Canada's investment in Moltex at this early stage in the development of the technology is meant to enable research that will allow for a better understanding of both the benefits and risks of its new proposed reprocessing technology. The investment at this stage anticipates whether such technology will receive regulatory approval.

- 3 -

Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

Canada acknowledges that nuclear reprocessing is a sensitive technology and remains attentive to the need to ensure that reprocessing technologies do not negatively affect our shared nuclear non-proliferation priorities. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act* as well as safeguards verification by the International Atomic Energy Agency.

Thank you for writing.

Yours sincerely,



The Honourable Seamus O'Regan Jr., P.C., M.P.

Minister
of Natural Resources



Ministre
des Ressources naturelles

Ottawa, Canada K1A 0E4

January 5, 2022

Dear [REDACTED]

The Prime Minister's Office has forwarded to me a copy of your correspondence of December 3, 2021, regarding plutonium separation from CANDU spent fuel. Thank you for taking the time to write.

As the former Minister of Natural Resources indicated in his response of August 13, 2021, to your previous correspondence, our climate plan includes an array of measures and investments in renewable and next-generation technologies, including technologies that will bring more clean, non-emitting power onto our grids, encourage cleaner modes of transportation such as zero-emission vehicles and transit, and make our homes, businesses, and industries more energy-efficient.

As part of this plan, the Government of Canada is working closely with partners to ensure that any future development of Small Modular Reactor technology can be done safely. Canada has a long history of safe and responsible development of nuclear energy, which plays an important role in Canada's current energy mix. Small Modular Reactors represent a new field of innovation and a potential tool to reduce emissions while creating jobs and stimulating economic growth. Several provincial governments, including New Brunswick, Ontario, Alberta and Saskatchewan, as well as Indigenous communities and organizations, have expressed a clear interest in using Small Modular Reactor technologies to reduce their greenhouse gas emissions, decarbonize heavy industry and spur economic development.

The Government of Canada is also working closely with like-minded countries such as the United States and the United Kingdom to realize this important opportunity for Canada. The strong interest and collaboration among governments and stakeholders in advancing new nuclear technologies, while ensuring international non-proliferation norms are respected, is encouraging. The Government of Canada's efforts position Canada as a global leader in the safe and responsible development of nuclear energy, with nuclear safety, security and non-proliferation as our guiding principles.

Canada

The Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure and environmentally sustainable way. Intergovernmental consultations on the implications of commercial reprocessing, including for non-proliferation, are ongoing.

The reprocessing of used CANDU fuel, as proposed by Moltex, has the potential to power existing and future nuclear reactors while potentially reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository. If this technology proves viable, it would allow Canada to extract additional energy from a used resource, potentially providing Canadians with emissions-free energy for years to come while reducing long-lived radioactive waste. Canada's investment in Moltex enables research that will allow a better understanding of the technology, including both benefits and risks that must be considered as part of any policy approval by the Government of Canada on reprocessing.

We recognize that nuclear reprocessing is a technology that raises sensitive non-proliferation concerns. The international community, including Canada, remains attentive to ensuring that reprocessing technologies do not negatively impact our shared nuclear non-proliferation priorities. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, in line with our multilateral engagements with the Nuclear Suppliers Group, as well as rigorous safeguards verification by the International Atomic Energy Agency.

Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of International Atomic Energy Agency safeguards to provide assurances that nuclear materials and technology are used solely for peaceful purposes.

The pathway to net zero by 2050 is the challenge of our time. To be successful, we must consider all potential options and solutions emerging from across the different energy sectors. We appreciate hearing your perspectives on these important issues.

Yours sincerely,



The Honourable Jonathan Wilkinson, P.C., M.P.

c.c.: **Distribution**

Canada

- 3 -

c.c.: **Distribution**


The Honourable Mélanie Joly, P.C., M.P.
Minister of Foreign Affairs
melanie.joly@international.gc.ca

The Honourable Steven Guilbeault, P.C., M.P.
Minister of Environment and Climate Change
ministre-minister@ec.gc.ca

Canada

FW: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt

April 29, 2024 10:18 AM

Subject	FW: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Wilkinson, David; Wittmann, Tess (she, her elle, elle)
Sent	November 28, 2023 2:39 AM
Attachments	 194268 MIN SIGN...

Attached is the signed copy from the previous correspondence.

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: "Prosser, Kathleen" <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Date: 2023-10-03 2:57 p.m. (GMT+01:00)
To: Tanya.Hinton@international.gc.ca
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt

Hi Tanya -

The timelines for our docket have this moving past our DGO on October 11th, so I'd like to have it in front of my Director by EOD Thursday to get it moving before the end of the week - if at all possible it would be great to have your edits by 2 pm Thursday.

On what letters have been sent before, I have the attached from January 2022 but nothing signed in response to the earlier letters in 2021. Can certainly note the letter from Jan 2022 but wouldn't want to reference anything else as we don't have the records on our end confirming it was ever sent..

-Kate

Kathleen Prosser, PhD.

(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

-----Original Message-----

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Friday, September 29, 2023 5:06 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

Hi Kate

Thanks for sharing. It's a good draft. I do have a few suggested edits, but would like to run them by my Director. When do you need input by?
I was also wondering if you were ever able to confirm that the previous letter was sent? I know Dan was never able to track down a signed version, so I'm now wondering if it in fact it was never sent. If it was, you could perhaps note that in your reply (but of course, I leave that to NRCan)

Tanya

-----Original Message-----

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: September 29, 2023 3:14 PM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

Declassified by ATIP/
PROTÉGÉ PAR PROTÉGÉ B

Hi Tanya,

Attached is an early draft for your review, this hasn't gone through any of the approval chains yet but welcome your thoughts.

Thanks!
-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada Division de l'uranium et des
déchets radioactifs | Ressources naturelles Canada _____

-----Original Message-----

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Friday, September 29, 2023 2:10 PM
To: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Daniel.Barbarie@international.gc.ca;
Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen

A0068287_12-000620

<Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>;
Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-
RNCan.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

Sorry to Daniel and Dan. I added the wrong person!

Grateful if GAC could be consulted on your reply, as our Minister was also forwarded the letter.

Thanks
Tanya

-----Original Message-----

From: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Sent: September 28, 2023 4:19 PM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>; Barbarie, Daniel -IGN
<Daniel.Barbarie@international.gc.ca>; Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen
<Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>;
Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-
RNCan.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

**Declassified by ATIP/
Déclassifié par l'ARDP**

Hi Tanya,

Thanks for reaching out. I believe it's in Dave and Kate's capable hands as we speak. Looking for
them to confirm.

Jamie

(he/him/il/lui)
Senior Advisor | Conseiller principale
Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs
Telephone | Téléphone: 343.543.6983
NEW: Jamie.Fairchild@NRCan-RNCan.gc.ca

-----Original Message-----

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Thursday, September 28, 2023 3:41 PM
To: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Daniel.Barbarie@international.gc.ca;
Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>
Subject: FW: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM
correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre
ou du sous-ministre.txt

Hello

Just wondering if NRCan will plan to take the lead on responding to this, as you did in the past?
I also note that the letter suggests they never received the previous reply, which is a bit curious.

Tanya

A0068287_13-000621

s.19(1)

-----Original Message-----

From: Graham, Mark -IGD <Mark.Graham@international.gc.ca>
Sent: September 28, 2023 1:46 PM
To: Bournillat, Frankie -DCC <Frankie.Bournillat@international.gc.ca>; Thoppil, Naina -IGN <Naina.Thoppil@international.gc.ca>; Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: RE: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt

Thanks Frankie. I have looped in IGN colleagues, but the lead for a response would probably lie with NRCan who could reach out to us as appropriate.

Mark

-----Original Message-----

From: Bournillat, Frankie -DCC <Frankie.Bournillat@international.gc.ca>
Sent: September 28, 2023 1:35 PM
To: EXTOTT (IGD) <igd@international.gc.ca>; *IGD <D-IGD@international.gc.ca>
Subject: A06255-2023 MCMS Notification - REQUEST TO DRAFT Ministerial or DM correspondence _ Notification SGCM - DEMANDE DE RÉDACTION d'une correspondance du ministre ou du sous-ministre.txt

REQUEST / DEMANDE : Record A06255-2023 has been assigned to DRAFT a reply for MINA signature. Please advise us as soon as possible if this tasking has been misdirected. / L'enregistrement A06255-2023 a été assigné à votre direction générale pour la rédaction d'une réponse pour la signature de MINA. Si cette demande a été adressée au mauvais endroit, veuillez nous en avertir dès que possible.

CORRESPONDENT / CORRESPONDANT :

[REDACTED]

SUBJECT / OBJET : Non-proliferation and disarmament / Non-prolifération et désarmement

DESCRIPTION : Request for a nuclear weapons proliferation risk assessment of the Canadian-government-funded proposal to separate plutonium from CANDU spent fuel (no record of September 22, 2023, email addressed to MINA at her parl.gc.ca addy)

LANGUAGE / LANGUE : Draft replies must be in the same official language as the incoming correspondence (in both official languages if received as such). / La réponse doit être dans la même langue officielle que la correspondance reçue (dans les deux langues officielles si elle est reçue comme telle).

DEADLINE / ÉCHÉANCIER : 2023-10-19.

DELIVERY / LIVRAISON : Attach approved draft (Word) to MCMS record. Close all bureau and divisional routings. Open new routing and assign to DCC/Editor with Task: "Edit." Save the record. If no access to MCMS, send by email to *DCC Editors - Réviseurs. / Joignez l'ébauche approuvée (Word) à l'enregistrement SGCM. Fermez tous les acheminements à la direction générale et à la direction. Ajoutez un nouvel acheminement à DCC/Editor, avec la tâche « Edit ». Sauvegardez l'enregistrement. Si vous n'avez pas accès au SGCM, veuillez transmettre par courriel à *DCC Editors - Réviseurs.

APPROVAL, TEMPLATE AND OTHER INSTRUCTIONS:

A0068287_14-000622



<http://modus/services/int-ser/comm/7097897-7097899.aspx?lang=eng>

APPROBATION, GABARIT ET AUTRES INSTRUCTIONS :

<http://modus/services/int-ser/comm/7097897-7097899.aspx?lang=fra>

FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

April 29, 2024 10:30 AM

Subject	FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts
From	Yuen, Pui Wai
To	Prosser, Kathleen; Wilkinson, David
Sent	December 1, 2023 5:39 PM
Attachments	 REPLY TO YOUR CO...  REPLY TO YOUR CO...

UNCLASSIFIED - NON CLASSIFIÉ

Fyi – I BCCed Tanya on this email.

From: Yuen, Pui Wai

Sent: 1 décembre 2023 17:36

To: [REDACTED]

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

Dear [REDACTED]

Thank you for your follow-up. We are pleased to have received confirmation from [REDACTED] that the recent response from our Assistant Deputy Minister's Office on reprocessing was received in reply to your September 22, 2023, letter.

We have also been able to confirm that two previous responses on the topic of reprocessing were sent to you from our Minister's Office on August 13, 2021, from Minister O'Regan, and on January 5, 2022, from Minister Wilkinson, both of which were sent to your incoming email address –

[REDACTED] We are resending these to you, as attached. Please kindly confirm receipt.

Since the responses were sent to you personally, we will leave it with you should you wish to forward them to other interested parties.

Thank you for your patience.

Sincerely,
Pui Wai

A0068288_1-000624

s.19(1)

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: [REDACTED]

Sent: 27 novembre 2023 08:29

To: Susan O'Donnell <susanodo.ca@gmail.com>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca;

Subject: Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

Thanks, Susan!

I look forward to receiving copies of the letters to me from Natural Resources Canada and will share them with the other US signatories of the three letters from US nonproliferation experts to Prime Minister Trudeau.

With very best regards,

From: Susan O'Donnell <susanodo.ca@gmail.com>

Date: Monday, November 27, 2023 at 5:01 AM

To: "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>

Cc: "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>,

"Tanya.Hinton@international.gc.ca" <Tanya.Hinton@international.gc.ca>,

Subject: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

Good morning Pui Wai and colleagues,

I'm following up on a point raised during our zoom meeting on November 17.

[REDACTED] will be sending out notes and official follow-up in due course.

I appreciate your engagement, Pui Wai, Kathleen and Tanya on the reprocessing topic. As I

A0068288_2-000625

mentioned at the meeting, what most concerns me is the lack of transparency by the government / public service about the risks of reprocessing. Canadians need to understand both the risks and the perceived benefits to be able to make informed opinions about it.

Pui Wai, at the meeting [REDACTED] asked about the open letters to the PM from [REDACTED] and colleagues in the U.S. raising concerns about the Moltex project and reprocessing. You stated that NRCan had responded twice to those letters. I mentioned that I had communicated with [REDACTED] who had not received a response. Last week I checked again and he confirmed that he had not received a response.

We invited [REDACTED] to our Nov. 17 meeting but he was unable to attend. I'm cc'ing him here along with [REDACTED] who signed the last open letter and who were able to attend the meeting. I've also cc'd [REDACTED] who was also at the meeting and is communicating with me about this.

Pui Wai you seemed certain that NRCan did respond to those open letters; by sending this email I'm not trying to put you on the spot but rather to clear up what's obviously a miscommunication. The letters that NRCan sent did not reach the intended recipient so something went awry somewhere.

If the NRCan responses were open letters could you please send them to us by reply email. If they were sent personally to [REDACTED] could you please resend to him and he can forward them to us if he so wishes.

Thanks everyone for your engagement on this important topic.

Susan

Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

Susan O'Donnell, PhD
Adjunct Research Professor
Lead investigator, the [CEDAR](#) project
Environment and Society Program
St. Thomas University
Fredericton, New Brunswick, Canada
susanodo.ca@gmail.com

This email originated from outside of NRCan. **Do not click links or open attachments unless you recognize the sender and believe the content is safe.** For information on how to recognize and report phishing emails, please visit the [Phishing Spot](#) on the NRCan Intranet.

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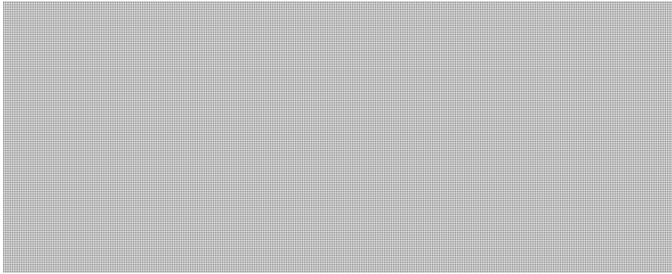
Minister
of Natural Resources



Ministre
des Ressources naturelles

Ottawa, Canada K1A 0E4

August 13, 2021



Dear [REDACTED] and Co-signatories:

The Prime Minister's Office has forwarded to me a copy of your correspondence of May 25, 2021, regarding Canadian support for extracting plutonium from spent nuclear fuel.

We cannot lose focus nor lose ground on the growing threat that climate change presents to the planet and to the health and livelihoods of all Canadians. For this reason, on December 11, 2020, the Government released A Healthy Environment and a Healthy Economy, the federal plan to build a better future. This plan builds on the work done to date and efforts that are underway and continues down the path that Canadians, governments, and businesses have been setting. It is a key pillar in our commitment to creating over one million jobs, restoring employment to pre-pandemic levels, and climate action and clean growth are a cornerstone of this commitment.

The climate plan includes a wide array of measures and investments in renewable and next-generation technologies. This includes technologies that will bring more clean and non-emitting power onto our grids, encourage cleaner modes of transportation such as zero-emission vehicles and transit, and make our homes and businesses more energy efficient.

Budget 2021, released in April 2021, is a plan for a green recovery. It is a plan that fights climate change, helps more than 200,000 Canadians make their homes greener, and builds a net-zero economy by investing in world-leading technologies that make industry cleaner and reduce pollution. It also helps Canada reach its goal of conserving 25% of our lands and oceans by 2025 and creates good middle-class jobs in the green economy along the way.

Canada

- 2 -

The Government of Canada is also working closely with partners to advance the safe development of small modular reactor (SMR) technology. Canada has a long history of safe and responsible development of nuclear energy, which plays an important role in Canada's current energy mix. Nuclear energy accounts for 15% of our current supply of electricity, including approximately 60% of our supply in Ontario and approximately 40% in New Brunswick. The sector also contributes approximately \$17 billion per year to Canada's gross domestic product and accounts for 76,000 jobs across the country, including over 200 small- and medium-sized enterprises.

SMRs represent a new field of innovation and a potential tool to reduce emissions and create jobs and economic growth. Several provincial governments, including New Brunswick, Ontario, Alberta, and Saskatchewan, as well as Indigenous communities and organizations, have expressed a clear interest in using SMR technologies to reduce their greenhouse gas emissions, decarbonize heavy industry, and spur economic development. The Government of Canada is working closely with these partners and like-minded countries such as the United States and the United Kingdom to capitalize on this important opportunity. In fact, in December 2020, the Government launched Canada's SMR Action Plan, which outlines a series of concrete actions that over 100 partners are taking to advance the development of SMR technologies.

I remain encouraged by the strong interest and collaboration that I have seen among governments and stakeholders in advancing new nuclear technologies, and I believe that the Government of Canada's efforts are helping to position Canada as a global leader in the safe and responsible development of nuclear energy.

Thank you for sharing your views on one of these new technologies. The pathway to net-zero emissions by 2050 is the challenge of our time. To be successful, we must consider all potential options and solutions emerging from across the different energy sectors, and we appreciate hearing your perspectives on this important issue.

The Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure and environmentally sustainable way while meeting Canada's non-proliferation obligations. Reprocessing used CANDU fuel, as proposed by Moltex Energy, has the potential to power existing and future nuclear reactors while reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository. If this technology proves viable, it would allow Canada to extract energy further from a used resource, potentially providing Canadians with emissions-free energy for years to come while reducing long-lived radioactive waste.

Canada's investment in Moltex at this early stage in the development of the technology is meant to enable research that will allow for a better understanding of both the benefits and risks of its new proposed reprocessing technology. The investment at this stage anticipates whether such technology will receive regulatory approval.

- 3 -

Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

Canada acknowledges that nuclear reprocessing is a sensitive technology and remains attentive to the need to ensure that reprocessing technologies do not negatively affect our shared nuclear non-proliferation priorities. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act* as well as safeguards verification by the International Atomic Energy Agency.

Thank you for writing.

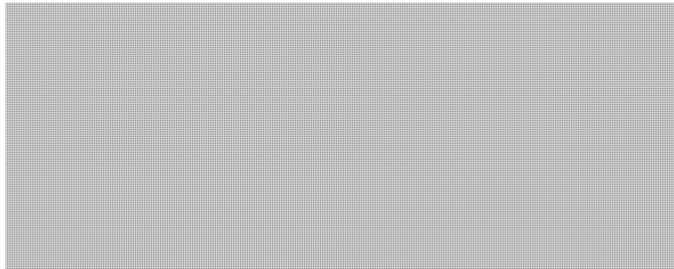
Yours sincerely,



The Honourable Seamus O'Regan Jr., P.C., M.P.



August 13, 2021



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Canada

- 2 -

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- 3 -

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Canada acknowledges that nuclear reprocessing is a sensitive technology and remains attentive to the need to ensure that reprocessing technologies do not negatively affect our shared nuclear non-proliferation priorities. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act* as well as safeguards verification by the International Atomic Energy Agency.

Thank you for writing.


Yours sincerely,



The Honourable Seamus O'Regan Jr., P.C., M.P.

194268 / Office of the Prime Minister / Cabinet du Premier ministre

April 29, 2024 10:33 AM

Subject	194268 / Office of the Prime Minister / Cabinet du Premier ministre
From	Prime Minister Premier Ministre
To	[REDACTED]
Cc	Mélanie Joly; Office of the Minister / Bureau du Ministre
Sent	December 3, 2021 1:27 PM
Attachments	 Third_Letter_to_Prime...

Dear [REDACTED]

On behalf of Prime Minister Justin Trudeau, I would like to acknowledge receipt of your most recent email of November 24, 2021.

Please be assured that your comments have been carefully reviewed. I note that you have also sent copies of your correspondence to the Honourable Mélanie Joly, Minister of Foreign Affairs, and the Honourable Jonathan Wilkinson, Minister of Natural Resources. While the Prime Minister appreciates being made aware of your views, he will leave your comments to be considered by the Ministers.

Thank you for writing.

M. Ibrahim
Executive Correspondence Officer/Agent de correspondance

Executive Correspondence Services/
Services de la correspondance de la haute direction

>>> From : [REDACTED] Received : 24 Nov 2021 11:42:06 AM >>>

>>> Subject : Re: Request for a proliferation assessment of a Canadian-government-funded proposal to separate plutonium >>>>

Dear Prime Minister Trudeau,

Congratulations on your re-election.

Out of concern that the issue may have been lost during the transition to your new government, I am writing to remind you and to inform relevant members of your new cabinet of the request made on May 25 in an open letter to you and your previous cabinet by a group of senior US nonproliferation experts.

We asked for a proliferation assessment of the \$50.5 million funding your government provided to support Moltex, a startup that proposes to reprocess spent fuel from the Point Lepreau CANDU power reactor in New Brunswick to recover plutonium to fuel a molten-salt cooled fast-neutron

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s.19(1)

reactor it proposes to build on the same site. An overlapping group of nonproliferation experts also sent a letter on June 20 to the Biden Administration asking for a proliferation assessment of funding the US Department of Energy began to provide for spent fuel reprocessing R&D during the Trump Administration.

Our letters expressed concern that the Canadian and US governments have forgotten the important lessons both countries learned 50 years ago when their Atoms for Peace assistance facilitated the launch of India's nuclear-weapon program. That experience led the administrations of US President Carter and Canadian Prime Minister P.E. Trudeau to oppose the separation of plutonium from spent fuel.

On June 23, we received a response to our letter from your office informing us that the matter had been referred to the offices of then Foreign Minister Marc Garneau and Minister of Natural Resources O'Regan. But we did not receive any communications from those Ministers prior to their departures from your cabinet.

On July 27, we sent a followup letter rebutting new Moltex claims that the reprocessing technology it proposed to use was proliferation resistant.

Since we sent those letters, you have appointed a new Minister of Foreign Affairs, Mélanie Joly, and a new Minister of Natural Resources, Jonathan Wilkinson. I am therefore copying them in this letter.

I am also copying your new Minister of Environment and Climate Change, Steven Guilbeault, because of refuted environmental claims made by Moltex for its reprocessing technology that should also be considered in your government's expert review.

Further detail and links to the previous letters and references may be found in the attached letter.

Given the gravity of the issues involved, this is a public letter, as were the 25 May and 27 July letters to you from our group. I will share this follow-up with my co-signatories on those letters as well as any responses received from your government.

We would be pleased to respond to any requests your government may have for further information.

Sincerely,



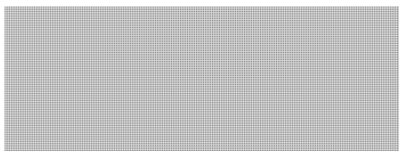
Minister
of Natural Resources



Ministre
des Ressources naturelles

Ottawa, Canada K1A 0E4

January 5, 2022



Dear [REDACTED]

The Prime Minister's Office has forwarded to me a copy of your correspondence of December 3, 2021, regarding plutonium separation from CANDU spent fuel. Thank you for taking the time to write.

As the former Minister of Natural Resources indicated in his response of August 13, 2021, to your previous correspondence, our climate plan includes an array of measures and investments in renewable and next-generation technologies, including technologies that will bring more clean, non-emitting power onto our grids, encourage cleaner modes of transportation such as zero-emission vehicles and transit, and make our homes, businesses, and industries more energy-efficient.

As part of this plan, the Government of Canada is working closely with partners to ensure that any future development of Small Modular Reactor technology can be done safely. Canada has a long history of safe and responsible development of nuclear energy, which plays an important role in Canada's current energy mix. Small Modular Reactors represent a new field of innovation and a potential tool to reduce emissions while creating jobs and stimulating economic growth. Several provincial governments, including New Brunswick, Ontario, Alberta and Saskatchewan, as well as Indigenous communities and organizations, have expressed a clear interest in using Small Modular Reactor technologies to reduce their greenhouse gas emissions, decarbonize heavy industry and spur economic development.

The Government of Canada is also working closely with like-minded countries such as the United States and the United Kingdom to realize this important opportunity for Canada. The strong interest and collaboration among governments and stakeholders in advancing new nuclear technologies, while ensuring international non-proliferation norms are respected, is encouraging. The Government of Canada's efforts position Canada as a global leader in the safe and responsible development of nuclear energy, with nuclear safety, security and non-proliferation as our guiding principles.

Canada

The Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure and environmentally sustainable way. Intergovernmental consultations on the implications of commercial reprocessing, including for non-proliferation, are ongoing.

The reprocessing of used CANDU fuel, as proposed by Moltex, has the potential to power existing and future nuclear reactors while potentially reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository. If this technology proves viable, it would allow Canada to extract additional energy from a used resource, potentially providing Canadians with emissions-free energy for years to come while reducing long-lived radioactive waste. Canada's investment in Moltex enables research that will allow a better understanding of the technology, including both benefits and risks that must be considered as part of any policy approval by the Government of Canada on reprocessing.

We recognize that nuclear reprocessing is a technology that raises sensitive non-proliferation concerns. The international community, including Canada, remains attentive to ensuring that reprocessing technologies do not negatively impact our shared nuclear non-proliferation priorities. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, in line with our multilateral engagements with the Nuclear Suppliers Group, as well as rigorous safeguards verification by the International Atomic Energy Agency.

Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of International Atomic Energy Agency safeguards to provide assurances that nuclear materials and technology are used solely for peaceful purposes.

The pathway to net zero by 2050 is the challenge of our time. To be successful, we must consider all potential options and solutions emerging from across the different energy sectors. We appreciate hearing your perspectives on these important issues.

Yours sincerely,



The Honourable Jonathan Wilkinson, P.C., M.P.

c.c.: **Distribution**

Canada


c.c.: **Distribution**

The Honourable Mélanie Joly, P.C., M.P.
Minister of Foreign Affairs
melanie.joly@international.gc.ca

The Honourable Steven Guilbeault, P.C., M.P.
Minister of Environment and Climate Change
ministre-minister@ec.gc.ca

REPLY TO YOUR CORRESPONDENCE - 192468

April 29, 2024 10:33 AM




Subject	REPLY TO YOUR CORRESPONDENCE - 192468
From	Office of the Minister / Bureau du Ministre
To	
Sent	August 13, 2021 1:07 PM
Attachments	<div> 192468 MIN SIGN...</div>

REPLY TO YOUR CORRESPONDENCE

Office of the Minister of Natural Resources Canada

REPLY TO YOUR CORRESPONDENCE - 194268

April 29, 2024 10:31 AM

Subject	REPLY TO YOUR CORRESPONDENCE - 194268
From	Office of the Minister / Bureau du Ministre
To	
Cc	'melanie.joly@international.gc.ca'; 'Ministre / Minister (ECCC)'
Sent	January 5, 2022 1:51 PM
Attachments	<div> 194268 Office of t...</div> <div> 194268 MIN SIGN...</div> <div> {D2022-01- 05T13-50...</div>

REPLY TO YOUR CORRESPONDENCE

Office of the Minister of Natural Resources Canada

24 November 2021

Prime Minister Justin Trudeau
justin.trudeau@parl.gc.ca

Re: Request for a proliferation assessment of a Canadian-government-funded proposal to separate plutonium from CANDU spent fuel

Dear Prime Minister Trudeau,

Congratulations on your re-election.

Out of concern that the issue may have been lost during the transition to your new government, I am writing to remind you and to inform relevant members of your new cabinet of the request made on May 25 in an open letter to you and your previous cabinet by a group of senior US nonproliferation experts.¹

We asked for a proliferation assessment of the \$50.5 million funding your government provided to support Moltex, a startup that proposes to reprocess spent fuel from the Point Lepreau CANDU power reactor in New Brunswick to recover plutonium to fuel a molten-salt cooled fast-neutron reactor it proposes to build on the same site. An overlapping group of nonproliferation experts sent a letter to the Biden Administration on June 20 asking for a proliferation assessment of funding the US Department of Energy began to provide for spent fuel reprocessing R&D during the Trump Administration.²

Our letters expressed concern that the Canadian and US governments have forgotten the important lessons both countries learned 50 years ago when their Atoms for Peace assistance facilitated the launch of India's nuclear-weapon program. That experience led the administrations of US President Carter and Canadian Prime Minister P.E. Trudeau to oppose the separation of plutonium from spent fuel.

That policy was reinforced by an assessment by the Carter Administration that exotic fast-neutron reactors such as the one Moltex proposes could not compete with water cooled reactors and that fuel made with reactor-grade but weapon-usable plutonium recovered by the chemical "reprocessing" of power-reactor spent fuel would cost far more than the non-weapon-usable low-enriched uranium fuel that it replaced. That judgement was subsequently confirmed when fast-neutron reactor programs failed in the UK, Germany, France and Japan, and plutonium fuel (mixed oxide fuel, called MOX) recycled in conventional reactors in France and Japan was found to cost ten times more than the low-enriched uranium fuel it replaced. This history suggests strongly that, in addition to undermining the global nonproliferation regime, the Moltex project would be a waste of precious time and funds in the global efforts to combat climate change.

On June 23, we received a response to our letter from your office informing us that the matter had been referred to the offices of then Foreign Minister Marc Garneau and Minister of Natural Resources O'Regan. But we did not receive any communications from those Ministers prior to their departures from your cabinet.

In the meantime, Moltex responded to our public letter by posting an article on the internet claiming that, since the process it was proposing to use to separate plutonium from CANDU spent fuel would produce impure plutonium, a multi-billion dollar "conventional

reprocessing facility” would be required to further purify it for weapons use. We therefore sent you, Mr. Prime Minister, a follow-on letter on July 27 explaining that a conventional reprocessing facility would not be required by a potential proliferator, as the radiation level would be quite low from the impure product produced by pyroprocessing CANDU fuel and pure plutonium could be extracted from the product in a low-cost "hot cell" – the same type of facility that Moltex would require to fabricate the material into fuel.³ Terrorists willing to accept a small increase in their lifetime cancer risk would not require a hot cell.

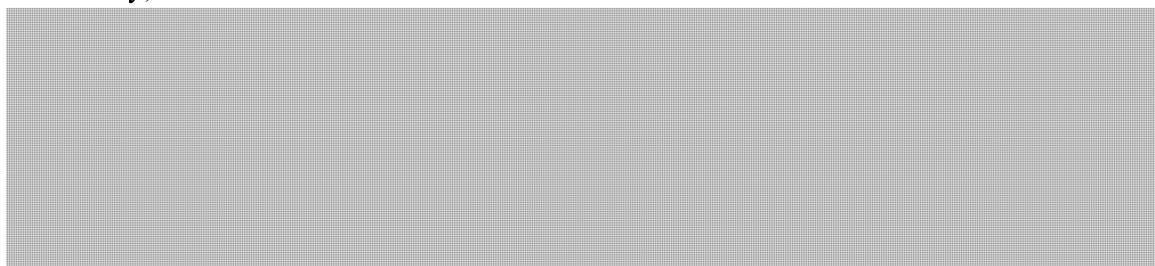
Since we sent those letters, you have appointed a new Minister of Foreign Affairs, Mélanie Joly, and a new Minister of Natural Resources, Jonathan Wilkinson. I am therefore copying them in this letter.

I am also copying your new Minister of Environment and Climate Change, Steven Guilbeault, because of refuted environmental claims by Moltex for its reprocessing technology that should also be considered in your government's expert review. As detailed in our letter to you of 27 July, the claim repeated by Moltex that the radioactive waste from its reprocessing of CANDU fuel would pose a hazard of significantly lesser longevity than that of the original CANDU fuel has been refuted by comprehensive studies by the US National Academies and SKB the company responsible for Sweden's spent fuel repository. We note also that the Idaho National Laboratory, which developed the pyroprocessing technology that Moltex proposes to use, has, after decades of effort, yet to demonstrate the conversion of the radioactive salt waste into a stable form suitable for disposal.⁴

I hope to hear from your government on this matter. If requested, our group can provide additional relevant background information. For example, I co-authored a proliferation assessment of pyroprocessing in 2005.⁵ Its conclusion was confirmed in 2009 by a joint assessment by experts from six US national laboratories.⁶ It have also recently co-authored an overview book on the issues involved in plutonium recycle.⁷ Some of my co-signatories have also done significant work on the subject. Two are no longer available as independent analysts because one has joined the State Department and another a national nuclear laboratory.

Given the gravity of the issues involved, this is a public letter, as were the 25 May and 27 July letters to you from our group. I will share this follow-up with my co-signatories on those previous letters as well as any responses received from your government.

Sincerely,



cc. Mélanie Joly, Minister of Foreign Affairs, melanie.joly@parl.gc.ca
Jonathan Wilkinson, Minister of Natural Resources jonathan.wilkinson@parl.gc.ca
Steven Guilbeault, Minister of Environment and Climate Change, Steven.Guilbeault@parl.gc.ca.

¹ “US experts concerned that Canadian support for extracting plutonium from spent nuclear fuel is undermining the global nuclear-weapons nonproliferation regime,” 25 May 2021, <https://sgs.princeton.edu/sites/default/files/2021-06/Open-Letter-to-Prime-Minister-Letter-Trudeau-May-2021.pdf>.

² “13 US Nonproliferation Experts Request a Review of the Department of Energy’s Promotion of Civilian Plutonium Separation,” 20 June 2021, <https://sgs.princeton.edu/sites/default/files/2021-11/letter-to-biden.pdf>.

³ “Re: US experts concerned that Canadian support for extracting plutonium from spent nuclear fuel is undermining the global nuclear-weapons nonproliferation regime,” 27 July 2021, <https://sgs.princeton.edu/sites/default/files/2021-11/second-letter-to-trudeau.pdf>.

⁴ Michael Patterson, “Update on EBR-II Used Fuel Treatment,” presentation to the National Academy of Sciences Committee on Merits and Viability of Different Nuclear Fuel Cycles and Technology Options and the Waste Aspects of Advanced Nuclear Reactors, 29 Sept 2021, slides 14 and 17, <https://www.nationalacademies.org/event/09-28-2021/merits-and-viability-of-different-nuclear-fuel-cycles-and-technology-options-and-the-waste-aspects-of-advanced-nuclear-reactors-meeting-10-september-28-29-2021-public-sessions>.


⁵ Jungmin Kang and Frank von Hippel, “Limited Proliferation-Resistance Benefits from Recycling Unseparated Transuranics and Lanthanides from Light-Water Reactor Spent Fuel,” *Science & Global Security*, Vol. 13:169–181, 2005, <https://scienceandglobalsecurity.org/archive/sgs13kang.pdf>.

⁶ R. Bari et al, “Proliferation Risk Reduction Study of Alternative Spent Fuel Processing,” Brookhaven National Laboratory, BNL-90264-2009-CP, 2009, <https://www.bnl.gov/isd/documents/70289.pdf>.

⁷ Frank von Hippel, Masafumi Takubo and Jungmin Kang, *Plutonium: How Nuclear Power’s Dream Fuel Became a Nightmare* (Springer, 2019) <https://link.springer.com/book/10.1007/978-981-13-9901-5>.

RE: DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 11:57 AM

Subject	RE: DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	Prosser, Kathleen
To	NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan); Ottaway, Chelsea
Cc	Hilborn, Jade; Yuen, Pui Wai; Wilkinson, David
Sent	May 25, 2023 8:28 AM
Attachments	 FW 202030 - DMO Ap...

Morning –

1. When we received the tasking (attached) there were 30 incoming. I have not been advised if there were additional incoming since the tasking was allocated.
2. We are proposing that the provided document be used as the standard response to this campaign
3. The campaign is being led by Nuclear Waste Watch who, shortly before the release of the Rad Waste Policy, launched a “Ban Reprocessing” campaign
[\[https://nuclearwastewatch.weebly.com/reprocessing.html\]](https://nuclearwastewatch.weebly.com/reprocessing.html)
 - a. The letter writing is still active
[\[https://nuclearwastewatch.weebly.com/action.html\]](https://nuclearwastewatch.weebly.com/action.html) it is very possible that we will continue to receive incoming letters and that is why we have proposed the standard response

Happy to answer any other questions they may have.

Thanks,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Sent: Thursday, May 25, 2023 8:17 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Hilborn, Jade <jade.hilborn@nrcan-rncan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Subject: Fwd: DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the

A0068300_1-000643

Reprocessing of Nuclear Fuel Waste

Kate, could you please follow up?

Thanks!

Sent from my iPhone

Begin forwarded message:

From: "NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)"
<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Date: May 25, 2023 at 7:48:30 AM EDT

To: "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>, "Wilkinson, David"
<david.wilkinson@nrcan-rncan.gc.ca>, "Hilborn, Jade" <jade.hilborn@nrcan-rncan.gc.ca>

Cc: "NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)"
<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>, "Ottaway, Chelsea"
<chelsea.ottaway@nrcan-rncan.gc.ca>

Subject: FW: DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

See below and advise please 😊

From: Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>
Sent: Wednesday, May 24, 2023 6:00 PM
To: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Cc: Vogel, Tania <tania.vogel@NRCan-RNCan.gc.ca>; ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Subject: DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Hi NEISB,

I see from below that a number of these incoming were received (e.g. 30)

Could you please advise:

1. How many of these incoming were received?
2. Are we proposing the same response for each incoming?
3. Are we anticipating more incoming that will need the same response (e.g. do we know who is leading the letter writing campaign, are they still active, etc)?

Bruce

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)
<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Sent: Wednesday, May 24, 2023 10:30 AM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

A0068300_2-000644

Cc: Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>; Clarotto, Lauren <lauren.clarotto@NRCan-RNCan.gc.ca>
Subject: RE: DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Link [202030 - DMO Appropriate Action Request DM correspondence re PM Trudeau \(gcdocs.gc.ca\)](#) had been updated

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Sent: Tuesday, May 23, 2023 5:30 PM
To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Cc: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>; Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>; Clarotto, Lauren <lauren.clarotto@NRCan-RNCan.gc.ca>
Subject: DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Hello NEISB,

Would it be possible to use the attached template for this DM Correspondence
[202030 - DMO Appropriate Action Request DM correspondence re PM Trudeau \(gcdocs.gc.ca\)](#)

Please let us know when updated.

Thank you

Eric

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Sent: Tuesday, May 23, 2023 4:00 PM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Subject: RE: Extension Granted (due May 23, 2023) 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

DG approved [202030 - DMO Appropriate Action Request DM correspondence re PM Trudeau \(gcdocs.gc.ca\)](#)

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Sent: Thursday, May 11, 2023 4:26 PM
To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Cc: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Scultety, Chantal <chantal.scultety@NRCan-RNCan.gc.ca>; Hilborn, Jade <jade.hilborn@nrcan-rncan.gc.ca>; Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>; Vogel, Tania <tania.vogel@NRCan-RNCan.gc.ca>; ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Subject: Extension Granted (due May 23, 2023) 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Hi NEISB,

Your extension request has been approved by DMO.

The new ECIO due date is by 2:00 on May 19th, 2023.

Regards,
Marc

From: DMO-EBU/BSM-UBD (NRCan/RNCan) <dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca>
Sent: May 11, 2023 15:58
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: Vogel, Tania <tania.vogel@NRCan-RNCan.gc.ca>; Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>; DMO-EBU/BSM-UBD (NRCan/RNCan) <dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca>; On, Minh (he, him | il, lui) <minh.on@NRCan-RNCan.gc.ca>; Aubry, Jocelyne <jocelyne.aubry@NRCan-RNCan.gc.ca>; DMO-EBU/BSM-UBD (NRCan/RNCan) <dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca>
Subject: Extension Granted (due May 23, 2023) --- RE: Docket Extension Request: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Hello ESS,

DMO is granting your extension request.

Due Date:

1 – to EDU (for proofing) : 10:00AM on May 23, 2023

2 – to DMO-EBU : by 14:00PM on May 23, 2023

All is updated in CCM 😊

Thanks,
Mel

Melanie Larocque

Coordonnatrice des breffages | Briefing Coordinator
 Unité de breffage et documents | Executive Briefing Unit
 Cabinet du sous-ministre | Deputy Minister's Office
 343-543-5058
melanie.larocque@nrcan-rncan.gc.ca



Natural Resources Canada
 Ressources naturelles Canada

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Sent: Thursday, May 11, 2023 3:48 PM
To: DMO-EBU/BSM-UBD (NRCan/RNCan) <dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca>
Cc: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Subject: FW: Docket Extension Request: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Hi DMO,

A0068300_4-000646

Please see ADMO approved extension request for May 23rd for your consideration.

Regards,
Marc

From: Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>
Sent: Thursday, May 11, 2023 3:42 PM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Subject: RE: Docket Extension Request: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

approved

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Sent: May 11, 2023 15:41
To: Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>
Cc: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Subject: FW: Docket Extension Request: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Hi Bruce,

Please see NEISB extension request for May 23rd for ADMO approval.

Regards,
Marc

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Sent: Thursday, May 11, 2023 3:33 PM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Hilborn, Jade <jade.hilborn@nrcan-rncan.gc.ca>
Subject: FW: Docket Extension Request: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Extension please

Lead Sector / Secteur responsable :		NEISB	
Docket number: Numéro du dossier :		202030	
Check (X) all that apply / Cochez (X) pour les cases applicables :	MIN	External (reply) / Externe (réponse)	
		Incoming attached / Correspondance ci-jointe	X
		VIP / Dignitaire	
		Internal (sector-driven) /	

			<i>Interne (créé par les secteurs)</i>	
	DM / SM	X	Request (briefing material) / Demande (matériel de breffage)	
			Miscellaneous request / Demande de renseignements divers	
			Recommendation (invitation) / Recommandation (invitation)	
			Revisions/Comments / Révisions/Commentaires	
Author of incoming correspondence and organization (external only): <i>Nom de l'auteur de la correspondance et de l'organisation (externe seulement) :</i>			Form email.	
Brief outline of subject: <i>Résumé du sujet :</i>			Reprocessing ban email campaign.	
Reason for extension: <i>Raison de la demande de prolongation :</i>			Only two days given to develop response, will be consulting with NED and Comms.	
Input date / <i>Date de la demande :</i>				
Original due date / <i>Date d'échéance initiale :</i>			ECIO due date: May 16h 2023	
Extension date requested: <i>Date de prolongation demandée :</i>			EDU due date : May 23 th DGO due date : May 18 th	
Number of extensions: <i>Nombre de prolongations :</i>			1	

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Sent: Thursday, May 11, 2023 12:27 PM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Hilborn, Jade <jade.hilborn@nrcan-rncan.gc.ca>

Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: FW: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

For your action please

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Sent: Thursday, May 11, 2023 10:57 AM

A0068300_6-000648

To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Cc: Ottawa, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Scultety, Chantal <chantal.scultety@NRCan-RNCan.gc.ca>; Vogel, Tania <tania.vogel@NRCan-RNCan.gc.ca>; Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>; ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Subject: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Lead: ESS-NEISB

What: DM Correspondence from multiple senders re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Action: Please review the attached correspondence and provide a **DM response**.

Note: The lead sector will create a GDOCS folder. Please ensure to add DMO Group - **NRCan - DMO - All Users** – to the documents with edit permissions.

ECIO due date: 2:00 May 16th, 2023.

Routed to NEISB for appropriate action.

Please provide DG approved materials to ECIO via email with the completed Routing Slip attached.

Thank you,

Marc

From: DMO-EBU/BSM-UBD (NRCan/RNCan) <dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca>
Sent: Thursday, May 11, 2023 9:51 AM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: Vogel, Tania <tania.vogel@NRCan-RNCan.gc.ca>; Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>; DMO-EBU/BSM-UBD (NRCan/RNCan) <dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca>; On, Minh (he, him | il, lui) <minh.on@NRCan-RNCan.gc.ca>; Aubry, Jocelyne <jocelyne.aubry@NRCan-RNCan.gc.ca>
Subject: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

1. **Reply** to this email to confirm receipt
2. Please advise **within the HOUR** whether this request should be redirected

DMO Appropriate Action Request :

Lead Sector: ESS

Consultation: N/A

What: DM Correspondence from multiple senders re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Action: Please review the below and attached correspondence and provide :

1. **DM response**

Docket #: 202030

Due Date:

1 – to EDU (for proofing) : 10:00AM on May 17, 2023

2 – to DMO-EBU : by 14:00PM on May 17, 2023

Please note: The lead sector will create a **GCDOCS folder**. Please ensure to add DMO Group - **NRCAN - DMO - All Users** – to the documents with edit permissions.

Merci,
EBU Team | L'Équipe UBD
dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca

From: Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>
Sent: Wednesday, May 10, 2023 5:20 PM
To: Aubry, Jocelyne <jocelyne.aubry@NRCAN-RNCan.gc.ca>
Cc: Nowak, Anna <Anna.Nowak@nrcan-rncan.gc.ca>; Vogel, Tania <tania.vogel@NRCAN-RNCan.gc.ca>
Subject: RE: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Hi Jocelyne,

Can these be packaged up and tasked to ESS for consideration of an appropriate response. Would view these as a letter writing campaign and the team wishes to decide on whether/how to respond.

Bruce

From: [REDACTED]
Sent: May 3, 2023 11:12 PM
To: Hannaford, John <John.Hannaford@nrcan-rncan.gc.ca>
Subject: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

s.19(1)

Dear Deputy Minister John Hannaford,

Dear Prime Minister Trudeau,

Canada is in the process of finalizing a new national policy on radioactive waste. The 2022 draft policy issued by Natural Resources Canada stated that the deployment of reprocessing technology in Canada, in order to extract plutonium from used nuclear fuel, would be "subject to policy approval" – but did not set out what that policy might be.

This is a policy vacuum that must be addressed.

Reprocessing nuclear waste results in the separation of plutonium. Since plutonium is one of the most widely used primary nuclear explosive material in the world's nuclear arsenals, non-proliferation experts are agreed that ready access to plutonium must be discouraged, and prevented where possible.

We call on the government of Canada to explicitly ban plutonium reprocessing in Canada.


Sincerely,

A rectangular area with a grey grid pattern, used to redact a signature.

A0068300_9-000651

FW: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 11:59 AM

Subject	FW: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	Hilborn, Jade
To	Prosser, Kathleen
Cc	Yuen, Pui Wai
Sent	May 11, 2023 1:26 PM
Attachments	 PM Trudeau ...

Hi Kate,

Please see below for tasking for this docket.

It's due to Fred May 15 for review/approval. Would it be possible to get it to Pui Wai on May 15 in the morning for her review?

Thank you!

Jade

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Sent: May 11, 2023 12:27

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Hilborn, Jade <jade.hilborn@nrcan-rncan.gc.ca>

Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: FW: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

For your action please

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Sent: Thursday, May 11, 2023 10:57 AM

To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Cc: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Scultety, Chantal

<chantal.scultety@NRCan-RNCan.gc.ca>; Vogel, Tania <tania.vogel@NRCan-RNCan.gc.ca>; Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>; ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Subject: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

A0068300_10-000652

Lead: ESS-NEISB

What: DM Correspondence from multiple senders re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Action: Please review the attached correspondence and provide a **DM response**.

Note: The lead sector will create a GCDOCS folder. Please ensure to add DMO Group - **NRCAN - DMO - All Users** – to the documents with edit permissions.

ECIO due date: 2:00 May 16th, 2023.

Routed to NEISB for appropriate action.

Please provide DG approved materials to ECIO via email with the completed Routing Slip attached.

Thank you,

Marc

From: DMO-EBU/BSM-UBD (NRCAN/RNCAN) <dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca>

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To: ESS Correspondence / SSE Correspondance (NRCAN/RNCAN) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Cc: Vogel, Tania <tania.vogel@NRCAN-RNCAN.gc.ca>; Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>; DMO-EBU/BSM-UBD (NRCAN/RNCAN) <dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca>; On, Minh (he, him | il, lui) <minh.on@NRCAN-RNCAN.gc.ca>; Aubry, Jocelyne <jocelyne.aubry@NRCAN-RNCAN.gc.ca>

Subject: 202030 - DMO Appropriate Action Request : DM correspondence re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

▪ **Reply to this email to confirm receipt**

▪ Please advise **within the HOUR** whether this request should be redirected

DMO Appropriate Action Request :

Lead Sector: ESS

Consultation: N/A

What: DM Correspondence from multiple senders re: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

-

Action: Please review the below and attached correspondence and provide :

1. DM response

Docket #: 202030

-

Due Date:

1 – to EDU (for proofing) : 10:00AM on May 17, 2023

2 – to DMO-EBU : by 14:00PM on May 17, 2023

Please note: The lead sector will create a **GCDOCS folder**. Please ensure to add DMO Group - **NRCAN - DMO - All Users** – to the documents with edit permissions.

Merci,
EBU Team | L'Équipe UBD
dmo-ebu-bsm-ubd@nrcan-rncan.gc.ca

From: Stirrett-Wood, Bruce <bruce.stirrettwood@nrcan-rncan.gc.ca>
Sent: Wednesday, May 10, 2023 5:20 PM
To: Aubry, Jocelyne <jocelyne.aubry@NRCAN-RNCAN.gc.ca>
Cc: Nowak, Anna <Anna.Nowak@nrcan-rncan.gc.ca>; Vogel, Tania <tania.vogel@NRCAN-RNCAN.gc.ca>
Subject: RE: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Hi Jocelyne,

Can these be packaged up and tasked to ESS for consideration of an appropriate response. Would view these as a letter writing campaign and the team wishes to decide on whether/how to respond.

Bruce

From: [REDACTED]
Sent: May 3, 2023 11:12 PM
To: Hannaford, John <John.Hannaford@nrcan-rncan.gc.ca>
Subject: PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

Dear Deputy Minister John Hannaford,

Dear Prime Minister Trudeau,

Canada is in the process of finalizing a new national policy on radioactive waste. The 2022 draft policy issued by Natural Resources Canada stated that the deployment of reprocessing technology in Canada, in order to extract plutonium from used nuclear fuel, would be "subject to policy approval" – but did not set out what that policy might be.

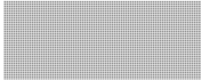
s.19(1)

This is a policy vacuum that must be addressed.

Reprocessing nuclear waste results in the separation of plutonium. Since plutonium is one of the most widely used primary nuclear explosive material in the world's nuclear arsenals, non-proliferation experts are agreed that ready access to plutonium must be discouraged, and prevented where possible.

We call on the government of Canada to explicitly ban plutonium reprocessing in Canada.

Sincerely,



PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:02 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 3, 2023 11:12 PM

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

Dear Deputy Minister John Hannaford,
Dear Prime Minister Trudeau,

Canada is in the process of finalizing a new national policy on radioactive waste. The 2022 draft policy issued by Natural Resources Canada stated that the deployment of reprocessing technology in Canada, in order to extract plutonium from used nuclear fuel, would be "subject to policy approval" – but did not set out what that policy might be.

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Sincerely,

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Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour de plus amples renseignements, veuillez consulter [Comment identifier des courriels d'hameçonnages](#) dans l'intranet des RNCan.



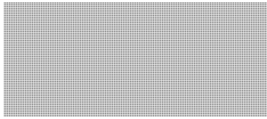
Natural Resources
Canada

Ressources naturelles
Canada

Deputy Minister

Sous-ministre

Ottawa, Canada
K1A 0E4



Dear 

Thank you for your correspondence about the reprocessing of spent nuclear fuel.

The Government of Canada is committed to the safe, effective, and environmentally sound management of radioactive waste. Protecting the health and safety of Canadians and the environment is a top priority when it comes to the Government's approach to nuclear energy.

All radioactive waste generated in Canada is safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science. Our independent regulator—the Canadian Nuclear Safety Commission—ensures that all licensed nuclear facilities that manage radioactive waste do so safely according to the regulatory framework under the *Nuclear Safety and Control Act*.

The Government of Canada is closely monitoring research developments in reprocessing CANDU fuel, and is receptive to exploring the science, benefits, and risks associated with technologies to reprocess nuclear fuel. Reprocessing in Canada would require consideration of all relevant factors by the federal government—including safety, security, sustainability, and peaceful use—prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

- 2 -

We appreciate hearing the perspectives of all Canadians on this important issue.

Again, thank you for writing on this important matter.

Yours sincerely,

John Hannaford
(he/him/il)
Deputy Minister
Natural Resources Canada

PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:02 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 2, 2023 5:11 PM

*****Caution** - email originated from outside of NRCAN. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCAN. **Voir la mise en garde ci-dessous*****

Dear Deputy Minister John Hannaford,

Dear Prime Minister Trudeau,

Canada is in the process of finalizing a new national policy on radioactive waste. The 2022 draft policy issued by Natural Resources Canada stated that the deployment of reprocessing technology in Canada, in order to extract plutonium from used nuclear fuel, would be "subject to policy approval" – but did not set out what that policy might be.

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We call on the government of Canada to explicitly ban plutonium reprocessing in Canada.

Sincerely,

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:03 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 2, 2023 4:47 PM

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

Dear Deputy Minister John Hannaford,

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:03 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	[REDACTED]
To	Hannaford, John
Sent	May 1, 2023 5:49 PM

*****Caution** - email originated from outside of NRCAN. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCAN. **Voir la mise en garde ci-dessous*****

Dear Deputy Minister John Hannaford,
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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:04 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 1, 2023 12:56 PM

*****Caution** - email originated from outside of NRCAN. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCAN. **Voir la mise en garde ci-dessous*****

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:04 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 1, 2023 10:54 AM

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:05 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 1, 2023 10:09 AM

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:05 PM

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Sent	May 1, 2023 10:09 AM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:06 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 1, 2023 9:43 AM

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Dear Deputy Minister John Hannaford,

Dear Prime Minister Trudeau,

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This is a policy vacuum that must be addressed.

Reprocessing nuclear waste results in the separation of plutonium. Since plutonium is one of the most widely used primary nuclear explosive material in the world's nuclear arsenals, non-proliferation experts are agreed that ready access to plutonium must be discouraged, and prevented where possible.

We call on the government of Canada to explicitly ban plutonium reprocessing in Canada.

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:07 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 1, 2023 8:56 AM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:07 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 1, 2023 7:45 AM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:07 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	[REDACTED]
To	Hannaford, John
Sent	May 1, 2023 5:57 AM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:08 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 11:52 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:08 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	[REDACTED]
To	Hannaford, John
Sent	April 30, 2023 11:51 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:09 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 9:45 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:09 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	[REDACTED]
To	Hannaford, John
Sent	April 30, 2023 9:38 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:09 PM

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From	
To	Hannaford, John
Sent	April 30, 2023 9:09 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:10 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 8:09 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:10 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 8:03 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:10 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	[REDACTED]
To	Hannaford, John
Sent	April 30, 2023 8:01 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:11 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 7:17 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:11 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	[REDACTED]
To	Hannaford, John
Sent	April 30, 2023 7:08 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:11 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 6:50 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:12 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	[REDACTED]
To	Hannaford, John
Sent	April 30, 2023 6:49 PM

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April 29, 2024 12:12 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 6:36 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:13 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 5:51 PM

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Dear Deputy Minister John Hannaford,

Dear Prime Minister Trudeau,

Canada is in the process of finalizing a new national policy on radioactive waste. The 2022 draft policy issued by Natural Resources Canada stated that the deployment of reprocessing technology in Canada, in order to extract plutonium from used nuclear fuel, would be "subject to policy approval" – but did not set out what that policy might be.

This is a policy vacuum that must be addressed.

Reprocessing nuclear waste results in the separation of plutonium. Since plutonium is one of the most widely used primary nuclear explosive material in the world's nuclear arsenals, non-proliferation experts are agreed that ready access to plutonium must be discouraged, and prevented where possible.

We call on the government of Canada to explicitly ban plutonium reprocessing in Canada.

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:13 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 5:36 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:13 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	April 30, 2023 5:21 PM

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PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste

April 29, 2024 12:01 PM

Subject	PM Trudeau: Ban the Reprocessing of Nuclear Fuel Waste
From	
To	Hannaford, John
Sent	May 10, 2023 2:44 PM

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RE: NWW Roundtable prep

April 29, 2024 10:22 AM

Subject	RE: NWW Roundtable prep
From	Prosser, Kathleen
To	Brunarski, Lee; Boudrias, Geneviève; McAllister, Andrew; Bourassa, Pascale; Kanasewich, Elaine; Petseva, Nadia; Yuen, Pui Wai; Brady, Daniel; Tanya.Hinton@international.gc.ca; Wilkinson, David
Sent	November 14, 2023 11:13 AM
Attachments	 MEETING NOTE - N...

Declassified by ATIP/
PROTÉGÉ PAR L'ATIP

Good morning,

Please see attached for the current draft of the meeting note that is being prepared for the NWW meeting Friday.

Look forward to chatting soon.

Thanks,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

-----Original Appointment-----

From: Brunarski, Lee <Lee.Brunarski@cnsccsn.gc.ca>
Sent: Tuesday, October 31, 2023 1:18 PM
To: Brunarski, Lee; Boudrias, Geneviève; McAllister, Andrew; Bourassa, Pascale; Kanasewich, Elaine; Petseva, Nadia; Yuen, Pui Wai; Brady, Daniel; Tanya.Hinton@international.gc.ca; Wilkinson, David; Prosser, Kathleen
Subject: NWW Roundtable prep
When: November 14, 2023 12:00-13:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Hello.

Scheduling a 2nd prep in advance of the November 17th roundtable. Suggest that key messages from any of our organizations be shared as soon as they are ready and not wait for this meeting, if ready in advance.

Thank you!

Lee

Microsoft Teams meeting

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(844) 632-5179, [REDACTED] # Canada (Toll-free)

Phone Conference ID: [REDACTED] #

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**MEETING NOTE TO THE URWD DIRECTOR****URWD DIRECTOR SPEAKING ENGAGEMENT WITH
NUCLEAR WASTE WATCH****MEETING DETAILS**

- **DATE/TIME:** Friday, November 17, 2023, 10:00 a.m. – 11:30 a.m. TBD
- **LOCATION:** Virtual Zoom Room, link TBD
- **AGENDA:**
 1. Very brief introductions and Meeting Objectives
 2. Reprocessing Nuclear Fuel Waste and Government Policy in Canada
 3. Nuclear Fuel Waste Reprocessing and Radioactive Wastes
 4. Reprocessing and Proliferation and Security Concerns
 5. Meeting wrap-up

*We will only attend relevant sessions to URWD and not the entire event
- **PARTICIPANTS:**
 - Susan O'Donnell, Representative from the Coalition for Responsible Energy Development in New Brunswick on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy
 - [REDACTED] Coordinator, Nuclear Waste Watch
 - Others TBD: Invited participants include a range of civil society organizations and academics interested in the security, disarmament, and nuclear weapons proliferation and/or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission.

ISSUE

Nuclear Waste Watch is organizing an invitation-only webinar roundtable and Q&A with 15-20 participants from civil society groups and academics to share perspectives, background and updates about potential reprocessing of nuclear fuel waste in Canada.

KEY BACKGROUND

- Nuclear Waste Watch is a national network of Canadian public interest groups and organizations concerned about radioactive waste and nuclear power. They initially believed NRCAN was developing a policy on reprocessing of nuclear fuel waste with the CANDU Owners' Group. This has since been corrected through correspondence.
- On December 15, 2022, Nuclear Waste Watch launched a campaign to formally demand that Canada include a ban on plutonium reprocessing in its Policy for radioactive waste management and decommissioning. NRCAN did not include reprocessing within the scope of the policy, except that should reprocessing be deployed, the resulting waste would fall under the policy.

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- Pui Wai Yuen and Frédéric Beaugregard-Tellier last met with Nuclear Waste Watch in September 2023 on their views on the draft Integrated Strategy for radioactive waste before the acceptance of it by the Minister of Energy and Natural Resources.

POINTS TO REGISTER

- NRCan, along with other federal organizations are here today to hear your views on reprocessing of nuclear fuel waste.
- NRCan is aware of the reprocessing draft document prepared by the CANDU Owners Group. This document is an industry led and owned document. It does not in any way represent a policy of or by the federal government.
- NRCan is not establishing a policy on used nuclear fuel reprocessing.
- The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons.

Q&A

If pressed on COG reprocessing policy document..

- NRCAN is aware of this draft document.
- This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document.
- This document is a proposal from industry's perspective of what a reprocessing could look like - it does not represent a policy of or by the federal government.

If pressed on a Government of Canada reprocessing policy..

- NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing.
- Moltex Energy Ltd received funding through Innovation, Science and Economic Development Canada (ISED) to research and better understand waste streams and handling processes resulting from reprocessing, as well as proliferation risks and any additional safeguards requirements beyond the current protocols for Canada's existing facilities to inform decisions on reprocessing policy.
- We remain receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act, as well as safeguards verification by the International Atomic Energy Agency (IAEA).
- Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons

If pressed on the Integrated strategy..

- This Strategy is an important element of ensuring Canada has continually effective and world-leading disposal and management plans for

SECURITY CLASSIFICATION

radioactive waste of all levels. It is vital that governments, industry and communities work together to advance priorities related to this economic activity — including reconciliation with Indigenous Peoples.

- The Strategy reflects international best practices and is informed by more than two years of extensive engagement with Indigenous Peoples and Canadians across the country.
- We expect waste owners will work together to update the Strategy, in collaboration with Indigenous Peoples, community partners and other involved parties, and submit their recommendations for review and consideration in 2028. We also expect that waste owners will meet with Natural Resources Canada officials on an annual basis to report on their progress in implementing the Strategy, including outlining a plan for their continued collaboration.

If pressed on nuclear non-proliferation policy..

- The pathway to net zero by 2050 is the challenge of our time. We must consider all potential options and solutions emerging from across the different energy sectors. We appreciate hearing different perspectives on these important issues.
- We recognize that nuclear reprocessing is a technology that raises sensitive non-proliferation concerns. We remain attentive to ensuring that Canada does not negatively impact its shared nuclear non-proliferation priorities.
- All activities in Canada involving radioactive materials, including research activities, are governed by our nuclear non-proliferation commitments and safely regulated by the Canadian Nuclear Safety Commission
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act, in line with our multilateral engagements with the Nuclear Suppliers Group, as well as rigorous safeguards verification by the International Atomic Energy Agency.


<i>Drafted by:</i>	<i>Teresa Wittmann</i>
<i>Consulted with:</i>	<i>ESS</i>
<i>Approved by:</i>	<i>[ADM(s) name]</i>

UNCLASSIFIED - NON CLASSIFIÉ
SECURITY CLASSIFICATION

<i>Approval date:</i>	<i>[date of ADM's approval]</i>
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Re: REPLY TO YOUR CORRESPONDENCE - 194268

April 29, 2024 9:21 AM

Subject	Re: REPLY TO YOUR CORRESPONDENCE - 194268
From	[REDACTED]
To	Yuen, Pui Wai
Cc	[REDACTED]
Sent	December 2, 2023 6:24 PM
Attachments	 Some fuels never lear...

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Dear Director Yuen,

[REDACTED]

With regard to the technical bases of the Ministers' responses, I was reacting to the sentence, "The reprocessing of used CANDU fuel, as proposed by Moltex, has the potential to power existing and future nuclear reactors while potentially reducing the volume and long-term radioactivity of waste that would need to be disposed of in a deep geological repository."

Technically it is correct that separating out the plutonium would reduce the long-term radioactivity of CANDU fuel. I am not sure about the volume since the fission and other transuranic products would have to be diluted – typically by glass – and new radioactive wastes would be created, including ultimately the reprocessing plant itself. In France, reprocessing does not reduce the volume of radioactive waste.

More importantly, according to studies by the US National Academy of Science and Sweden's SKB (the company responsible for Sweden's spent fuel repository) removal of the plutonium would *not* reduce the long-term hazard from a repository. Plutonium's low solubility and very small absorption through the human GI tract results in it not dominating the long-term hazard from a spent fuel repository.

I attach an article (the intemperate title was provided by the journal's editors) [REDACTED]
[REDACTED] that makes this and other related points.

As the article makes clear, we have had the same problems with the Trump and Biden Administrations forgetting the hard-won nonproliferation lessons of 50 years ago that our letters to Prime Minister Trudeau have been complaining about in the case of Canada.

Please share this with Minister Wilkinson if he has the time to read it.

With very best regards,

[REDACTED]

A0068459_1-000694

Dear Director Yuen,

Thank you for the copies of the letters from two successive Canadian Ministers of Natural Resources in response to letters to Prime Minister from a group of US nonproliferation experts concerned about your Ministry's funding of a proposal to separate plutonium from Canada's spent fuel and to make Canada an export hub for reprocessing technology. I don't know how the originals went astray.

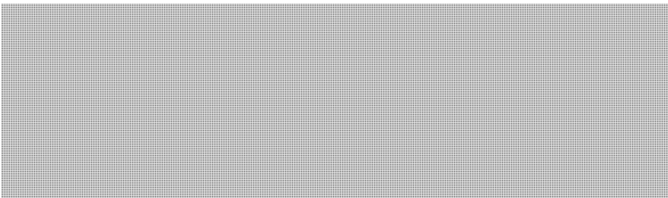
Unfortunately, the technical bases for these responses are incorrect in almost all regards.

We tried to explain this in our letters, and we had hoped that might provide an opportunity to open a dialogue with officials who are responsible for Canada's nonproliferation policy. Unfortunately, we have not to my knowledge heard from the Ministry of Foreign Affairs to which Prime Minister Trudeau's office also referred at least one of our letters.

It would be expected that the responses from your Ministry, whose actions caused our concerns, would be defensive as these two letters are.

I will share these responses with the co-signers of our letters to Prime Minister Trudeau and other interested parties to see whether there remains any possibility to engage in this matter Canadian government agencies responsible for defending the integrity of Canada's nonproliferation policy.

Sincerely yours,



From: Office of the Minister / Bureau du Ministre <Minister.Ministre@NRCan-RNCan.gc.ca>

Date: Wednesday, January 5, 2022 at 1:51 PM

To: [Redacted]

Cc: "'melanie.joly@international.gc.ca'" <melanie.joly@international.gc.ca>, "'Ministre / Minister (ECCC)'" <ministre-minister@ec.gc.ca>

Subject: REPLY TO YOUR CORRESPONDENCE - 194268

REPLY TO YOUR CORRESPONDENCE

Office of the Minister of Natural Resources Canada

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A0068459_2-000695

The authoritative guide to ensuring science and technology make life on Earth better, not worse.

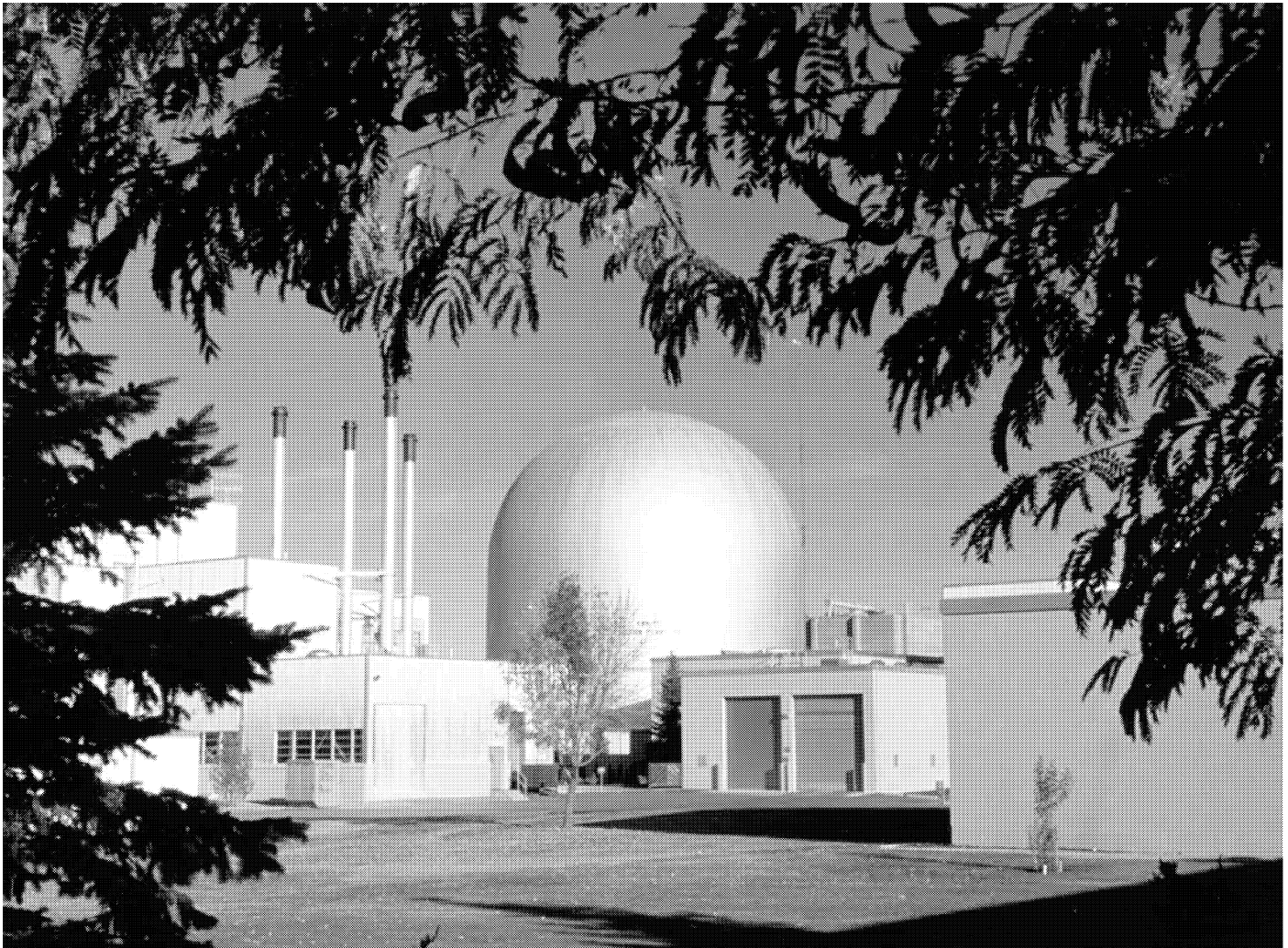


GIVING



Some fuels never learn. US Energy Department returns to costly and risky plutonium separation technologies

By Jungmin Kang, Masafumi Takubo, Frank von Hippel | September 14, 2022



Starting in 1964, Idaho National Laboratory's Experimental Breeder Reactor II proved the concept of fuel recycling. The reactor was shut down in 1994 due to a lack of mission after the end of the US breeder program a decade earlier. The Energy Department is now supporting research, development, and demonstration of sodium-cooled reactors by several nuclear energy startups. (Credit Idaho National Laboratory via Flickr)

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On July 17, the United Kingdom ended 58 years of plutonium separation for nuclear fuel by closing its Magnox nuclear fuel reprocessing plant at Sellafield. This leaves the UK with the world's largest stock of separated power-reactor plutonium, 140 metric tons as of the end of 2020, including 22 tons separated for Japan. The UK is also second in the world only to Russia in the size of its overall inventory of separated plutonium with 119 tons, including 3.2 tons for weapons. Russia's stock, 191 tons, is mostly "weapon-grade" separated for use in nuclear weapons during the Cold War, but the UK's power-reactor plutonium is also weapon usable, and therefore also poses a security risk. The UK has no plan for how it will dispose of its separated plutonium. Its "prudent estimate" placeholder for the disposal cost is £10 billion (\$12.6 billion).

One obvious way to get rid of separated plutonium would be to mix it with depleted uranium to make “mixed-oxide” (MOX) fuel energetically equivalent to low-enriched uranium fuel, the standard fuel of conventional reactors. Despite the bad economics, since 1976 France has routinely separated out the approximately one percent plutonium in the low-enriched uranium spent fuel discharged by its water-cooled reactors and recycled the plutonium in MOX fuel.

But both the UK and the US have had negative experiences with building their own MOX production plants.

In 2001, the UK completed a MOX plant, only to abandon it in 2011 after 10 years of failed attempts to make it operate. For its part, the US Energy Department, which owns almost 50 tons of excess Cold War plutonium, contracted with the French government-owned nuclear-fuel cycle company, Areva (now Orano), in 2008 to build a MOX fuel fabrication plant. But the United States switched to a “dilute and dispose” policy for its excess plutonium in 2017 after the estimated cost of the MOX plant grew from \$2.7 billion to \$17 billion.

Despite decades of failed attempts around the world to make separated plutonium an economic fuel for nuclear power plants, the United States Energy Department is once again promoting the recycling of separated plutonium in the fuel of “advanced” reactor designs that were found to be economically uncompetitive 50 years ago. At the same time, other countries—including Canada and South Korea, working in collaboration with the Energy Department’s nuclear laboratories—are also promoting plutonium separation as a “solution” to their own spent fuel disposal problems. These efforts not only gloss over the long history of failure of these nuclear technologies; they also fail to take into account the proliferation risk associated with plutonium separation—a risk that history has shown to be quite real.

Renewed advocacy for plutonium separation. As the UK finally turns its back on plutonium separation, the United States Energy Department is looking in the other direction. Within the Energy Department, one part, the Office of Defense Nuclear Nonproliferation, is struggling to dispose of excess Cold War weapons plutonium, as two others—the Office of Nuclear Energy and ARPA-E (Advanced Research Project Agency – Energy)—are promoting plutonium separation.

In 2020, the Office of Nuclear Energy put out a fact sheet about spent nuclear fuel. In this document, the fifth and last “fact” stated: “Used fuel can be recycled. ... More than

90 percent of its potential energy still remains in the fuel, even after five years of operation in a reactor. The United States does not currently recycle used nuclear fuel but foreign countries, such as France, do. There are also some advanced reactor designs in development that could consume or run on used nuclear fuel in the future.”

The advanced reactor design the Office of Nuclear Energy refers to in its fact sheet is a plutonium breeder reactor that could, theoretically, convert the uranium 238 that constitutes more than 90 percent of the mass of spent fuel into plutonium and fission it—all of that over many recycles and hundreds of years.

In fact, the Energy Department’s Office of Nuclear Energy is promoting sodium-cooled reactor designs based on the Idaho National Laboratory’s Experimental Breeder Reactor II, which was shut down in 1994 due to a lack of mission after the end of the US breeder program a decade earlier. The Energy Department’s office is now supporting research, development, and demonstration of sodium-cooled reactors by several nuclear energy startups. Among them is Bill Gates’ Terrapower, to which the department has committed as much as \$2 billion in matching funds to build a 345-megawatt-electric sodium-cooled prototype reactor—called *Natrium* (sodium in Latin)—in the state of Wyoming. One of Wyoming’s current senators, John Barrasso, is a leading advocate of nuclear power and could become chair of the Senate Committee on Energy and Natural Resources if the Republicans take control of the upper chamber in the elections this fall.

Terrapower insists *Natrium* is not a plutonium breeder reactor and will be fueled “once through” with uranium enriched to just below 20 percent and its spent fuel disposed of directly in a deep geologic repository, without reprocessing. *Natrium*, however, is set to use, initially at least, the same type of fuel used in Idaho’s Experimental Breeder Reactor II. The Energy Department maintains that this spent fuel cannot be disposed of directly because the sodium in the fuel could burn if it contacts underground water or air. On that basis, the Idaho National Laboratory has been struggling for 25 years to treat a mere three tons of spent fuel from the Experimental Breeder Reactor II using a special reprocessing technology called “pyroprocessing.” In pyroprocessing, the fuel is dissolved in molten salt instead of acid, and the plutonium and uranium are recovered by passing a current through the salt and plating them out on electrodes. In 2021, Terrapower stated that it plans to switch later to a fuel for *Natrium* that does not contain sodium but then received in March 2022 the largest of eleven Energy Department grants for research and development on new reprocessing technologies.

Liquid-sodium-cooled reactor designs date back to the 1960s and 1970s, when the global nuclear power community believed conventional power reactor capacity would quickly outgrow the available supply of high-grade uranium ore. Conventional reactors are fueled primarily by chain-reacting uranium 235, which comprises only 0.7 percent by weight of natural uranium. Because of this low percentage, nuclear power advocates focused on developing plutonium “breeder” reactors that would be fueled by chain-reacting plutonium produced from the abundant but non-chain-reacting uranium 238 isotope, which constitutes 99.3 percent of natural uranium. (Liquid-sodium-cooled reactors are sometimes called “fast-neutron reactors” because they utilize fast neutrons to operate. Sodium was chosen as a coolant because it slows neutrons less than water. Fast neutrons are essential to a plutonium breeder reactor because the fission of plutonium by fast neutrons releases more excess secondary neutrons whose capture in uranium 238 makes possible the production of more plutonium than the reactor consumes.)

Large programs were launched to provide startup fuel for the breeder reactors by reprocessing spent conventional power-reactor fuel to recover its contained plutonium.

The growth of electrical power production slowed dramatically worldwide in the 1970s, however. In the United States, the annual growth rate went from an average of 6.6 percent during the period 1920-70 to 1.9 percent during 1970-2020. Had the pre-1970 growth rate persisted as US electric utilities expected, US electricity production would have been 11 times larger in 2020 than it was. A similar pattern happened globally with 8 percent average growth in 1920-70 and 3.2 percent in 1970-2020.

Because of the less-than-expected demand for electricity, the growth of nuclear power slowed and then stopped. Declining construction rates drove capital costs for new nuclear power plants higher in most countries, while costs of natural gas-fired, wind, and photovoltaic power plants plunged. Liquid sodium-cooled breeder reactors proved even more costly than conventional water-cooled reactors. Only a few prototypes were built and then mostly abandoned. In 2020, the Organisation for Economic Co-operation and Development’s Nuclear Energy Agency estimated that sufficient low-cost uranium would be available to fuel existing conventional reactor capacity for more than a century.

RELATED: Question for the candidates: Should the president retain the sole authority to order the use of nuclear weapons?

Zombie plutonium-separation programs. Even though separated plutonium has morphed from the nuclear fuel of the future into a disposal problem, civilian plutonium separation continues in several countries, notably France, Japan, and Russia. It is also being advocated again by the offices within the US Energy Department that fund research and development on nuclear energy.

Russia still has an active breeder reactor development program, with two operating liquid sodium-cooled prototypes—only one of them plutonium fueled—plus a small, liquid, lead-cooled prototype under construction. But Russia has already separated 60 tons of power-reactor plutonium and has declared as excess above its weapons needs approximately 40 tons of weapon-grade plutonium. These 100 tons of separated plutonium would be enough to provide startup fuel for five years for six full-size breeder reactors.

China and India have breeder reactor prototypes under construction, but their breeders are suspected of being dual-purpose. In addition to their production of electric power, the weapon-grade plutonium produced in uranium “blankets” around the breeder cores is likely to be used for making additional warheads for their still-growing nuclear arsenals.

France and Japan require their nuclear utilities to pay for reprocessing their spent fuel and for recycling the recovered plutonium in MOX fuel, even though both countries have known for decades that the cost of plutonium recycling is several times more than using low-enriched uranium fuel “once through,” with the spent fuel being disposed of directly in a deep geological repository.

Claimed benefits of reprocessing. Advocates of plutonium recycling in France and Japan justify their programs with claims that it reduces uranium requirements, the volume of radioactive waste requiring disposal, and the duration of the decay heat and radiotoxicity of the spent fuel in a geologic repository. These benefits are, however, either minor or non-existent. First, France’s plutonium recycling program reduces its uranium requirements by only about 10 percent, which could be achieved at much less cost in other ways, such as by adjusting enrichment plants to extract a higher

percentage of the uranium 235 isotopes in natural uranium. Second, with proper accounting, it is not at all clear that recycling produces a net reduction in the volume of radioactive waste requiring deep geological disposal. Third, the claimed heat reduction, if realized, could reduce the size of the repository by packing radioactive waste canisters more closely. But this is not significant because, with the currently used reprocessing technology, americium 241, which has a 430-year half-life and dominates the decay heat from the spent fuel during the first thousand years, remains in the reprocessed waste.

Claims of the reduced toxicity of reprocessed waste turn out to be false as well. For decades, France's nuclear establishment has promoted continued reprocessing in part out of hope that, after its foreign reprocessing customers did not renew their contracts, it could sell its plutonium recycling technology to other countries, starting with China and the United States. But, with the notable exception of the canceled US MOX plant, these efforts so far have not materialized, and the willingness of the French government to continue funding its expensive nuclear fuel cycle strategy may be reaching its limits.

In 2006, France's parliament passed a Planning Act on radioactive materials and wastes requiring "reduction of the quantity and toxicity of radioactive waste ... notably by processing spent fuel and by processing and conditioning radioactive waste." The act required a pilot facility for the "transmutation" (fissioning) of the plutonium and other transuranic elements accumulating in its spent MOX fuel to be completed by the end of 2020. In 2012, France's nuclear research agency, the Commissariat à l'Énergie Atomique (CEA), which had shut down its failed 1,200 megawatt-electric sodium-cooled fast breeder demonstration reactor called *Superphénix* in 1998, came back with a proposal that the pilot plant becomes a new 600 megawatt-electric sodium-cooled reactor that would be called ASTRID (Advanced Sodium Technological Reactor for Industrial Demonstration). In 2019, however, after spending about \$800 million in design studies, France's government, citing the "current energy market situation," decided not to proceed with the ASTRID project—at least not "before the second half of this century."

In the United States, however, advocates of sodium-cooled reactors have obtained congressional backing—at least temporarily. In 2018, following efforts led by the two senators from Idaho, Congress mandated that the Energy Department examine the construction of a new sodium-cooled reactor—later named the Versatile Test Reactor—to test reactor materials and fuels for a possible new generation of these reactors. The legislation required the reactor to start operating by the end of 2025. The Energy

Department's Idaho National Laboratory proposed a scaled-up version of its shut-down Experimental Breeder Reactor II with an estimated cost of \$2.6 to 5.8 billion. The Energy Department chose General Electric-Hitachi to build the reactor, which then proposed to partner with Bill Gates' Terrapower. After the Energy Department's Office of Nuclear Energy awarded Terrapower up to \$2 billion to build the *Sodium* reactor—which would be very similar to the Versatile Test Reactor—by 2028, the department deferred the decision to build the latter reactor until 2027. Nevertheless, the Energy Department requested \$145 million for the Versatile Test Reactor in its fiscal year 2022 budget. Congress provided no funding, however.

Proliferation danger. Aside from the waste of taxpayer money, there is one major public-policy objection to plutonium separation: Plutonium can be used to make a nuclear weapon. The chain-reacting material in the Nagasaki bomb was six kilograms of plutonium, and the fission triggers of virtually all nuclear warheads today are powered with plutonium. Reactor-grade plutonium is weapon-usable, as well.

In the 1960s, however, blinded by enthusiasm for plutonium breeder reactors, the US Atomic Energy Commission—the Energy Department's predecessor agency—promoted plutonium worldwide as the fuel of the future. During that period, India sent 1,000 scientists and engineers to Argonne and other US national laboratories to be educated in nuclear science and engineering. In 1964, India began to separate plutonium from the spent fuel of a heavy-water research reactor provided jointly by Canada and the United States. Ten years later, in 1974, India used some of that separated plutonium for a design test of a "peaceful nuclear explosive," which is now a landmark in the history of nuclear weapon proliferation.

Immediately after India's nuclear test, the US State Department checked whether any other countries might be pursuing nuclear weapons via nominally civilian plutonium programs. The Department found that Brazil, Pakistan, South Korea, and Taiwan—all under military dictatorships at the time—had contracted for reprocessing equipment from French or German companies. Forceful US interventions with the French and German governments helped prevent those contracts from being fulfilled.

In the United States, the government concluded that neither breeder reactors nor spent fuel reprocessing could compete economically with water-cooled reactors fueled by once-through low-enriched uranium fuel. Subsequently, the US government decided to

end funding for both programs in the late 1970s and early 1980s, and, with no government funding, the private sector also lost interest in the programs.

False environmental claims for reprocessing. Since the 1980s, advocates of reprocessing and plutonium recycling and fast neutron reactors in the Energy Department's Argonne and Idaho National Laboratories have promoted them primarily as a strategy to facilitate spent fuel disposal.

The George W. Bush administration, which came to power in 2001, embraced this argument because it saw the impasse over siting a spent fuel repository as an obstacle to the expansion of nuclear power in the United States. To address the proliferation issue, the Bush Administration proposed in 2006 a "Global Nuclear Energy Partnership" in which only countries that already reprocessed their spent fuel (China, France, Japan, and Russia) plus the United States would be allowed to reprocess the world's spent fuel and extract plutonium. The recovered plutonium then would be used in the reprocessing countries to fuel advanced burner reactors (breeder reactors tweaked so that they would produce less plutonium than they consumed). These burner reactors would be sodium-cooled fast-neutron reactors because the slow neutrons that sustain the chain reaction in water-cooled reactors are not effective in fissioning some of the plutonium isotopes. After Congress understood the huge costs involved, however, it refused to fund the partnership.

RELATED: **Congress will hold a hearing about the Sentinel missile's exploding budget, but is it too little, too late?**

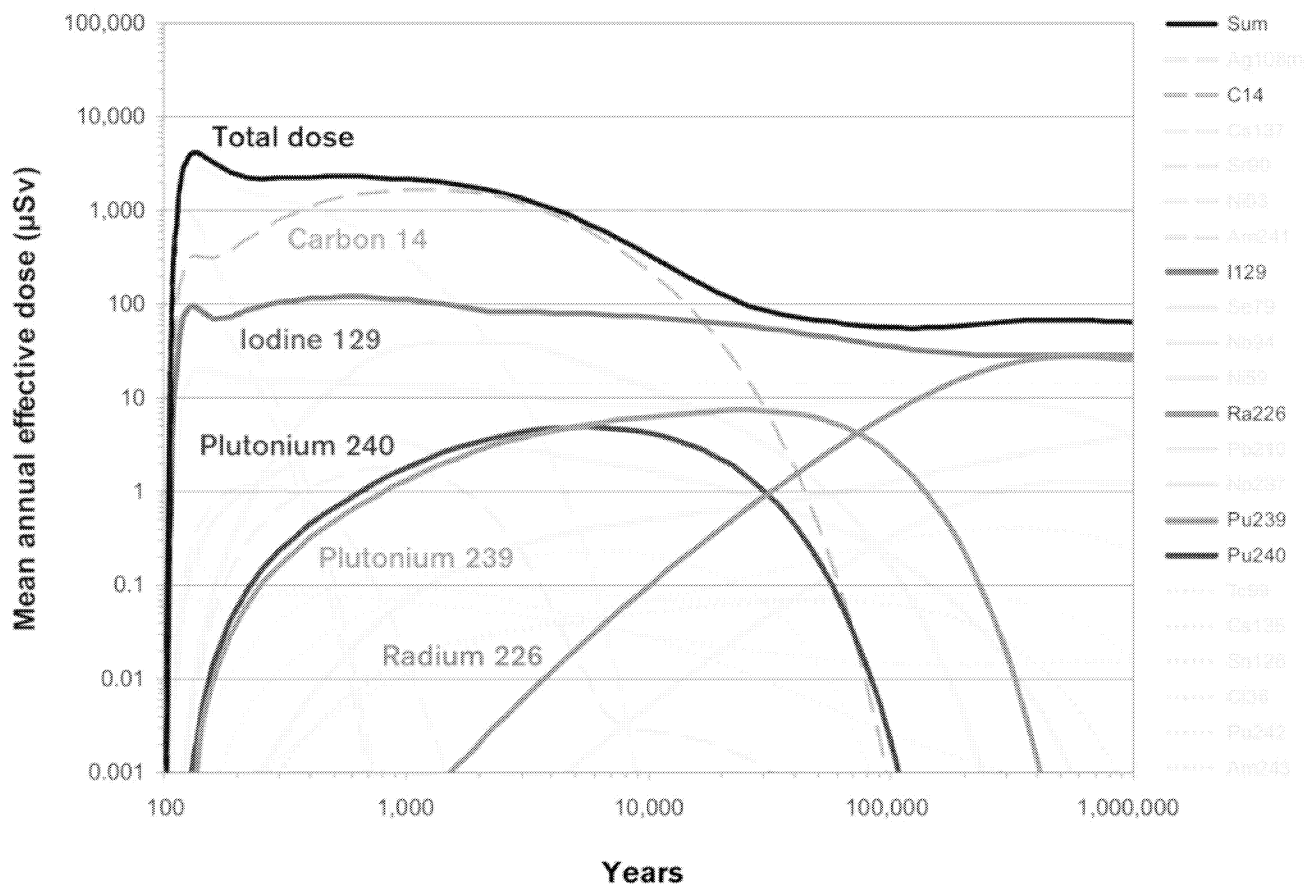
In 2001, the Argonne National Laboratory's nuclear energy group informed an energy policy review group led by US Vice President Dick Cheney that the pyroprocessing technology the laboratory had developed to reprocess the fuel from Idaho's Experimental Breeder Reactor II was "proliferation-resistant." On that basis, the administration authorized the Argonne and Idaho national laboratories to share the technology with the South Korea Atomic Energy Research Institute. In 2009, however, a study by safeguards experts from six different Energy Department laboratories, including Argonne, concluded that pyroprocessing is not significantly more proliferation-resistant than conventional reprocessing. US attempts to end the joint US-South Korea

research and development program on pyroprocessing led to difficult negotiations with South Korea that have not yet been resolved.

Plutonium and the geological disposal of spent fuel. Despite the unfavorable economics, the idea of separating and fissioning the plutonium in spent fuel has been kept alive in the United States and some other countries in part by continuing political and technical obstacles to siting spent fuel repositories. Proponents of reprocessing have managed to keep their governments' attention on plutonium because it is a long-lived radioelement, a ferocious carcinogen—if inhaled—and has fuel value if recycled.

But detailed studies have concluded that plutonium makes a relatively small contribution to the long-term risk from a spent fuel geologic repository for spent fuel from commercial power reactors. Plutonium has relatively low solubility in deep groundwater, which makes it less mobile in the environment and slow to reach the surface. (One notable exception to this slow mobility is a hypothetical scenario that might occur in a volcanic area such as Nevada, where an eruption through a repository could disperse some of its radioactivity into the air to be inhaled by people downwind.) Moreover, plutonium is not concentrated in the food chain and, even if it were ingested, only about one percent of it would be absorbed into the body from the gut.

As a cumulative result of all of these barriers, the doses to humans through the food chain from plutonium caused by a leaking repository have been found to be minor in comparison to the doses from more water-soluble, long-lived radioisotopes. Calculations by SKB, Sweden's nuclear waste management company, found that the long-term hazard from spent fuel is dominated first by carbon 14 (with a half-life of 5,700 years) produced through neutron absorption by atmospheric nitrogen trapped in fuel; then by the fission product iodine 129 (16 million-year half-life); and finally by radium 226 (which has only a 1,600-year half-life but is a decay product of uranium 238, which has a 4.5 billion-year half-life). (See figure.)[1]



SKB, the company responsible for designing and building Sweden's spent fuel repository, calculated the dose to a subsistence farmer on the surface from various radioisotopes if the spent fuel were not contained in a copper cask surrounded by a layer of clay. In this adaptation, showing the contributions from a few of the radioisotopes, the doses from plutonium never dominate. Note the logarithmic scale used. (Source: SKB, modified by Thomas Gaulkin.)

The SKB results are consistent with the conclusions of a massive five-year study by the National Academy of Sciences on separation and transmutation technologies for nuclear waste commissioned by the Energy Department in 1991. That study, which was completed in 1996, found that "none of the [repository] dose reductions seem large enough to warrant the expense and additional operational risk of transmutation."

These risk assessments are theoretical, but they are based on real-world experience with the movement of radioisotopes through the environment.

The main source of that experience is from the large quantities of fission products and plutonium lofted into the stratosphere by the fireballs of megaton-scale atmospheric nuclear tests between 1952 and 1980. During that period, the Soviet Union, the United States, China, the United Kingdom, and France injected into the stratosphere a total of about eight tons of fission products and 3.4 tons of plutonium—comparable to the

quantities in a few hundred tons of spent light water reactor fuel. These radioisotopes returned to earth as global radioactive “fallout.”

The UN Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) found that the total dose from the plutonium in the fallout was relatively small, with the most important contribution being due to inhalation on the plutonium’s way to the ground. Once on the ground, UNSCEAR estimated that the doses from ingestion of the plutonium would be relatively small. It estimated the summed effective dose commitment to the global population of the ingested plutonium at about 440 person-grays. For comparison, in 2000, UNSCEAR estimated the effective whole-body dose to future generations over 10,000 years from iodine 129 (16 million-year half-life) released into the atmosphere as a result of France’s reprocessing of about 64 tons of spent fuel during 1995-97 would result in a cumulative population dose of 123 person-grays. As of 2019, France had reprocessed cumulatively 34,000 tons of spent fuel at La Hague, which would scale this dose estimate to 64,000 person-grays.

Because studies suggest the hazards from plutonium in a spent fuel repository may be comparable to those from radium being released from a deep-underground uranium deposit, the attempts by proponents of reprocessing and fast-neutron reactors to emphasize the health and environmental risks of plutonium in spent fuel repositories have been counterproductive for the nuclear power industry.

In addition to the proliferation danger dramatized by the case of India, plutonium separation also brings with it a danger of a massive accidental radioactive release during reprocessing. The world’s worst nuclear accident before Chernobyl involved the Soviet Union’s first reprocessing plant for plutonium production, in 1957.

Some reprocessing advocates argue that, in the future, the plutonium in spent fuel directly disposed of deep underground might be mined to make nuclear weapons. This is a legitimate concern but the tradeoffs are complex: Reducing the danger of *future* proliferation by removing the plutonium from spent fuel before burial increases nuclear proliferation and terrorism risks *today*.

Gullible governments. Nearly half a century after India conducted its first nuclear test in 1974 with assistance provided inadvertently by Canada and the United States, both countries’ governments seem to have forgotten about the proliferation risk associated with spent fuel reprocessing. Today, advocates of fast-neutron breeder or burner reactors are pitching again the same arguments—used before the test—to gullible

governments that seem unaware of the history of this issue. This ignorance has created problems for Canada's nonproliferation policy as well as that of the United States.

In Canada, a UK startup, Moltex, has obtained financial support from federal and provincial governments by promising to "solve" Canada's spent fuel problem. Its proposed solution is to extract the plutonium in the spent fuel of Canada's aging CANDU (CANada Deuterium Uranium) reactors to fuel a new generation of molten-salt-cooled reactors. The Moltex company also proposes to make Canada an export hub for its reactors and small reprocessing plants.

In South Korea, the Korea Atomic Energy Research Institute, with support from Energy Department's Argonne and Idaho National Laboratories, has similarly been campaigning to persuade its government that pyroprocessing spent fuel and fissioning plutonium in sodium-cooled reactors would help solve that country's spent fuel management problem.

It is time for governments to learn again about the risks involved with plutonium separation and to fence off "no-go zones" for their nuclear energy advocates, lest they unintentionally precipitate a new round of nuclear-weapon proliferation.

Notes:

[1] Carbon 14 and iodine 129 are difficult to capture during reprocessing and therefore are routinely released into the atmosphere and ocean by France's reprocessing plant at La Hague. Also, had the uranium 238 in the spent fuel not been mined, its decay product, radium 226, would have been released within the original uranium deposit. So, even though some reprocessing advocates join with nuclear power critics in amplifying the hazards of plutonium and other transuranic elements in underground radioactive waste repositories, they generally omit comparisons with reprocessing hazards (in the case of reprocessing advocates) or with natural uranium deposits (in the case of repository opponents).

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Reprocessing - NWW invitation

April 29, 2024 9:13 AM

Subject	Reprocessing - NWW invitation
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Wilkinson, David; Hilborn, Jade
Sent	September 12, 2023 8:12 AM
Attachments	 RE Invitation ...

Declassified by ATIP/
PROTÉGÉ B

Flip friendly attached.

Cheers,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Policy Advisor | Uranium and Radioactive Waste Division
Natural Resources Canada | Government of Canada

Conseiller en politique | Division de l'uranium et des déchets radioactifs
Ressources naturelles Canada | Gouvernement du Canada

kathleen.prosser@nrcan-rncan.gc.ca

s.19(1)

Wittmann, Tess (she, her | elle, elle)

To: susanodo.ca@gmail.com
Cc: Hannah, Justin; [REDACTED]
Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Dear Dr. O'Donnell,

My colleague Justin Hannah shared with me your kind invitation to participate in the Nuclear Waste Watch webinar roundtable, I am responding on behalf of the Nuclear Energy and Infrastructure Security Branch within Natural Resources Canada.

I would like to first clarify the nature of the "proposed reprocessing policy" you have identified. This document was generated by the CANDU Owners Group and is, in its entirety, and industry led and owned document. It does not in any way represent a policy of or by the federal government; we do not presently have a reprocessing policy and have not launched a formal process for developing one. While spent nuclear fuel reprocessing is not presently commercially employed in Canada, the Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of the Policy. Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act as well as safeguards verification by the International Atomic Energy Agency (IAEA). Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

Given that we do not have a policy under development, we do not have any updates to provide with respect to such a process. We would nonetheless be happy to participate in the webinar and to engage on the subject of reprocessing more broadly should that be of interest to the team at Nuclear Waste Watch. Please work with my subject matter expert Kathleen Prosser to arrange a time for the roundtable, with November 2nd and 3rd presently being our preferred dates.

Thank you again for the invitation, and very much looking forward to the discussion.

Kind regards,

Pui Wai Yuen

From: Susan O'Donnell <susanodo.ca@gmail.com>
Sent: September 8, 2023 11:25 AM
To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Cc: [REDACTED]
Subject: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Dear Justin Hannah,

Good morning. I represent the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy. I'm cc'ing [REDACTED]
[REDACTED]


Nuclear Waste Watch is organizing a webinar roundtable of civil society groups and academics about the proposed reprocessing policy that NRCan is developing with the CANDU owners group and others. We are inviting you to speak at the roundtable, to give us an update on the policy development and engage in Q&A. We are planning an invitation-only roundtable with about 15-20 participants, by zoom.

Please let us know your availability the week of October 30 to November 3, and please confirm receipt of this email.

Thank you for considering our invitation and kind regards,
Susan O'Donnell
representative, CRED-NB

Response to Susan - roundtable

April 29, 2024 8:51 AM

Subject	Response to Susan - roundtable
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Wilkinson, David; Hilborn, Jade (she, her elle, elle)
Sent	September 27, 2023 4:37 PM
Attachments	 Re Invitation ...

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Hi Pui Wai,

As requested, draft email for Susan, short and sweet I think should suffice since we'll have to get back to her again once Fred is back. I don't think it's advisable to request what questions they are planning on asking, as that may give the impression that we have information to share, which we don't really beyond what was in our earlier correspondence. Propose asking for an agenda per the below as an appropriate gauge of what will be centered.

Over to you.

-Kate

Hi Susan,

Thank you for confirming the date and time of the roundtable, we will be in touch next week to confirm which representatives from NRCan will be in attendance. We unfortunately will not be able to provide you with names before the end of the month and appreciate your understanding. If you could provide an agenda at your convenience that may also assist us in determining which representatives it would be best to have present during the event.

Kind regards,

Pui Wai Yuen
Director etc.

Kathleen Prosser, PhD.
(she/her/elle)

Policy Advisor | Uranium and Radioactive Waste Division
Natural Resources Canada | Government of Canada

Conseiller en politique | Division de l'uranium et des déchets radioactifs

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Ressources naturelles Canada | Gouvernement du Canada

kathleen.prosser@nrcan-rncan.gc.ca

Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

April 29, 2024 8:52 AM

Subject	Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing
From	Susan O'Donnell
To	Yuen, Pui Wai
Cc	Hannah, Justin; Prosser, Kathleen; Wilkinson, David
Sent	September 22, 2023 11:24 AM

Hello again Pui Wai,

Thank you for suggesting November 2 and 3 as your preferred dates for participating in the roundtable on used nuclear fuel reprocessing policy organized by Nuclear Waste Watch. We've fixed the date: Friday, November 3. The meeting will be 90 minutes starting at 9am Eastern. We will supply the zoom link, agenda, and list of invited participants over the next weeks. Could you please confirm that NRCAN will participate in the roundtable and if you would like one or two representatives to be invited? We would appreciate knowing the name(s) by the end of September, if possible.

Thank you and kind regards,

Susan

CRED-NB

On Fri, 15 Sept 2023 at 10:15, Susan O'Donnell <susanodo.ca@gmail.com> wrote:

Good morning Pui Wai,

Thank you for your email and information.

Kind regards,

Susan

CRED-NB

On Fri, 15 Sept 2023 at 10:00, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

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Dear Dr. O'Donnell,

My colleague Justin Hannah shared with me your kind invitation to participate in the Nuclear Waste Watch webinar roundtable, I am responding on behalf of the Nuclear Energy and Infrastructure Security Branch within Natural Resources Canada.

NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and

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technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the Treaty on the Non-Proliferation of Nuclear Weapons, including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.

NRCAN is aware of the draft document prepared by the CANDU Owners Group referenced below through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

We do not have any further updates beyond the above to provide on this topic. However, we would be happy to participate in the webinar and to engage on the subject with Nuclear Waste Watch should you still wish. If so, please work with my subject matter expert Kathleen Prosser copied above, to arrange a time for the roundtable, with November 2 and 3 presently being our preferred dates.

Thank you again for the invitation.

Kind regards,

Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: September 8, 2023 11:25 AM

To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>

Cc: [REDACTED]

Subject: Invitation to speak about proposed policy on used nuclear fuel reprocessing

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Dear Justin Hannah,

Good morning. I represent the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy. I'm cc'ing [REDACTED]

Nuclear Waste Watch is organizing a webinar roundtable of civil society groups and academics about the proposed reprocessing policy that NRCAN is developing with the CANDU owners group and others. We are inviting you to speak at the roundtable, to give us an update on the policy development and engage in Q&A. We are planning an invitation-only roundtable with about 15-20 participants, by zoom.

Please let us know your availability the week of October 30 to November 3, and please confirm receipt of this email.

Thank you for considering our invitation and kind regards,
Susan O'Donnell
representative, CRED-NB

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FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

April 29, 2024 11:05 AM

Subject	FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	October 26, 2023 4:15 PM

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fyi

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: 26 octobre 2023 15:47
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Naina.Thoppil@international.gc.ca
Subject: FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

Hello NRCan Colleagues,

This invitation has just landed in my inbox. I assume some of you have also received one? A lot of very familiar names from the discussions NRCan hosted on the waste policy.

Tanya

From: Nuclear Waste Watch <nuclearwastewatch@gmail.com>
Sent: Thursday, October 26, 2023 3:29 PM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

October 26, 2023

Tanya Hinton, Senior Advisor
Global Affairs Canada

Dear Ms. Hinton,

Earlier this month you received an invitation from Nuclear Waste Watch to participate in a roundtable discussion of approximately 20 civil society and

government representatives about reprocessing nuclear fuel waste. Due to the non-availability of some key participants, we have shifted the date by two weeks to Friday, November 17th. Our apologies for any inconvenience, especially to those who have already confirmed for the earlier date.

The roundtable discussion will share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. Civil society groups and nuclear weapons proliferation experts have raised concerns about the potential of reprocessing in Canada. The roundtable session objective is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The revised meeting details are:

Date / Time: Friday, November 17, 10 a.m. to 11:30 a.m Eastern

Connection: Virtual Meeting via ZOOM (details to follow)

Invited participants include a range of civil society organizations and academics interested in the security, disarmament and nuclear weapons proliferation and / or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission

We are requesting confirmation of your participation by November 10th. If you cannot attend, please respond as soon as possible with the name of a colleague from your organization who can participate. A list of confirmed participants will be sent with the zoom link a week prior to the meeting.

The meeting will be 90 minutes with the opportunity for followup email communications. The agenda is:

- Very brief introductions and Meeting Objectives
- Reprocessing Nuclear Fuel Waste and Government Policy in Canada
- Nuclear Fuel Waste Reprocessing and Radioactive Wastes
- Reprocessing and Proliferation and Security Concerns
- Meeting wrap-up

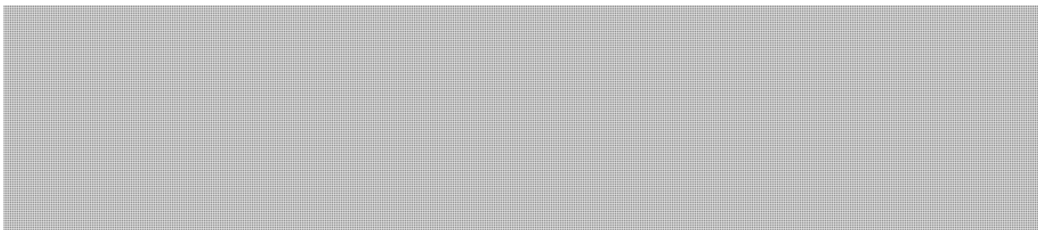
We look forward to hearing confirmation of your engagement in this important discussion. If you have any questions or comments in advance, please don't hesitate to be in touch.

Sincerely,

Dr. Susan O'Donnell
Coalition for Responsible Energy
Development in New Brunswick

A0068476_2-000720

s.19(1)



FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

April 29, 2024 11:06 AM

Subject	FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern
From	Yuen, Pui Wai
To	Wilkinson, David
Cc	Prosser, Kathleen
Sent	October 26, 2023 4:13 PM

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From: Nuclear Waste Watch <nuclearwastewatch@gmail.com>
Sent: 26 octobre 2023 15:27
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

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October 26, 2023

Pui Wai Yuen Director
 Uranium and Radioactive Waste Division
 Kathleen Prosser Advisor
 Small modular reactors and radioactive waste
 Natural Resources Canada

Dear Pui Wai and Kathleen,

Earlier this month an email was sent from Nuclear Waste Watch to yourselves and others, inviting you to participate in a roundtable discussion of approximately 20 civil society and government representatives about reprocessing nuclear fuel waste. We understand from your followup with Susan O'Donnel that you did not receive these invitations, and for that we are profoundly sorry.

Due to those communication difficulties and to the non-availability of some key participants, we have shifted the date by two weeks to Friday, November 17th.

A0068479_1-000722

Our apologies for any inconvenience, especially to those who have already confirmed for the earlier date. We were very pleased to receive your confirmation that you will be available on November 17th.

The roundtable discussion will share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. Civil society groups and nuclear weapons proliferation experts have raised concerns about the potential of reprocessing in Canada. The roundtable session objective is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The revised meeting details are:

Date / Time: Friday, November 17, 10 a.m. to 11:30 a.m Eastern

Connection: Virtual Meeting via ZOOM (details to follow)

Invited participants include a range of civil society organizations and academics interested in the security, disarmament and nuclear weapons proliferation and / or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission

We are requesting confirmation of your participation by November 10th. If you cannot attend, please respond as soon as possible with the name of a colleague from your organization who can participate. A list of confirmed participants will be sent with the zoom link a week prior to the meeting.

The meeting will be 90 minutes with the opportunity for followup email communications. The agenda is:

- Very brief introductions and Meeting Objectives
- Reprocessing Nuclear Fuel Waste and Government Policy in Canada
- Nuclear Fuel Waste Reprocessing and Radioactive Wastes
- Reprocessing and Proliferation and Security Concerns
- Meeting wrap-up

We look forward to hearing confirmation of your engagement in this important discussion. If you have any questions or comments in advance, please don't hesitate to be in touch.

Sincerely,



Dr. Susan O'Donnell
Coalition for Responsible Energy
Development in New Brunswick

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FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

April 29, 2024 11:11 AM

Subject	FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	October 26, 2023 4:18 PM

UNCLASSIFIED - NON CLASSIFIÉ

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 26 octobre 2023 16:13
To: Nuclear Waste Watch <nuclearwastewatch@gmail.com>
Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: RE: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

UNCLASSIFIED - NON CLASSIFIÉ

Good afternoon,

Thank you for sharing the invitation, I'm confirming receipt of the email and our attendance for the policy agenda item on the 17th. If possible, we would appreciate a list of the anticipated participants as we prepare materials for the roundtable.

Regards,
Kathleen

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Nuclear Waste Watch <nuclearwastewatch@gmail.com>
Sent: Thursday, October 26, 2023 3:27 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

A0068481_1-000725

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dessous***



October 26, 2023

Pui Wai Yuen Director
Uranium and Radioactive Waste Division
Kathleen Prosser Advisor
Small modular reactors and radioactive waste
Natural Resources Canada

Dear Pui Wai and Kathleen,

Earlier this month an email was sent from Nuclear Waste Watch to yourselves and others, inviting you to participate in a roundtable discussion of approximately 20 civil society and government representatives about reprocessing nuclear fuel waste. We understand from your followup with Susan O'Donnel that you did not receive these invitations, and for that we are profoundly sorry.

Due to those communication difficulties and to the non-availability of some key participants, we have shifted the date by two weeks to Friday, November 17th. Our apologies for any inconvenience, especially to those who have already confirmed for the earlier date. We were very pleased to receive your confirmation that you will be available on November 17th.

The roundtable discussion will share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. Civil society groups and nuclear weapons proliferation experts have raised concerns about the potential of reprocessing in Canada. The roundtable session objective is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The revised meeting details are:

Date / Time: Friday, November 17, 10 a.m. to 11:30 a.m Eastern
Connection: Virtual Meeting via ZOOM (details to follow)

Invited participants include a range of civil society organizations and academics interested in the security, disarmament and nuclear weapons proliferation and / or environmental impacts of reprocessing and government representatives from

A0068481_2-000726

Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission

We are requesting confirmation of your participation by November 10th. If you cannot attend, please respond as soon as possible with the name of a colleague from your organization who can participate. A list of confirmed participants will be sent with the zoom link a week prior to the meeting.

The meeting will be 90 minutes with the opportunity for followup email communications. The agenda is:

- Very brief introductions and Meeting Objectives
- Reprocessing Nuclear Fuel Waste and Government Policy in Canada
- Nuclear Fuel Waste Reprocessing and Radioactive Wastes
- Reprocessing and Proliferation and Security Concerns
- Meeting wrap-up

We look forward to hearing confirmation of your engagement in this important discussion. If you have any questions or comments in advance, please don't hesitate to be in touch.

Sincerely,

Dr. Susan O'Donnell
Coalition for Responsible Energy
Development in New Brunswick

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FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

April 29, 2024 11:11 AM

Subject	FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	November 10, 2023 4:04 PM

UNCLASSIFIED - NON CLASSIFIÉ

From: Yuen, Pui Wai
Sent: 10 novembre 2023 16:01
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

Fyi – looks like David Moroz will be attending for the CNSC

From: Moroz, David <david.moroz@cnscccsn.gc.ca>
Sent: 10 novembre 2023 15:46
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; tanya.hinton@international.gc.ca
Subject: FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

Hi Puiwai and Tanya,

I hope you are both doing well. Nuclear Waste Watch called me to see if I would participate in their panel next week. They mentioned that both of you have confirmed. Is this correct?

If I were to join, I could talk to licensing and the requirements for safety, security, and safeguards... but I am trying to understand if both of you have agreed to participated first.

Thanks,
David

From: Nuclear Waste Watch <nuclearwastewatch@gmail.com>
Sent: Friday, November 10, 2023 3:15 PM
To: Moroz, David <david.moroz@cnscccsn.gc.ca>
Subject: Re: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

EXTERNAL EMAIL – USE CAUTION / COURRIEL EXTERNE – FAITES PREUVE DE PRUDENCE

Good afternoon, Mr Moroz

A0068482_1-000728

Are you able to join us next Friday for the roundtable on reprocessing?

if you could drop me a quick line to let me know I would appreciate it.

Regards,



On Mon, Nov 6, 2023 at 8:00 AM Nuclear Waste Watch <nuclearwastewatch@gmail.com> wrote:
Good morning, Mr. Moroz

Last month you received an invitation from Nuclear Waste Watch to participate in a roundtable discussion of approximately 20 civil society and government representatives about reprocessing nuclear fuel waste. We're following up this morning with a reminder of our invitation, and request that you confirm your participation by November 10th.

Invited participants include a range of civil society organizations and academics interested in the security, disarmament and nuclear weapons proliferation and / or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission. Natural Resources Canada and Global Affairs have confirmed their participation. Given the CNSC's role in the regulation of nuclear activities and overseeing nuclear safeguards, we would very much appreciate a response and participation from the CNSC.

We are requesting confirmation of your participation by November 10th. If you cannot attend, please respond as soon as possible with the name of a colleague from your organization who can participate. A list of confirmed participants will be sent with the zoom link a week prior to the meeting.

Details of our invitation are below, and we would be pleased

to discuss further by email or phone at your convenience. I can be reached at [REDACTED] or by reply email.

Thank you for your consideration. We look forward to hearing from you.

[REDACTED] / Nuclear Waste Watch steering group

On Thu, Oct 26, 2023 at 3:30 PM Nuclear Waste Watch <nuclearwastewatch@gmail.com> wrote:

October 26, 2023

David Moroz Director General
Security and Safeguards
Canadian Nuclear Safety Commission

Dear Mr. Moroz,

Earlier this month you received an invitation from Nuclear Waste Watch to participate in a roundtable discussion of approximately 20 civil society and government representatives about reprocessing nuclear fuel waste. Due to the non-availability of some key participants, we have shifted the date by two weeks to Friday, November 17th. Our apologies for any inconvenience, especially to those who have already confirmed for the earlier date.

The roundtable discussion will share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. Civil society groups and nuclear weapons proliferation experts have raised concerns about the potential of reprocessing in Canada. The roundtable session objective is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The revised meeting details are:

Date / Time: Friday, November 17, 10 a.m. to 11:30 a.m Eastern
Connection: Virtual Meeting via ZOOM (details to follow)

Invited participants include a range of civil society organizations and academics interested in the security, disarmament and nuclear weapons proliferation and / or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission

We are requesting confirmation of your participation by November 10th. If you

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cannot attend, please respond as soon as possible with the name of a colleague from your organization who can participate. A list of confirmed participants will be sent with the zoom link a week prior to the meeting.

The meeting will be 90 minutes with the opportunity for followup email communications. The agenda is:

- Very brief introductions and Meeting Objectives
- Reprocessing Nuclear Fuel Waste and Government Policy in Canada
- Nuclear Fuel Waste Reprocessing and Radioactive Wastes
- Reprocessing and Proliferation and Security Concerns
- Meeting wrap-up

We look forward to hearing confirmation of your engagement in this important discussion. If you have any questions or comments in advance, please don't hesitate to be in touch.

Sincerely,

Dr. Susan O'Donnell
Coalition for Responsible Energy
Development in New Brunswick

FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing

April 29, 2024 11:01 AM

Subject	FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing
From	Yuen, Pui Wai
To	Prosser, Kathleen
Cc	Wilkinson, David
Sent	October 23, 2023 10:57 AM

UNCLASSIFIED - NON CLASSIFIÉ

I wonder if her email got blocked/quarantined. Please ask them to resend (I wonder as an attachment maybe for the calendar invite would work?)

Thanks!
PW

From: [REDACTED]
Sent: 23 octobre 2023 10:33
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai (NRCan/RNCan) <puiwai.yuen@canada.ca>
Cc: Susan O'Donnell <susanodo.ca@gmail.com>
Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Good morning, Kathleen
 Invitations were sent out from Nuclear Waste Watch's nuclearwastewatch@gmail.com account on October 12th, but I have just resent the generic invitation to you and Pui Wai again from the same email, and am attaching the pdf to this email.
 My apologies if it somehow went astray in transmission. I have been having some IT difficulties, but have received responses from others who were sent the invitation at the same time from the same email. I hope this delay in your receiving the details does not impact your ability to participate.
 Regards,
 [REDACTED]

On 2023-10-23 9:58 a.m., Prosser, Kathleen wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Good Morning,

Thank you for the prompt reply. Unfortunately, neither Pui Wai or I received the invitation or associated materials. Would it be possible to resend?

Thanks so much,
Kathleen

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: Monday, October 23, 2023 9:39 AM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: [REDACTED]

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Hi Kathleen,

Good morning. [REDACTED] from Nuclear Waste Watch sent out the invitation to you and others, with the agenda, the week before last. If you did not receive it let me know.

Thanks,
Susan

On Fri, 20 Oct 2023 at 15:19, Prosser, Kathleen <Kathleen.Prosser@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Hi Susan,

Thank you for providing a clarification of the date, I'm looking forward to the meeting. I'm following up to see if you are able to share an agenda at this time as I work to prepare any supporting materials for the round table.

Kind regards,

Kathleen

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: Tuesday, October 10, 2023 9:20 PM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: [REDACTED] Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>;

Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Hello Pui Wai and Kathleen,

The date is indeed Friday Nov. 3, apologies for the confusion. We are moving the time up to 10am Eastern to help facilitate possible participation from B.C. We are preparing the agenda this week and aim to have it to you by Friday. In response to your question, at this point we do not anticipate any internal discussion.

Thank you again for your engagement.

Susan

CRED-NB

On Fri, 6 Oct 2023 at 20:01, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Dear Susan,

Thank you for your well wishes. [REDACTED]

A quick question: I'd like to confirm the date of the webinar as in our previous correspondence you indicated that the event will be held on November 3, 2023, at 9am. However, in subsequent correspondence you indicated participation at the roundtable for November 2. Would you mind confirming the date and time so that we can mark it in our calendars?

In terms of participation, I will be attending the event along with Dr. Kathleen Prosser, Policy Analyst, Uranium and Radioactive Waste Division (copied above).

Given that the event is 90 minutes, please let us know if your agenda will include any internal discussion that will not require NRCan's participation. If that is the case, please share an agenda at your earliest convenience so that we can plan our attendance accordingly. As previously communicated, we do not have further updates to provide on this topic beyond that of the below. However, we appreciate the opportunity to hear your perspective and answer any questions you may have.

We look forward to the event. Thank you for organizing.

Happy Thanksgiving,
Pui Wai

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: 29 septembre 2023 07:00

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: [REDACTED] Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>;
Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Good morning Pui Wai,

[REDACTED]

Thank you for indicating NRCan's willingness to participate in the roundtable on Nov. 2. We will aim to send you an agenda as soon as possible. We're a large volunteer organizing committee so of course this takes time on our end.

Kind regards,
Susan
CRED-NB

On Thu, 28 Sept 2023 at 19:16, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Hi Susan,

Apologies for the delayed response. [REDACTED]

Thank you for confirming the date and time of the roundtable – we will need a little bit more time to confirm which representatives from NRCAN will be in attendance and unfortunately won't be able to get back to you by the end of September. We'll, however, aim to provide you with the names next week and will be in touch. We appreciate your patience and understanding. In the meantime, if you could provide an agenda at your convenience that may also assist us in determining which representatives would be best to have at the event.

Thank you.

Kind regards,

Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: 22 septembre 2023 11:25

To: Yuen, Pui Wai <puiwai.yuen@NRCAN-RNCan.gc.ca>

Cc: [REDACTED] Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCAN-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCAN-RNCan.gc.ca>

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Hello again Pui Wai,

Thank you for suggesting November 2 and 3 as your preferred dates for participating in the roundtable on used nuclear fuel reprocessing policy organized by Nuclear Waste Watch. We've fixed the date: Friday, November 3. The meeting will be 90 minutes starting at 9am Eastern. We will supply the zoom link, agenda, and list of invited participants over the next weeks. Could you please confirm that NRCAN will participate in the roundtable and if you would like one or two representatives to be invited? We would appreciate knowing the name(s) by the end of September, if possible.

Thank you and kind regards,

Susan

CRED-NB

On Fri, 15 Sept 2023 at 10:15, Susan O'Donnell <susanodo.ca@gmail.com> wrote:

Good morning Pui Wai,

Thank you for your email and information.

Kind regards,

Susan

CRED-NB

A0068483_4-000735

On Fri, 15 Sept 2023 at 10:00, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Dear Dr. O'Donnell,

My colleague Justin Hannah shared with me your kind invitation to participate in the Nuclear Waste Watch webinar roundtable, I am responding on behalf of the Nuclear Energy and Infrastructure Security Branch within Natural Resources Canada.

NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the [Treaty on the Non-Proliferation of Nuclear Weapons](#), including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of [Canada's Policy for Radioactive Waste Management and Decommissioning](#).

NRCAN is aware of the draft document prepared by the CANDU Owners Group referenced below through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

We do not have any further updates beyond the above to provide on this topic. However, we would be happy to participate in the webinar and to engage on the subject with Nuclear Waste Watch should you still wish. If so, please work with my subject matter expert Kathleen Prosser copied above, to arrange a time for the roundtable, with November 2 and 3 presently being our preferred dates.

Thank you again for the invitation.

A0068483_5-000736

Kind regards,

Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: September 8, 2023 11:25 AM

To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>

Cc: [REDACTED]

Subject: Invitation to speak about proposed policy on used nuclear fuel reprocessing

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Dear Justin Hannah,

Good morning. I represent the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy. I'm cc'ing [REDACTED]

Nuclear Waste Watch is organizing a webinar roundtable of civil society groups and academics about the proposed reprocessing policy that NRCan is developing with the CANDU owners group and others. We are inviting you to speak at the roundtable, to give us an update on the policy development and engage in Q&A. We are planning an invitation-only roundtable with about 15-20 participants, by zoom.

Please let us know your availability the week of October 30 to November 3, and please confirm receipt of this email.

Thank you for considering our invitation and kind regards,
Susan O'Donnell
representative, CRED-NB

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FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing

April 29, 2024 10:58 AM

Subject	FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing
From	Yuen, Pui Wai
To	Brady, Daniel
Cc	Hannah, Justin; Prosser, Kathleen; Wilkinson, David
Sent	September 18, 2023 4:14 PM

Declassified by ATIP/
Déclassé par ATIP
PROTÉGÉ B

Hi Dan, FYI, keeping you in the loop.

From: Susan O'Donnell <susanodo.ca@gmail.com>
Sent: 15 septembre 2023 09:15
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: [REDACTED] Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Good morning Pui Wai,

Thank you for your email and information.

Kind regards,
Susan
CRED-NB

On Fri, 15 Sept 2023 at 10:00, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Dear Dr. O'Donnell,

My colleague Justin Hannah shared with me your kind invitation to participate in the Nuclear Waste Watch webinar roundtable, I am responding on behalf of the Nuclear Energy and Infrastructure Security Branch within Natural Resources Canada.

NRCan is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used

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nuclear fuel.

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the [Treaty on the Non-Proliferation of Nuclear Weapons](#), including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of [Canada's Policy for Radioactive Waste Management and Decommissioning](#).

NRCAN is aware of the draft document prepared by the CANDU Owners Group referenced below through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

We do not have any further updates beyond the above to provide on this topic. However, we would be happy to participate in the webinar and to engage on the subject with Nuclear Waste Watch should you still wish. If so, please work with my subject matter expert Kathleen Prosser copied above, to arrange a time for the roundtable, with November 2 and 3 presently being our preferred dates.

Thank you again for the invitation.

Kind regards,

Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: September 8, 2023 11:25 AM

To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>

Cc: [REDACTED]

Subject: Invitation to speak about proposed policy on used nuclear fuel reprocessing

*****Caution** - email originated from outside of NRCAN. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCAN. **Voir la mise en garde ci-dessous*****

A0068484_2-000740

s.19(1)

Dear Justin Hannah,

Good morning. I represent the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy. I'm cc'ing [REDACTED]

Nuclear Waste Watch is organizing a webinar roundtable of civil society groups and academics about the proposed reprocessing policy that NRCAN is developing with the CANDU owners group and others. We are inviting you to speak at the roundtable, to give us an update on the policy development and engage in Q&A. We are planning an invitation-only roundtable with about 15-20 participants, by zoom.

Please let us know your availability the week of October 30 to November 3, and please confirm receipt of this email.

Thank you for considering our invitation and kind regards,
Susan O'Donnell
representative, CRED-NB

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A0068484_3-000741

FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

April 29, 2024 9:58 AM

Subject	FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts
From	Yuen, Pui Wai
To	Wilkinson, David; Wittmann, Tess (she, her elle, elle)
Cc	Hilborn, Jade (she, her elle, elle)
Sent	November 27, 2023 12:26 PM

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So [REDACTED] is confirming that they have received it...

Pls tweak response accordingly

Let's chase down the NED response in 2021

From: [REDACTED]
Sent: 27 novembre 2023 12:23
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; [REDACTED]
[REDACTED]
[REDACTED] Susan O'Donnell <susanodo.ca@gmail.com>
Subject: Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

Good morning Pui Wai and Tanya Hinton et al. -

This is to inform you that the letter from NRCan dated November 20 2023 was indeed received by [REDACTED] and cosignatories, in response to the letter sent to the Prime Minister earlier this year on September 22, 2023.

There is as yet no record of the earlier letter from NRCan responding to the three 2021 letters from [REDACTED] and a smaller number of cosignatories. It is quite possible that that letter ended up being filtered out by their email software as "suspicious".

Cheers,

[REDACTED]

A0068502_1-000742

On Nov 27, 2023, at 5:01 AM, Susan O'Donnell <susanodo.ca@gmail.com> wrote:

Good morning Pui Wai and colleagues,

I'm following up on a point raised during our zoom meeting on November 17. [REDACTED]
[REDACTED] will be sending out notes and official follow-up in due course.

I appreciate your engagement, Pui Wai, Kathleen and Tanya on the reprocessing topic. As I mentioned at the meeting, what most concerns me is the lack of transparency by the government / public service about the risks of reprocessing. Canadians need to understand both the risks and the perceived benefits to be able to make informed opinions about it.

Pui Wai, at the meeting [REDACTED] asked about the open letters to the PM from [REDACTED] and colleagues in the U.S. raising concerns about the Moltex project and reprocessing. You stated that NRCan had responded twice to those letters. I mentioned that I had communicated with [REDACTED] who had not received a response. Last week I checked again and he confirmed that he had not received a response.

We invited [REDACTED] to our Nov. 17 meeting but he was unable to attend. I'm cc'ing him here along with [REDACTED] who signed the last open letter and who were able to attend the meeting. I've also cc'd [REDACTED] who was also at the meeting and is communicating with me about this.

Pui Wai you seemed certain that NRCan did respond to those open letters; by sending this email I'm not trying to put you on the spot but rather to clear up what's obviously a miscommunication. The letters that NRCan sent did not reach the intended recipient so something went awry somewhere.

If the NRCan responses were open letters could you please send them to us by reply email. If they were sent personally to [REDACTED] could you please resend to him and he can forward them to us if he so wishes.

Thanks everyone for your engagement on this important topic.

Susan
Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

Susan O'Donnell, PhD
Adjunct Research Professor
Lead investigator, the [CEDAR](#) project
Environment and Society Program
St. Thomas University
Fredericton, New Brunswick, Canada
susanodo.ca@gmail.com

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FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

April 29, 2024 10:15 AM

Subject	FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts
From	NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)
To	Wilkinson, David; Prosser, Kathleen; Hilborn, Jade (she, her elle, elle); Yuen, Pui Wai
Cc	NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan); Ottaway, Chelsea; Ravary, Liz
Sent	December 1, 2023 3:52 PM

UNCLASSIFIED - NON CLASSIFIÉ

Hi Team

See below 😊

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Sent: Friday, December 1, 2023 3:45 PM
To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Cc: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>; Clarotto, Lauren <lauren.clarotto@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>
Subject: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

Hello NEISB,

From EDU :

We have confirmed that these can be resent at the branch level. Please be sure to be clear to the correspondent that they are resends.

Thank you

Eric

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Sent: Friday, December 1, 2023 8:49 AM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-

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RNCan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

Good Morning ECIO

Thank you for your assistance with retrieving the requested emails, we are now seeking guidance on how to proceed re-sending the older responses back to [REDACTED] and the co-signatories as they were not originally received. [REDACTED] has told us that [REDACTED] e-mail system rejected Assistant Deputy Minister Scharf's message as spam and that may have been the reason the other weren't received. Can they be resent at branch level, or should they be sent by MINO?

Thank you
Chantal

From: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Sent: Wednesday, November 29, 2023 3:08 PM

To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Subject: FW: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

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As discussed, sharing for your records.

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Sent: Wednesday, November 29, 2023 2:55 PM

To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Cc: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Clarotto, Lauren <lauren.clarotto@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

Hello NEISB,

From EDU :

I was able to obtain permission from MINO to share the outgoing emails, please find them attached.

Thank you

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Eric

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Sent: Wednesday, November 29, 2023 1:31 PM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>; NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Cc: Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Clarotto, Lauren <lauren.clarotto@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>
Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

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Yes please, the team would like copies for their files.

Thank you
 Chantal

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Sent: Wednesday, November 29, 2023 1:28 PM
To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Cc: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Clarotto, Lauren <lauren.clarotto@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>
Subject: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

Hello NEISB,

Response from EDU :

I located the 2 original outgoing emails and can confirm that they were sent to the email address

[REDACTED]

I'll need to ask permission to share the actual emails, would you like me to do so?

Thank you

Eric

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>
Sent: Tuesday, November 28, 2023 3:16 PM
To: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>
Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan) <neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea

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<chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

HI ECIO

Can you please inquire with EDU:

1) Signed response from Min O'Regan on August 13, 2021, attached (192468), 2) Signed response from Min Wilkinson on January 5, 2022, attached (194268); and 3) the most recent response from our ADM dated November 2, 2023 (203954). We have an actual email trail for the recent ADM reply, because the outgoing email with attached PDF response is copied to the docket folder.

Is there any way to obtain the actual outgoing email for the two Min-level responses, so we know in fact that the Min signed letters were emailed to [REDACTED] and co-signatories say they've never received the two previous Min replies.

Thank you
Chantal

FW: Reprocessing - NWW invitation

April 29, 2024 9:12 AM

Subject	FW: Reprocessing - NWW invitation
From	Prosser, Kathleen
To	Yuen, Pui Wai
Cc	Hilborn, Jade; Wilkinson, David
Sent	September 12, 2023 9:38 AM

PROTECTED B - PROTÉGÉ B

Hi Pui Wai,

Updated with edits from Dave below. Corrected factual errors and ready for your consideration.

Cheers,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Sent: Tuesday, September 12, 2023 9:32 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: Reprocessing - NWW invitation

PROTECTED B - PROTÉGÉ B

Hi Kate,
Slight tweaks below. Please revise and resend to PW. Happy to discuss.

Thanks!

Dave

Dear Dr. O'Donnell,

My colleague Justin Hannah shared with me your kind invitation to participate in the Nuclear Waste Watch webinar roundtable, I am responding on behalf of the Nuclear Energy and Infrastructure Security Branch within Natural Resources Canada.

I would like to first clarify the nature of the "proposed reprocessing policy" you have identified. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and

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owned document. It does not in any way represent a policy of or by the federal government.

The Government of Canada remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.

While we do not presently have a specific reprocessing policy and reprocessing is not presently commercially deployed in Canada, ~~and have not launched a formal process for developing one,~~ any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act* and *Impact Assessment Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA). Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

~~As we are not involved in the CANDU Owners Groups work on reprocessing that~~ we do not have a policy under development, we do not have any updates to provide on this topic. We would nonetheless be happy to participate in the webinar and to engage on the subject of reprocessing more broadly should that be of interest to the team at Nuclear Waste Watch. Please work with my subject matter expert Kathleen Prosser to arrange a time for the roundtable, with November 2 and 3 presently being our preferred dates.

Thank you again for the invitation, and very much looking forward to the discussion.

Kind regards,

Pui Wai Yuen

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: September 12, 2023 08:12

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Hilborn, Jade <jade.hilborn@nrcan-rncan.gc.ca>

Subject: Reprocessing - NWW invitation

Declassified by ATIP/
DÉCLASSIFIÉ PAR ATIP
PROTÉGÉ B / PROTÉGÉ B

Flip friendly attached.

Cheers,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Policy Advisor | Uranium and Radioactive Waste Division
Natural Resources Canada | Government of Canada

Conseiller en politique | Division de l'uranium et des déchets radioactifs
Ressources naturelles Canada | Gouvernement du Canada

kathleen.prosser@nrcan-rncan.gc.ca

FW: Two letters sent in response to [REDACTED]
letters -- never received by [REDACTED]

April 29, 2024 8:49 AM

Subject	FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]
From	Yuen, Pui Wai
To	Wilkinson, David
Cc	Prosser, Kathleen; Fairchild, Jamie; Hilborn, Jade (she, her elle, elle)
Sent	November 30, 2023 2:59 PM

Declassified by ATIP/
Déclassifié par l'ATIP
PROTECTED / PROTÉGÉ A

Dave, can you review Tanya's draft response in Kate's absence?

Please connect with Jamie as necessary.

Thanks!
PW

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: 30 novembre 2023 12:17
To: Elaine.Kanasewich@cnscccsn.gc.ca; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Lee.Brunarski@cnscccsn.gc.ca; Naina.Thoppil@international.gc.ca
Subject: FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Good morning Elaine and Pui Wai,

I have drafted the following response to the questions received from [REDACTED] following the roundtable discussion which can be found below. As some of these answers overlap with your work, and to ensure we stay in sync on all of this, I would be most grateful for your review of the draft below.

Kind regards
Tanya

Dear [REDACTED]

Thank you for your input during the recent roundtable discussion and for your questions. I will try to answer them, but would note that some fall outside of Global Affairs Canada's remit.

Regarding the reply letters to [REDACTED] I will defer to the separate email chain that was addressed to NRCan and that you and I are both included on, noting that you have kindly confirmed that the second reply letter has since been received by [REDACTED]

On definitions, the Government of Canada certainly references IAEA definitions, given they are

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internationally established terminology for the most part and some definitions are used in our policies, our Nuclear Cooperation Agreements for example refer to the definitions contained in the IAEA Statute. However, I am not aware of a Global Affairs Canada position or policy specifically on the definition referred to in the question below.

The proposed Fissile Material Cut-Off Treaty (FMCT) is a “treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices”. So such a treaty would cover fissile material that was specifically produced for weapons use.

I am hesitant to speak to operations of CNL and would perhaps suggest these questions might be better suited for the CNSC or CNL directly. Having said that, CNL is a research facility that is licensed and regulated by the CNSC and has been conducting research on the nuclear fuel cycle for decades. The facility is subject to International Atomic Energy Agency (IAEA) safeguards, including reporting of research activities to the IAEA.

Regards,
Tanya

From: [REDACTED]
Sent: Monday, November 27, 2023 4:27 AM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Re: our recent round table discussion (by zoom) on reprocessing in Canada

Good morning Tanya Hinton:

I enjoyed our brief interaction during the recent round table discussion (by zoom) on commercial reprocessing and government policy.

If you can provide me with any information on the following topics I will be most grateful.

(1) During our round table discussion it was reported that two written responses had been sent to [REDACTED] on the issue of reprocessing, non-proliferation, and Canada's investment of \$50.5 million in the Moltex project. I took the liberty of contacting [REDACTED] and he assures me that he has never received any substantive letters from any Canadian government department in response to the open letters that he and his co-signatories wrote to the Prime Minister. The only response he ever received was an acknowledgement of the first letter from the Prime Minister's office saying that the matter had been delegated to the Ministers of Foreign Affairs and Natural Resources to deal with. May I ask you to verify that the aforementioned response letters were indeed sent to [REDACTED] at the correct address? Perhaps they could be re-sent with a signature required at the other end?

(2) Does Global Affairs Canada accept the position that has been taken by the IAEA and by the US Department of Energy that all separated plutonium is nuclear-weapons-usable material unless there is an unusually high concentration of plutonium-238 in the mix?

(3) Does Global Affairs Canada take the view that only plutonium that is produced for

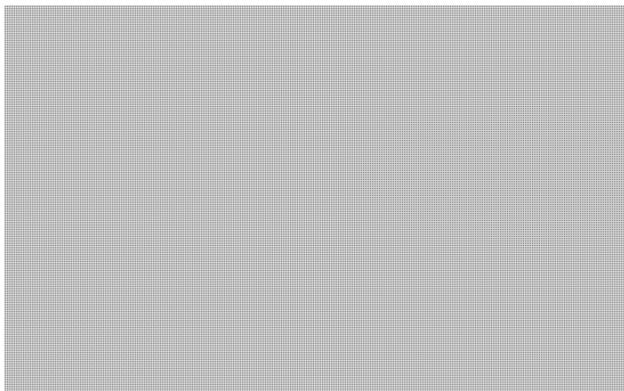
s.19(1)

the express purpose of weapons use is to be eliminated if and when the Fissile Materials Cut-off Treaty is ever signed? Or is the FMCT expected to apply to virtually all separated plutonium (with the sole exception noted above)?

(4) Since Canada does not yet have a policy permitting commercial reprocessing of used nuclear fuel in Canada, will Canadian Nuclear Laboratories be nevertheless permitted to pursue research at Chalk River involving the use of separated plutonium, including some reprocessing and fuel fabrication, with the ultimate objective of using this research to further commercial reprocessing opportunities?

(5) Have all of those individuals who will be participating in hands-on Canadian research involving the reprocessing of used nuclear fuel to extract plutonium and other radionuclides been required to obtain high-level security clearances before engaging in such work?

With warm personal regards,



RE: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

April 29, 2024 11:09 AM

Subject	RE: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern
From	Tanya.Hinton@international.gc.ca
To	Prosser, Kathleen
Cc	Yuen, Pui Wai; Brady, Daniel; Naina.Thoppil@international.gc.ca; Wilkinson, David
Sent	October 27, 2023 3:24 PM

PROTECTED A - PROTÉGÉ A

Hi Kate

I have responded to say that I will participate and they have told me that it was David Moroz, DG of Security and Safeguards, that was invited from the CNSC, just me from GAC, and then you and Pui Wai from NRCan. Not sure who else from civil society, but she said "a short list of academic and non-governmental organizations" have been invited.

Tanya

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Friday, October 27, 2023 8:09 AM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Thoppil, Naina -IGN <Naina.Thoppil@international.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Subject: RE: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

PROTECTED A - PROTÉGÉ A

Morning Tanya,

On our side Pui Wai and I will be attending. I've asked NWW for a list of participants but no word yet, I will also reach out to the folks at CNSC to see who is planning to attend.

Will try to get something set up towards the end of next week or into the following since the roundtable has been pushed to the 17th.

Have a lovely Friday!

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

A0068511_1-000754

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Thursday, October 26, 2023 4:38 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>;
Naina.Thoppil@international.gc.ca; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Subject: Re: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

Hi Kate

That sounds like a good idea to connect in advance. Who from NRCan will participate?

Tanya

On Oct 26, 2023, at 4:33 PM, Prosser, Kathleen <Kathleen.Prosser@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Hi Tanya –

Yes we have been invited and have confirmed our attendance with NWW for the 17th. If you're amenable, it might be worth while to have a quick touch base for the GoC participants in the roundtable prior to the discussion. Let me know if that's something GAC would be interested in and I will work to find out who from the CNSC was invited and get something set up.

Cheers,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Thursday, October 26, 2023 3:47 PM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Naina.Thoppil@international.gc.ca
Subject: FW: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED DATE - Friday, November 17, 10 am Eastern

Hello NRCan Colleagues,

A0068511_2-000755

This invitation has just landed in my inbox. I assume some of you have also received one? A lot of very familiar names from the discussions NRCan hosted on the waste policy.

Tanya

From: Nuclear Waste Watch <nuclearwastewatch@gmail.com>

Sent: Thursday, October 26, 2023 3:29 PM

To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>

Subject: Invitation to a Roundtable Discussion of Reprocessing Nuclear Fuel Waste - REVISED
DATE - Friday, November 17, 10 am Eastern

<image001.jpg>

October 26, 2023

Tanya Hinton, Senior Advisor
Global Affairs Canada

Dear Ms. Hinton,

Earlier this month you received an invitation from Nuclear Waste Watch to participate in a roundtable discussion of approximately 20 civil society and government representatives about reprocessing nuclear fuel waste. Due to the non-availability of some key participants, we have shifted the date by two weeks to Friday, November 17th. Our apologies for any inconvenience, especially to those who have already confirmed for the earlier date.

The roundtable discussion will share perspectives, background and updates about the policy and practice of reprocessing nuclear fuel waste in Canada. Civil society groups and nuclear weapons proliferation experts have raised concerns about the potential of reprocessing in Canada. The roundtable session objective is to develop a better understanding of perspectives and concerns of participants about reprocessing. The session is not expected to be conclusive or to result in new commitments by the roundtable participants.

The revised meeting details are:

Date / Time: Friday, November 17, 10 a.m. to 11:30 a.m Eastern

Connection: Virtual Meeting via ZOOM (details to follow)

Invited participants include a range of civil society organizations and academics interested in the security, disarmament and nuclear weapons proliferation and / or environmental impacts of reprocessing and government representatives from Natural Resources Canada, Global Affairs Canada and the Canadian Nuclear Safety Commission

We are requesting confirmation of your participation by November 10th. If you cannot attend, please respond as soon as possible with the name of a colleague from your organization who can participate. A list of confirmed participants will be sent with the zoom link a week prior to the meeting.

A0068511_3-000756

The meeting will be 90 minutes with the opportunity for followup email communications. The agenda is:

1. Very brief introductions and Meeting Objectives
2. Reprocessing Nuclear Fuel Waste and Government Policy in Canada
3. Nuclear Fuel Waste Reprocessing and Radioactive Wastes
4. Reprocessing and Proliferation and Security Concerns
5. Meeting wrap-up

We look forward to hearing confirmation of your engagement in this important discussion. If you have any questions or comments in advance, please don't hesitate to be in touch.

Sincerely,

Dr. Susan O'Donnell
Coalition for Responsible Energy
Development in New Brunswick

RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

April 29, 2024 10:48 AM

Subject	RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing
From	Beauregard-Tellier, Frédéric
To	Yuen, Pui Wai; Hannah, Justin; Prosser, Kathleen
Cc	Adams, Emilie (she, her elle, elle); Ottaway, Chelsea; Wilkinson, David
Sent	September 11, 2023 5:03 PM

PROTECTED A - PROTÉGÉ A

Thanks. I prefer option 2. We should engage and be seen as willing to engage.

Fred

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Sent: Monday, September 11, 2023 4:29 PM

To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED A - PROTÉGÉ A

Hi Fred,

Regarding the invitation to speak on the proposed reprocessing policy referenced below at a Nuclear Waste Watch (NWW) webinar, we recommend responding to Susan before our NWW meeting with [REDACTED] to take place later this week/next (still TBD) on ISRW as this topic will likely come up. Susan is a contributing member of Nuclear Waste Watch. Please see proposed approach and options for your consideration.

Background:

The Reprocessing Policy referenced by NWW is an industry document that COG members, and most notably, NB Power had prepared last year as part of the ongoing discussion with NRCan regarding reprocessing. It is not a GoC document or something that we endorsed or have agreed to. NWW obtained the draft policy via an ATIP, whereby our ATIP team consulted COG and we had suggested it be withheld.

Approach:

- Pui Wai to respond to Susan and [REDACTED] thanking them for their continued interest, and highlight some of the key messages below with:
 - Option 1: Decline the invitation to participate in the roundtable (but make clear that the document is not ours, it does not represent any position from the GoC and any reprocessing would need to be carefully reviewed by GoC)
 - Option 2: Accept the invitation to participate (PW + team staff), and re-iterate our

A0068513_1-000758

key messages at the meeting.

Key messages:

- The reprocessing policy to which they are referring to was developed by the CANDU Owners Group (COG) SMR task force, largely by members affiliated with NB Power. This is a document that was developed wholly by industry, and does not in any way constitute a Government of Canada document. This document was released publicly as a part of an ATIP package in August following consultation by the ATIP team with COG.
- While spent nuclear fuel reprocessing is not presently commercially employed in Canada, the Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of the Policy.
- Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the Nuclear Safety and Control Act as well as safeguards verification by the International Atomic Energy Agency (IAEA). Canada remains committed to the Treaty on the Non Proliferation of Nuclear Weapons (NPT), including the full implementation of safeguards set by the IAEA to provide assurances that nuclear materials are used solely for peaceful purposes in Canada.

Happy to discuss during our bilat or earlier at your convenience.

Thanks!

Pui Wai

From: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>

Sent: 11 septembre 2023 11:37

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED A - PROTÉGÉ A

Thanks, yes please keep Dan in the loop.

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Sent: September 11, 2023 10:53 AM

To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCan-RNCan.gc.ca>; Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

PROTECTED A - PROTÉGÉ A

Thanks Justin for forwarding.

Kate, Dave, could we connect and discuss approach to this and have a discussion with Comms as well before we brief Fred?

Justin, happy to keep NED in the loop as well. Is Dan the lead?

Thanks!
PW

From: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Sent: 8 septembre 2023 12:27
To: Yuen, Pui Wai <puiwai.yuen@NRCAN-RNCAN.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCAN-RNCAN.gc.ca>
Cc: Adams, Emilie (she, her | elle, elle) <emilie.adams@NRCAN-RNCAN.gc.ca>; Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Subject: FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing

FYI

From: Susan O'Donnell <susanodo.ca@gmail.com>
Sent: September 8, 2023 11:25 AM
To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Cc: [REDACTED]
Subject: Invitation to speak about proposed policy on used nuclear fuel reprocessing

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Dear Justin Hannah,

Good morning. I represent the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy. I'm cc'ing [REDACTED]

Nuclear Waste Watch is organizing a webinar roundtable of civil society groups and academics about the proposed reprocessing policy that NRCAN is developing with the CANDU owners group and others. We are inviting you to speak at the roundtable, to give us an update on the policy development and engage in Q&A. We are planning an invitation-only roundtable with about 15-20 participants, by zoom.

Please let us know your availability the week of October 30 to November 3, and please confirm receipt of this email.

Thank you for considering our invitation and kind regards,
 Susan O'Donnell
 representative, CRED-NB

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 Ce courriel provient de l'extérieur des RNCAN. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour de plus amples renseignements, veuillez consulter [Comment identifier des courriels d'hameçonnages](#) dans l'intranet des RNCAN.

RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing

April 29, 2024 11:02 AM

Subject	RE: Invitation to speak about proposed policy on used nuclear fuel reprocessing
From	Yuen, Pui Wai
To	Prosser, Kathleen; Hilborn, Jade (she, her elle, elle)
Cc	Wilkinson, David; Wittmann, Teresa (she, her elle, elle)
Sent	October 23, 2023 11:40 AM

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Kate. I'd like you to be there if possible – 17th is fairly open for me at this moment.

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: 23 octobre 2023 11:04

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>

Cc: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Wittmann, Teresa (she, her | elle, elle) <teresa.wittmann@nrcan-rncan.gc.ca>

Subject: FW: Invitation to speak about proposed policy on used nuclear fuel reprocessing

UNCLASSIFIED - NON CLASSIFIÉ

Flagging the below – I'm happy for them to move it, but only the Nov 17th Date works for me.
@Yuen, Pui Wai@Hilborn, Jade (she, her elle, elle)Any preference? I don't mind if you want to do it while I'm out of town, should be straightforward to have the materials for you.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: Monday, October 23, 2023 10:58 AM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: [REDACTED]

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Hello again Kathleen, Pui Wai,

I spoke with [REDACTED] about responses from our invitation email and it seems that many people are unavailable on the November 2 date and so we will be proposing alternative dates: Friday at 10am

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to 11-30pm on either November 17 or 24. Please let me know if either of these dates works for you.

Thank you,
Susan

On Mon, 23 Oct 2023 at 10:39, Susan O'Donnell <susanodo.ca@gmail.com> wrote:
Hi Kathleen,

Good morning. [REDACTED] from Nuclear Waste Watch sent out the invitation to you and others, with the agenda, the week before last. If you did not receive it let me know.

Thanks,
Susan

On Fri, 20 Oct 2023 at 15:19, Prosser, Kathleen <Kathleen.Prosser@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Hi Susan,

Thank you for providing a clarification of the date, I'm looking forward to the meeting. I'm following up to see if you are able to share an agenda at this time as I work to prepare any supporting materials for the round table.

Kind regards,

Kathleen

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: Tuesday, October 10, 2023 9:20 PM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: [REDACTED] Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>;
Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Hello Pui Wai and Kathleen,

The date is indeed Friday Nov. 3, apologies for the confusion. We are moving the time up to 10am Eastern to help facilitate possible participation from B.C. We are preparing the agenda this week and aim to have it to you by Friday. In response to your question, at this point we do not anticipate any internal discussion.

Thank you again for your engagement.
Susan
CRED-NB

On Fri, 6 Oct 2023 at 20:01, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Dear Susan,

Thank you for your well wishes. [REDACTED]

A quick question: I'd like to confirm the date of the webinar as in our previous correspondence you indicated that the event will be held on November 3, 2023, at 9am. However, in subsequent correspondence you indicated participation at the roundtable for November 2. Would you mind confirming the date and time so that we can mark it in our calendars?

In terms of participation, I will be attending the event along with Dr. Kathleen Prosser, Policy Analyst, Uranium and Radioactive Waste Division (copied above).

Given that the event is 90 minutes, please let us know if your agenda will include any internal discussion that will not require NRCan's participation. If that is the case, please share an agenda at your earliest convenience so that we can plan our attendance accordingly. As previously communicated, we do not have further updates to provide on this topic beyond that of the below. However, we appreciate the opportunity to hear your perspective and answer any questions you may have.

We look forward to the event. Thank you for organizing.

Happy Thanksgiving,
Pui Wai

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: 29 septembre 2023 07:00

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: [REDACTED] Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>;
Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Good morning Pui Wai,

[REDACTED]

Thank you for indicating NRCan's willingness to participate in the roundtable on Nov. 2. We will aim to send you an agenda as soon as possible. We're a large volunteer organizing committee so of course this takes time on our end.

Kind regards,
Susan
CRED-NB

On Thu, 28 Sept 2023 at 19:16, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Hi Susan,

Apologies for the delayed response. [REDACTED]

Thank you for confirming the date and time of the roundtable – we will need a little bit more time to confirm which representatives from NRCAN will be in attendance and unfortunately won't be able to get back to you by the end of September. We'll, however, aim to provide you with the names next week and will be in touch. We appreciate your patience and understanding. In the meantime, if you could provide an agenda at your convenience that may also assist us in determining which representatives would be best to have at the event.

Thank you.

Kind regards,

Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures

Natural Resources Canada | Ressources naturelles Canada

puiwai.yuen@nrcan-rncan.gc.ca

Tel: 613-218-5067

From: Susan O'Donnell <susanodo.ca@gmail.com>

Sent: 22 septembre 2023 11:25

To: Yuen, Pui Wai <puiwai.yuen@NRCAN-RNCAN.gc.ca>

Cc: [REDACTED] Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCAN-RNCAN.gc.ca>; Wilkinson, David <david.wilkinson@NRCAN-RNCAN.gc.ca>

Subject: Re: Invitation to speak about proposed policy on used nuclear fuel reprocessing

Hello again Pui Wai,

Thank you for suggesting November 2 and 3 as your preferred dates for participating in the roundtable on used nuclear fuel reprocessing policy organized by Nuclear Waste Watch. We've fixed the date: Friday, November 3. The meeting will be 90 minutes starting at 9am Eastern. We will supply the zoom link, agenda, and list of invited participants over the next weeks. Could you please confirm that NRCAN will participate in the roundtable and if you would like one or two representatives to be invited? We would appreciate knowing the name(s) by the end of September, if possible.

Thank you and kind regards,

Susan

CRED-NB

On Fri, 15 Sept 2023 at 10:15, Susan O'Donnell <susanodo.ca@gmail.com> wrote:

Good morning Pui Wai,

Thank you for your email and information.

Kind regards,

Susan

CRED-NB

On Fri, 15 Sept 2023 at 10:00, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Dear Dr. O'Donnell,

My colleague Justin Hannah shared with me your kind invitation to participate in the Nuclear Waste Watch webinar roundtable, I am responding on behalf of the Nuclear Energy and Infrastructure Security Branch within Natural Resources Canada.

NRCAN is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the [Treaty on the Non-Proliferation of Nuclear Weapons](#), including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of [Canada's Policy for Radioactive Waste Management and Decommissioning](#).

NRCAN is aware of the draft document prepared by the CANDU Owners Group referenced below through subject matter expert participation in SMR related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

We do not have any further updates beyond the above to provide on this topic. However, we would be happy to participate in the webinar and to engage on the subject with Nuclear Waste Watch should you still wish. If so, please work with my subject matter expert Kathleen Prosser copied above, to arrange a time for the roundtable, with November 2 and 3 presently being our preferred dates.

Thank you again for the invitation.

Kind regards,

Pui Wai

Pui Wai Yuen
Director | Directrice

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Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs
 Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité
 des infrastructures
 Natural Resources Canada | Ressources naturelles Canada
puiwai.yuen@nrcan-rncan.gc.ca
 Tel: 613-218-5067

From: Susan O'Donnell <susanodo.ca@gmail.com>
Sent: September 8, 2023 11:25 AM
To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Cc: [REDACTED]
Subject: Invitation to speak about proposed policy on used nuclear fuel reprocessing

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dessous***

Dear Justin Hannah,

Good morning. I represent the Coalition for Responsible Energy Development in New Brunswick (CRED-NB) on the Nuclear Waste Watch Steering Committee for the Radioactive Waste Policy. I'm cc'ing [REDACTED]

Nuclear Waste Watch is organizing a webinar roundtable of civil society groups and academics about the proposed reprocessing policy that NRCan is developing with the CANDU owners group and others. We are inviting you to speak at the roundtable, to give us an update on the policy development and engage in Q&A. We are planning an invitation-only roundtable with about 15-20 participants, by zoom.

Please let us know your availability the week of October 30 to November 3, and please confirm receipt of this email.

Thank you for considering our invitation and kind regards,
 Susan O'Donnell
 representative, CRED-NB

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 Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour de plus amples renseignements, veuillez consulter [Comment identifier des courriels d'hameçonnages](#) dans l'intranet des RNCan.

RE: NWW Roundtable prep

April 29, 2024 10:40 AM

Subject	RE: NWW Roundtable prep
From	Prosser, Kathleen
To	Brunarski, Lee; Boudrias, Geneviève; McAllister, Andrew; Bourassa, Pascale; Kanasewich, Elaine; Petseva, Nadia; Yuen, Pui Wai; Brady, Daniel; Tanya.Hinton@international.gc.ca; Wilkinson, David
Sent	November 14, 2023 1:15 PM

Declassified by ATIP/
Déclassifié par l'ATIP
PROTÉGÉ A / PROTÉGÉ A

Good afternoon –

As mentioned during the discussion, please see below the correspondence that Pui Wai sent to Susan back in September/October. I'll be in touch if Dan's team has anything substantial to provide by way of standard lines.

Thanks,

Kate

Dear Dr. O'Donnell,

My colleague Justin Hannah shared with me your kind invitation to participate in the Nuclear Waste Watch webinar roundtable, I am responding on behalf of the Nuclear Energy and Infrastructure Security Branch within Natural Resources Canada.

NRCan is not undertaking efforts to establish a policy on used nuclear fuel reprocessing. The Government of Canada is monitoring the research and development of technologies related to the reprocessing of spent CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations. There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel.

All radioactive material, and any potential future deployment of reprocessing technologies in Canada is and will be safely managed under our comprehensive legislative framework for nuclear energy and technologies. This framework focuses on protecting health, safety, security, and the environment, while following international best practices that are based on the best available science.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment would be subject to a regulatory review with opportunities for the public to provide input. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and peaceful use – prior to its deployment. Canada remains committed to the [Treaty on the Non-Proliferation of Nuclear Weapons](#), including the full implementation of safeguards set by the International Atomic Energy Agency to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of [Canada's Policy for Radioactive Waste Management and Decommissioning](#).

NRCan is aware of the draft document prepared by the CANDU Owners Group referenced below through subject matter expert participation in SMR related working groups. This document was

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generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

We do not have any further updates beyond the above to provide on this topic. However, we would be happy to participate in the webinar and to engage on the subject with Nuclear Waste Watch should you still wish. If so, please work with my subject matter expert Kathleen Prosser copied above, to arrange a time for the roundtable, with November 2 and 3 presently being our preferred dates.

Thank you again for the invitation.

Kind regards,

Pui Wai

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Prosser, Kathleen

Sent: Tuesday, November 14, 2023 11:14 AM

To: Brunarski, Lee <Lee.Brunarski@cnsccsn.gc.ca>; Boudrias, Geneviève <Genevieve.Boudrias@cnsccsn.gc.ca>; McAllister, Andrew <Andrew.McAllister@cnsccsn.gc.ca>; Bourassa, Pascale <Pascale.Bourassa@cnsccsn.gc.ca>; Kanasewich, Elaine <Elaine.Kanasewich@cnsccsn.gc.ca>; Petseva, Nadia <Nadia.Petseva@cnsccsn.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: RE: NWW Roundtable prep

Good morning,

Please see attached for the current draft of the meeting note that is being prepared for the NWW meeting Friday.

Look forward to chatting soon.

Thanks,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

-----Original Appointment-----

From: Brunarski, Lee <Lee.Brunarski@cnsccsn.gc.ca>

Sent: Tuesday, October 31, 2023 1:18 PM

To: Brunarski, Lee; Boudrias, Geneviève; McAllister, Andrew; Bourassa, Pascale; Kanasewich, Elaine; Petseva, Nadia; Yuen, Pui Wai; Brady, Daniel; Tanya.Hinton@international.gc.ca; Wilkinson, David;

A0071965_2-000768

s.16(2)

Prosser, Kathleen

Subject: NWW Roundtable prep

When: November 14, 2023 12:00-13:00 (UTC-05:00) Eastern Time (US & Canada).

Where: Microsoft Teams Meeting

Hello.

Scheduling a 2nd prep in advance of the November 17th roundtable. Suggest that key messages from any of our organizations be shared as soon as they are ready and not wait for this meeting, if ready in advance.

Thank you!

Lee

Microsoft Teams meeting

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Re: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

April 29, 2024 10:24 AM

Subject	Re: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing
From	[REDACTED]
To	Yuen, Pui Wai; Susan O'Donnell
Cc	Prosser, Kathleen; Tanya.Hinton@international.gc.ca; Wilkinson, David; [REDACTED]
Sent	January 11, 2024 10:21 AM

UNCLASSIFIED - NON CLASSIFIÉ

Thank you, Director Yuen.

I also wrote to Minister of Foreign Affairs Joly on this matter on 20 December. I believe her department has the lead on nonproliferation matters. I hope to hear back from Global Affairs Canada soon.

With very best regards,

[REDACTED]

From: "Yuen, Pui Wai" <puiwai.yuen@NRCan-RNCan.gc.ca>
Date: Thursday, January 11, 2024 at 8:00 AM
To: '[REDACTED]', Susan O'Donnell <susanodo.ca@gmail.com>
Cc: "Prosser, Kathleen" <Kathleen.Prosser@NRCan-RNCan.gc.ca>, "Tanya.Hinton@international.gc.ca" <Tanya.Hinton@international.gc.ca>, "Wilkinson, David" <david.wilkinson@NRCan-RNCan.gc.ca>, [REDACTED]
Subject: RE: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

UNCLASSIFIED - NON CLASSIFIÉ

Dear [REDACTED]

My sincere apologies for the delay in responding. I was away for most of December and did not get a chance to write back. I hope that you're well and had a wonderful holiday season.

Thank you for your question. As mentioned in our letters, these important concerns/interests are kept in mind throughout Canada's nuclear sector. Natural Resources Canada is responsible for

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domestic policy related to reprocessing, and so is not leading any conversation happening in international fora. We continue to have intergovernmental conversations with implicated government departments in Canada, as well as with other levels of government, recognizing that reprocessing is a sensitive technology. We are committed to the Treaty on the Non-Proliferation of Nuclear Weapons and reprocessing research and technology in Canada is and would be subject to IAEA safeguard verification.

Regardless of any potential future policy work by the Government, a proposal for commercial deployment of used fuel reprocessing would be subject to a rigorous regulatory review process with opportunities for the public to provide input. Public engagement is an important part of the democratic process that provides the opportunity to shape government policies, programs, services, and regulatory initiatives that improves the health and safety of Canadians. I'd also like to acknowledge receipt of your other email correspondence from later in the day on December 2, 2023 and assure you that we do keep the senior leadership of our organization informed of significant developments in the areas of new nuclear technologies, as appropriate.

For further enquiries, you may also contact the following:
Email: nrcan_questions-questions_nrcan@nrcan-rncan.gc.ca

Thank you for sharing your views on this important issue. Wish you all the best in the new year.

Sincerely,
Pui Wai

Pui Wai Yuen
Director | Directrice
Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs
Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité des infrastructures
Natural Resources Canada | Ressources naturelles Canada
puiwai.yuen@nrcan-rncan.gc.ca
Tel: 613-218-5067

From: [REDACTED]
Sent: 2 décembre 2023 17:53
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Susan O'Donnell <susanodo.ca@gmail.com>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; [REDACTED]
Subject: Q re response from Minister Wilkinson to open letters from U.S. experts to PM Trudeau re reprocessing

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Dear Director Yuen,

I have circulated to the US nonproliferation experts who signed the letters of concern to Prime Minister Trudeau about Canada's reprocessing policy the letters of response from Ministers O'Regan and Wilkinson that you kindly re-sent yesterday.

One of my co-signatories, [REDACTED] copied here, pointed out that Minister Wilkinson's letter included the sentence:

"The Government of Canada is receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure and environmentally

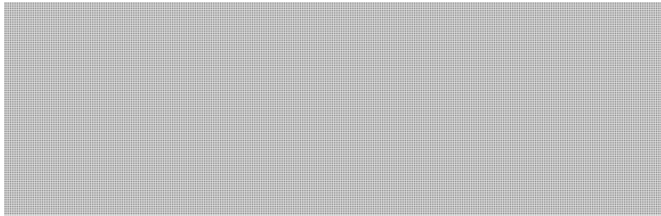
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sustainable way. *Intergovernmental consultations on the implications of commercial reprocessing, including for non-proliferation, are ongoing*" (emphasis added).

We are very gratified to learn that.

Could you or Tanya Hinton at Global Affairs, who you copied and I have copied here, kindly inform us whether the intergovernmental consultations referred to are under the auspices of Nuclear Suppliers Group, the IAEA, bilateral with the US or in some other venue?

With very best regards,



From: "Yuen, Pui Wai" <puiwai.yuen@NRCan-RNCan.gc.ca>

Date: Friday, December 1, 2023 at 5:38 PM

To: [REDACTED], Susan O'Donnell
<susanodo.ca@gmail.com>

Cc: "Prosser, Kathleen" <Kathleen.Prosser@NRCan-RNCan.gc.ca>,

"Tanya.Hinton@international.gc.ca" <Tanya.Hinton@international.gc.ca>, [REDACTED]



[REDACTED] "Wilkinson, David" <david.wilkinson@NRCan-RNCan.gc.ca>

Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

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Dear [REDACTED] and others,

Thank you for your follow-up, and please consider this a response to your recent collective inquiries on this topic. We are pleased to have received confirmation from [REDACTED] that the recent response from our Assistant Deputy Minister's Office on reprocessing was received in reply to your September 22, 2023, letter.

We have also been able to confirm that two previous responses on the topic of reprocessing were sent to [REDACTED] from our Minister's Office on August 13, 2021, from Minister O'Regan, and on January 5, 2022, from Minister Wilkinson. We have resent them to [REDACTED] and given that the responses were sent to him personally, we will leave it with [REDACTED] should he wishes to forward them.

Thank you for your patience.

Sincerely,
Pui Wai

Pui Wai Yuen

Director | Directrice

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

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Nuclear Energy & Infrastructure Security Branch | Direction de l'énergie nucléaire et de la sécurité
des infrastructures
Natural Resources Canada | Ressources naturelles Canada
puiwai.yuen@nrcan-rncan.gc.ca
Tel: 613-218-5067

From: [REDACTED]
Sent: 27 novembre 2023 08:29
To: Susan O'Donnell <susanodo.ca@gmail.com>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca;

Subject: Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

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dessous***

Thanks, Susan!
I look forward to receiving copies of the letters to me from Natural Resources Canada and will share them with the other US signatories of the three letters from US nonproliferation experts to Prime Minister Trudeau.
With very best regards,

From: Susan O'Donnell <susanodo.ca@gmail.com>
Date: Monday, November 27, 2023 at 5:01 AM
To: "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>
Cc: "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>, "Tanya.Hinton@international.gc.ca" <Tanya.Hinton@international.gc.ca>, [REDACTED]

Subject: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

Good morning Pui Wai and colleagues,

I'm following up on a point raised during our zoom meeting on November 17. [REDACTED]
[REDACTED] will be sending out notes and official follow-up in due course.

I appreciate your engagement, Pui Wai, Kathleen and Tanya on the reprocessing topic. As I mentioned at the meeting, what most concerns me is the lack of transparency by the government / public service about the risks of reprocessing. Canadians need to understand both the risks and the perceived benefits to be able to make informed opinions about it.

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Pui Wai, at the meeting [REDACTED] asked about the open letters to the PM from [REDACTED] and colleagues in the U.S. raising concerns about the Moltex project and reprocessing. You stated that NRCan had responded twice to those letters. I mentioned that I had communicated with [REDACTED] who had not received a response. Last week I checked again and he confirmed that he had not received a response.

We invited [REDACTED] to our Nov. 17 meeting but he was unable to attend. I'm cc'ing him here along with [REDACTED] who signed the last open letter and who were able to attend the meeting. I've also cc'd [REDACTED] who was also at the meeting and is communicating with me about this.

Pui Wai you seemed certain that NRCan did respond to those open letters; by sending this email I'm not trying to put you on the spot but rather to clear up what's obviously a miscommunication. The letters that NRCan sent did not reach the intended recipient so something went awry somewhere.

If the NRCan responses were open letters could you please send them to us by reply email. If they were sent personally to [REDACTED] could you please resend to him and he can forward them to us if he so wishes.

Thanks everyone for your engagement on this important topic.

Susan
Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

Susan O'Donnell, PhD
Adjunct Research Professor
Lead investigator, the [CEDAR](#) project
Environment and Society Program
St. Thomas University
Fredericton, New Brunswick, Canada
susanodo.ca@gmail.com

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A0071966_5-000774

RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

April 29, 2024 10:13 AM

Subject	RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts
From	Hilborn, Jade (she, her elle, elle)
To	Wilkinson, David; Yuen, Pui Wai
Cc	Wittmann, Tess (she, her elle, elle); Prosser, Kathleen
Sent	November 27, 2023 2:02 PM

UNCLASSIFIED - NON CLASSIFIÉ

Waiting on Chantal to check in the system about the 2021 response.

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Sent: Monday, November 27, 2023 1:31 PM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

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Hi Pui Wai,

The response must have been resent on Nov 20, after Tess updated it to add the co-signatories. Hence why [REDACTED] has received it. Either way, it looks like they've received it, which is great.

In my last email I requested that Jade look into the system to confirm if the 2021 response was ever sent out, but I also indicated that it looks like it was not based on the folder not having a min signed version. Assuming Jade confirms it was never sent, please see draft response below.

Dave

Good afternoon [REDACTED] Susan and [REDACTED]

Thank you for confirming receipt of the response from our Assistant Deputy Minister's Office. Regretfully, it seems that no earlier response on the topic was provided in regards to the letter from 2021. The response you received on November 20 should be considered applicable to both instances. Please accept my apologies.

Sincerely,

[pw signature]

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From: [REDACTED]
Sent: 27 novembre 2023 12:23
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Tanya.Hinton@international.gc.ca
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; [REDACTED]
 [REDACTED]
 Susan O'Donnell <susanodo.ca@gmail.com>
Subject: Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

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Good morning Pui Wai and Tanya Hinton et al. -

This is to inform you that the letter from NRCan dated November 20 2023 was indeed received by [REDACTED] and cosignatories, in response to the letter sent to the Prime Minister earlier this year on September 22, 2023.

There is as yet no record of the earlier letter from NRCan responding to the three 2021 letters from [REDACTED] and a smaller number of cosignatories. It is quite possible that that letter ended up being filtered out by their email software as "suspicious".

Cheers,

[REDACTED]

On Nov 27, 2023, at 5:01 AM, Susan O'Donnell <susanodo.ca@gmail.com> wrote:

Good morning Pui Wai and colleagues,

I'm following up on a point raised during our zoom meeting on November 17. [REDACTED] will be sending out notes and official follow-up in due course.

I appreciate your engagement, Pui Wai, Kathleen and Tanya on the reprocessing topic. As I mentioned at the meeting, what most concerns me is the lack of transparency by the government / public service about the risks of reprocessing. Canadians need to understand both the risks and the perceived benefits to be able to make informed opinions about it.

Pui Wai, at the meeting [REDACTED] asked about the open letters to the PM from [REDACTED] and colleagues in the U.S. raising concerns about the Moltex project and reprocessing. You stated that NRCan had responded twice to those letters. I mentioned that I had communicated with [REDACTED] who had not received a response. Last week I checked again and he confirmed that he had not received a response.

We invited [REDACTED] to our Nov. 17 meeting but he was unable to attend. I'm cc'ing him here along with [REDACTED] who signed the last open letter and who were able to attend the meeting. I've also cc'd [REDACTED] who was also at the meeting and is communicating with me about this.

Pui Wai you seemed certain that NRCan did respond to those open letters; by sending this email I'm not trying to put you on the spot but rather to clear up what's obviously a miscommunication. The

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letters that NRCan sent did not reach the intended recipient so something went awry somewhere.

If the NRCan responses were open letters could you please send them to us by reply email. If they were sent personally to [REDACTED] could you please resend to him and he can forward them to us if he so wishes.

Thanks everyone for your engagement on this important topic.

Susan

Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

Susan O'Donnell, PhD
Adjunct Research Professor
Lead investigator, the [CEDAR](#) project
Environment and Society Program
St. Thomas University
Fredericton, New Brunswick, Canada
susanodo.ca@gmail.com

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RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

April 29, 2024 8:47 AM

Subject	RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]
From	Yuen, Pui Wai
To	Wilkinson, David
Cc	Prosser, Kathleen; Fairchild, Jamie
Sent	December 1, 2023 9:42 AM

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Kate and Dave!

Dave, does this change the response to [REDACTED] and NWW?

I have not sent it yet but plan to today – happy to connect on it as well.

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Sent: 1 décembre 2023 08:33

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Fairchild, Jamie
<jamie.fairchild@NRCan-RNCan.gc.ca>

Subject: FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

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Morning Pui Wai,

Small tweak proposed below. It wasn't a second letter that was received, but rather the Nov 2 ADM reply (re Sep 22 incoming) was received the second time it was sent from ADMO on Nov 20. No other proposed changes. (Thanks for your review Kate.)

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs
Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>

Sent: Thursday, November 30, 2023 12:17 PM

To: Elaine.Kanasewich@cnscccsn.gc.ca; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David
<david.wilkinson@NRCan-RNCan.gc.ca>; Lee.Brunarski@cnscccsn.gc.ca;
Naina.Thoppil@international.gc.ca

Subject: FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

s.19(1)

Good morning Elaine and Pui Wai,

I have drafted the following response to the questions received from [REDACTED] following the roundtable discussion which can be found below. As some of these answers overlap with your work, and to ensure we stay in sync on all of this, I would be most grateful for your review of the draft below.

Kind regards
Tanya

Dear [REDACTED]

Thank you for your input during the recent roundtable discussion and for your questions. I will try to answer them, but would note that some fall outside of Global Affairs Canada's remit.

Regarding the reply letters to [REDACTED] I will defer to the separate email chain that was addressed to NRCAN and that you and I are both included on, noting that you have kindly confirmed that the second a reply to the September 22, 2023, letter has since been received by [REDACTED]

On definitions, the Government of Canada certainly references IAEA definitions, given they are internationally established terminology for the most part and some definitions are used in our policies, our Nuclear Cooperation Agreements for example refer to the definitions contained in the IAEA Statute. However, I am not aware of a Global Affairs Canada position or policy specifically on the definition referred to in the question below.

The proposed Fissile Material Cut-Off Treaty (FMCT) is a "treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices". So such a treaty would cover fissile material that was specifically produced for weapons use.

I am hesitant to speak to operations of CNL and would perhaps suggest these questions might be better suited for the CNSC or CNL directly. Having said that, CNL is a research facility that is licensed and regulated by the CNSC and has been conducting research on the nuclear fuel cycle for decades. The facility is subject to International Atomic Energy Agency (IAEA) safeguards, including reporting of research activities to the IAEA.

Regards,
Tanya

From: [REDACTED]
Sent: Monday, November 27, 2023 4:27 AM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Re: our recent round table discussion (by zoom) on reprocessing in Canada

Good morning Tanya Hinton:

I enjoyed our brief interaction during the recent round table discussion (by zoom) on commercial reprocessing and government policy.

If you can provide me with any information on the following topics I will be most grateful.

A0071968_2-000779

(1) During our round table discussion it was reported that two written responses had been sent to [REDACTED] on the issue of reprocessing, non-proliferation, and Canada's investment of \$50.5 million in the Moltex project. I took the liberty of contacting [REDACTED] and he assures me that he has never received any substantive letters from any Canadian government department in response to the open letters that he and his co-signatories wrote to the Prime Minister. The only response he ever received was an acknowledgement of the first letter from the Prime Minister's office saying that the matter had been delegated to the Ministers of Foreign Affairs and Natural Resources to deal with. May I ask you to verify that the aforementioned response letters were indeed sent to [REDACTED] at the correct address? Perhaps they could be re-sent with a signature required at the other end?

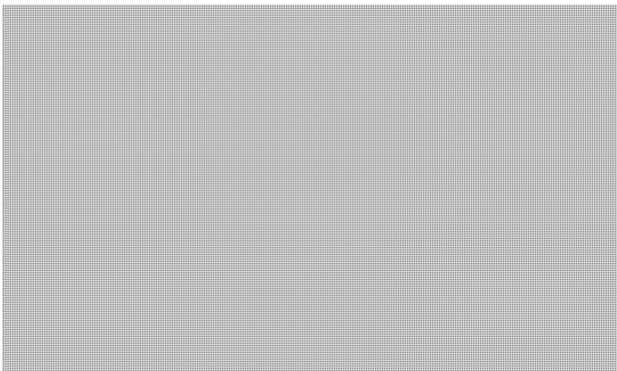
(2) Does Global Affairs Canada accept the position that has been taken by the IAEA and by the US Department of Energy that all separated plutonium is nuclear-weapons-usable material unless there is an unusually high concentration of plutonium-238 in the mix?

(3) Does Global Affairs Canada take the view that only plutonium that is produced for the express purpose of weapons use is to be eliminated if and when the Fissile Materials Cut-off Treaty is ever signed? Or is the FMCT expected to apply to virtually all separated plutonium (with the sole exception noted above)?

(4) Since Canada does not yet have a policy permitting commercial reprocessing of used nuclear fuel in Canada, will Canadian Nuclear Laboratories be nevertheless permitted to pursue research at Chalk River involving the use of separated plutonium, including some reprocessing and fuel fabrication, with the ultimate objective of using this research to further commercial reprocessing opportunities?

(5) Have all of those individuals who will be participating in hands-on Canadian research involving the reprocessing of used nuclear fuel to extract plutonium and other radionuclides been required to obtain high-level security clearances before engaging in such work?

With warm personal regards,



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RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

April 29, 2024 8:48 AM

Subject	RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]
From	Prosser, Kathleen
To	Fairchild, Jamie; Wilkinson, David
Cc	Yuen, Pui Wai
Sent	December 1, 2023 8:21 AM

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Morning – I would strike the letter to the Prime Minister text, PM/PMO didn't reply so I don't think we want to draw attention to that unnecessarily. Simply highlighting that there was a reply and confirmed receipt should be sufficient.

Otherwise, no concerns.

Cheers,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Sent: Friday, December 1, 2023 8:12 AM
To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>
Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

UNCLASSIFIED - NON CLASSIFIÉ

Morning Dave. Thanks for connecting.

Tanya is [REDACTED] and I think Kate will be back online later this morning so things should line up. Happy for her to prioritize this upon her return!

Have a good one.

Jamie

(he/him/il/lui)

Senior Advisor | Conseiller principale

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Telephone | Téléphone: 343.543.6983

NEW: Jamie.Fairchild@NRCan-RNCan.gc.ca

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Sent: Thursday, November 30, 2023 3:49 PM

To: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>

Cc: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen

<Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

UNCLASSIFIED - NON CLASSIFIÉ

Hi Jamie,

Please see the chain below in regards to questions Tanya received about reprocessing. She is seeking our input on her responses. I've proposed a small tweak to Pui Wai, but it *would benefit from a quick review from you to flag any concerns*.

We should get back to Tanya tomorrow.

Thanks!

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs

Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs

Natural Resources Canada / Ressources naturelles Canada

From: Wilkinson, David

Sent: Thursday, November 30, 2023 12:38 PM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Hi Pui Wai,

Small tweak proposed below. It wasn't a second letter that was received, but rather the Nov 2 ADM reply (re Sep 22 incoming) was received the second time it was sent from ADMO on Nov 20.

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs

Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs

Natural Resources Canada / Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>

Sent: Thursday, November 30, 2023 12:17 PM

To: Elaine.Kanasewich@cnsccsn.gc.ca; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David

<david.wilkinson@NRCan-RNCan.gc.ca>; Lee.Brunarski@cnsccsn.gc.ca;

A0071969_2-000783

s.19(1)

Naina.Thoppil@international.gc.ca

Subject: FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Good morning Elaine and Pui Wai,

I have drafted the following response to the questions received from [REDACTED] following the roundtable discussion which can be found below. As some of these answers overlap with your work, and to ensure we stay in sync on all of this, I would be most grateful for your review of the draft below.

Kind regards
Tanya

Dear [REDACTED]

Thank you for your input during the recent roundtable discussion and for your questions. I will try to answer them, but would note that some fall outside of Global Affairs Canada's remit.

Regarding the reply letters to [REDACTED] I will defer to the separate email chain that was addressed to NRCAN and that you and I are both included on, noting that you have kindly confirmed that the second a reply to the September 22, 2023, letter to the Prime Minister has since been received by [REDACTED]

On definitions, the Government of Canada certainly references IAEA definitions, given they are internationally established terminology for the most part and some definitions are used in our policies, our Nuclear Cooperation Agreements for example refer to the definitions contained in the IAEA Statute. However, I am not aware of a Global Affairs Canada position or policy specifically on the definition referred to in the question below.

The proposed Fissile Material Cut-Off Treaty (FMCT) is a "treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices". So such a treaty would cover fissile material that was specifically produced for weapons use.

I am hesitant to speak to operations of CNL and would perhaps suggest these questions might be better suited for the CNSC or CNL directly. Having said that, CNL is a research facility that is licensed and regulated by the CNSC and has been conducting research on the nuclear fuel cycle for decades. The facility is subject to International Atomic Energy Agency (IAEA) safeguards, including reporting of research activities to the IAEA.

Regards,
Tanya

From: [REDACTED]
Sent: Monday, November 27, 2023 4:27 AM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Re: our recent round table discussion (by zoom) on reprocessing in Canada

Good morning Tanya Hinton:

I enjoyed our brief interaction during the recent round table discussion (by zoom) on

A0071969_3-000784

commercial reprocessing and government policy.

If you can provide me with any information on the following topics I will be most grateful.

(1) During our round table discussion it was reported that two written responses had been sent to [REDACTED] on the issue of reprocessing, non-proliferation, and Canada's investment of \$50.5 million in the Moltex project. I took the liberty of contacting [REDACTED] and he assures me that he has never received any substantive letters from any Canadian government department in response to the open letters that he and his co-signatories wrote to the Prime Minister. The only response he ever received was an acknowledgement of the first letter from the Prime Minister's office saying that the matter had been delegated to the Ministers of Foreign Affairs and Natural Resources to deal with. May I ask you to verify that the aforementioned response letters were indeed sent to [REDACTED] at the correct address? Perhaps they could be re-sent with a signature required at the other end?

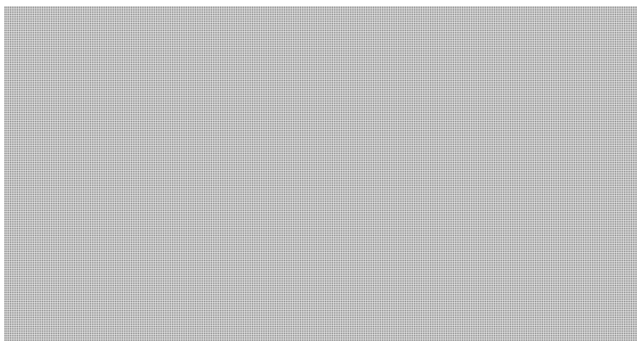
(2) Does Global Affairs Canada accept the position that has been taken by the IAEA and by the US Department of Energy that all separated plutonium is nuclear-weapons-usable material unless there is an unusually high concentration of plutonium-238 in the mix?

(3) Does Global Affairs Canada take the view that only plutonium that is produced for the express purpose of weapons use is to be eliminated if and when the Fissile Materials Cut-off Treaty is ever signed? Or is the FMCT expected to apply to virtually all separated plutonium (with the sole exception noted above)?

(4) Since Canada does not yet have a policy permitting commercial reprocessing of used nuclear fuel in Canada, will Canadian Nuclear Laboratories be nevertheless permitted to pursue research at Chalk River involving the use of separated plutonium, including some reprocessing and fuel fabrication, with the ultimate objective of using this research to further commercial reprocessing opportunities?

(5) Have all of those individuals who will be participating in hands-on Canadian research involving the reprocessing of used nuclear fuel to extract plutonium and other radionuclides been required to obtain high-level security clearances before engaging in such work?

With warm personal regards,



s.19(1)



A0071969_5-000786

RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

April 29, 2024 8:50 AM

Subject	RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]
From	Yuen, Pui Wai
To	Kanasewich, Elaine; Tanya.Hinton@international.gc.ca
Cc	Prosser, Kathleen; Wilkinson, David; Brunarski, Lee; Naina.Thoppil@international.gc.ca; Boudrias, Geneviève
Sent	December 1, 2023 6:03 PM

Declassified by ATIP/
PROTÉGÉ PAR L'APRU

Thanks Tanya for sharing your draft responses. They look good to us as well. Minor tweak/addition below in reference to the responses to [REDACTED] that we have just responded to:

“Regarding the reply letters to [REDACTED] I will defer to the separate email chain that was addressed to NRCan and that you and I are both included on, noting that you have kindly confirmed that the second a reply to the September 22, 2023, letter has since been received by [REDACTED]. I also understand that NRCan has resent two other previous responses to [REDACTED] letters, which he may choose to share.”

Thanks and let us know if you have any questions. Have a great weekend!
Pui Wai

From: Kanasewich, Elaine <Elaine.Kanasewich@cnscccsn.gc.ca>
Sent: 1 décembre 2023 14:43
To: Tanya.Hinton@international.gc.ca; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>; Naina.Thoppil@international.gc.ca; Boudrias, Geneviève <Genevieve.Boudrias@cnscccsn.gc.ca>
Subject: RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Many thanks, Tanya.

The response looks good to me. I propose a slight elaboration on the last para to reflect the perception in the meeting that there is no/no safeguards oversight at CNL. Please see my revised final para, for your consideration.

“I am hesitant to speak to operations of CNL and would perhaps suggest these questions might be better suited for the CNSC or CNL directly. Having said that, CNL is a research facility that is licensed and regulated by the CNSC and has been conducting research on the nuclear fuel cycle for decades. Under Canada’s obligations arising from INFCIRC/164 – Additional Protocol, the International Atomic Energy Agency (IAEA) is provided an annual update of all research activities and/or operations associated with the nuclear fuel-cycle. This reporting is closely monitored by the IAEA and adjustments can be made should there be a change to the scope or scale of the research.”

Reach out if you need anything else! Best for now,

Elaine

s.19(1)

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: November 30, 2023 12:17 PM
To: Kanasewich, Elaine <Elaine.Kanasewich@cnsccsn.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Kathleen.Prosser@NRCan-RNCan.gc.ca; david.wilkinson@NRCan-RNCan.gc.ca; Brunarski, Lee <Lee.Brunarski@cnsccsn.gc.ca>; Naina.Thoppil@international.gc.ca
Subject: FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

EXTERNAL EMAIL – USE CAUTION / COURRIEL EXTERNE – FAITES PREUVE DE PRUDENCE

Good morning Elaine and Pui Wai,

I have drafted the following response to the questions received from [REDACTED] following the roundtable discussion which can be found below. As some of these answers overlap with your work, and to ensure we stay in sync on all of this, I would be most grateful for your review of the draft below.

Kind regards

Tanya

Dear [REDACTED]

Thank you for your input during the recent roundtable discussion and for your questions. I will try to answer them, but would note that some fall outside of Global Affairs Canada's remit.

Regarding the reply letters to [REDACTED] I will defer to the separate email chain that was addressed to NRCan and that you and I are both included on, noting that you have kindly confirmed that the second reply letter has since been received by [REDACTED]

On definitions, the Government of Canada certainly references IAEA definitions, given they are internationally established terminology for the most part and some definitions are used in our policies, our Nuclear Cooperation Agreements for example refer to the definitions contained in the IAEA Statute. However, I am not aware of a Global Affairs Canada position or policy specifically on the definition referred to in the question below.

The proposed Fissile Material Cut-Off Treaty (FMCT) is a "treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices". So such a treaty would cover fissile material that was specifically produced for weapons use.

I am hesitant to speak to operations of CNL and would perhaps suggest these questions might be better suited for the CNSC or CNL directly. Having said that, CNL is a research facility that is licensed and regulated by the CNSC and has been conducting research on the nuclear fuel cycle for decades. The facility is subject to International Atomic Energy Agency (IAEA) safeguards, including reporting of research activities to the IAEA.

Regards,

Tanya

From: [REDACTED]
Sent: Monday, November 27, 2023 4:27 AM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

A0071970_2-000788

[REDACTED]

Re: our recent round table discussion (by zoom) on reprocessing in Canada

Good morning Tanya Hinton:

I enjoyed our brief interaction during the recent round table discussion (by zoom) on commercial reprocessing and government policy.

If you can provide me with any information on the following topics I will be most grateful.

(1) During our round table discussion it was reported that two written responses had been sent to [REDACTED] on the issue of reprocessing, non-proliferation, and Canada's investment of \$50.5 million in the Moltex project. I took the liberty of contacting [REDACTED] and he assures me that he has never received any substantive letters from any Canadian government department in response to the open letters that he and his co-signatories wrote to the Prime Minister. The only response he ever received was an acknowledgement of the first letter from the Prime Minister's office saying that the matter had been delegated to the Ministers of Foreign Affairs and Natural Resources to deal with. May I ask you to verify that the aforementioned response letters were indeed sent to [REDACTED] at the correct address? Perhaps they could be re-sent with a signature required at the other end?

(2) Does Global Affairs Canada accept the position that has been taken by the IAEA and by the US Department of Energy that all separated plutonium is nuclear-weapons-usable material unless there is an unusually high concentration of plutonium-238 in the mix?

(3) Does Global Affairs Canada take the view that only plutonium that is produced for the express purpose of weapons use is to be eliminated if and when the Fissile Materials Cut-off Treaty is ever signed? Or is the FMCT expected to apply to virtually all separated plutonium (with the sole exception noted above)?

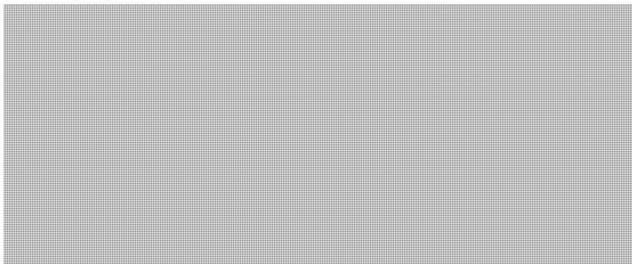
(4) Since Canada does not yet have a policy permitting commercial reprocessing of used nuclear fuel in Canada, will Canadian Nuclear Laboratories be nevertheless permitted to pursue research at Chalk River involving the use of separated plutonium, including some reprocessing and fuel fabrication, with the ultimate objective of using this research to further commercial reprocessing opportunities?

(5) Have all of those individuals who will be participating in hands-on Canadian research involving the reprocessing of used nuclear fuel to extract plutonium and other radionuclides been required to obtain high-level security clearances before engaging in such work?

With warm personal regards,

[REDACTED]

s.19(1)



A0071970_4-000790

RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

April 29, 2024 8:41 AM

Subject	RE: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]
From	Yuen, Pui Wai
To	Tanya.Hinton@international.gc.ca; Prosser, Kathleen
Cc	Wilkinson, David
Sent	November 28, 2023 12:08 PM

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Hi Tanya,

Thanks for reaching out. We have not received any additional questions beyond that of the chain about the letter responses which we have been looking into and confirmed that 2 responses have been sent out. I'll aim to respond to NWW on that front later this afternoon.

My feedback in red below and thank you for offering – we would appreciate having a look at your reply before you send to ensure alignment should we get similar questions.

We should discuss however though, and to mitigate the influx of these ongoing questions, whether we should suggest they go through each of the Department's Comms portal – not sure what the protocol is at GAC for these types of inquiries? Dave/Kate, maybe we can check with our Comms too. I wonder if the CNSC is also receiving follow-up questions.

Thanks, and talk soon.
PW

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>

Sent: 28 novembre 2023 10:59

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen
<Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: FW: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Good morning Pui Wai and Kate

I'm not sure if you are also getting questions from the roundtable participants (we are all on the one chain about the letters), but I have received the email below. I will work on some responses, but wanted to be sure you are aware of what we are getting.

My thinking on some of these questions is:

- to defer to the separate email regarding the letters (agree and you can refer to my response)
- maybe speak to the Government viewing IAEA definitions as internationally established/accepted terminology, but noting that I am not aware of a Global Affairs Canada position or policy specifically on the definition referred to in the question. (good approach)
- I think we can just refer to the language being used in the FMCT work, which is specifically for weapons use, but I will check with my colleagues who lead on that. (thumbs up ☺)

A0071972_1-000791

- I would not want to say much on the CNL questions, as this is not a GAC lead, but could note that CNL is Canada's nuclear laboratory and is always doing a wide range of R&D related to CANDU reactors and fuel. (I think for this one, we could defer to the CNSC and their answer that, including research, everything is regulated and reported to the IAEA)

Please let me know if you would like to be consulted on our reply before sending and if you are getting similar questions.

Thanks

Tanya

From: [REDACTED]
Sent: Monday, November 27, 2023 4:27 AM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: Two letters sent in response to [REDACTED] letters -- never received by [REDACTED]

Re: our recent round table discussion (by zoom) on reprocessing in Canada

Good morning Tanya Hinton:

I enjoyed our brief interaction during the recent round table discussion (by zoom) on commercial reprocessing and government policy.

If you can provide me with any information on the following topics I will be most grateful.

(1) During our round table discussion it was reported that two written responses had been sent to [REDACTED] on the issue of reprocessing, non-proliferation, and Canada's investment of \$50.5 million in the Moltex project. I took the liberty of contacting [REDACTED] and he assures me that he has never received any substantive letters from any Canadian government department in response to the open letters that he and his co-signatories wrote to the Prime Minister. The only response he ever received was an acknowledgement of the first letter from the Prime Minister's office saying that the matter had been delegated to the Ministers of Foreign Affairs and Natural Resources to deal with. May I ask you to verify that the aforementioned response letters were indeed sent to [REDACTED] at the correct address? Perhaps they could be re-sent with a signature required at the other end?

(2) Does Global Affairs Canada accept the position that has been taken by the IAEA and by the US Department of Energy that all separated plutonium is nuclear-weapons-usable material unless there is an unusually high concentration of plutonium-238 in the mix?

(3) Does Global Affairs Canada take the view that only plutonium that is produced for the express purpose of weapons use is to be eliminated if and when the Fissile Materials Cut-off Treaty is ever signed? Or is the FMCT expected to apply to virtually all separated plutonium (with the sole exception noted above)?

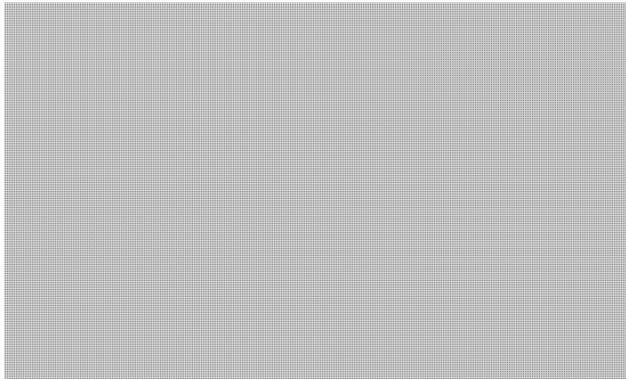
(4) Since Canada does not yet have a policy permitting commercial reprocessing of used nuclear fuel in Canada, will Canadian Nuclear Laboratories be nevertheless

s.19(1)

permitted to pursue research at Chalk River involving the use of separated plutonium, including some reprocessing and fuel fabrication, with the ultimate objective of using this research to further commercial reprocessing opportunities?

(5) Have all of those individuals who will be participating in hands-on Canadian research involving the reprocessing of used nuclear fuel to extract plutonium and other radionuclides been required to obtain high-level security clearances before engaging in such work?

With warm personal regards,



Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

April 29, 2024 10:02 AM

Subject	Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts
From	Yuen, Pui Wai
To	Wittmann, Tess (she, her elle, elle)
Cc	Wilkinson, David; Prosser, Kathleen
Sent	November 27, 2023 9:17 AM

Is this one letter or two?

There was one that was responded by NED and another one by us is my understanding.

Thanks!

Sent from my iPhone

On Nov 27, 2023, at 9:14 AM, Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Hey!

Kate had me add all the other signatories to this document as well and I sent it to Jade last Monday: [Document Overview: 203954 - ADM Direct Reply.docx \(gcdocs.gc.ca\)](#)

Tess

From: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>

Sent: Monday, November 27, 2023 9:13 AM

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>

Subject: RE: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

UNCLASSIFIED - NON CLASSIFIÉ

Hello,

It was ADM signed and sent on Nov 2: [203954 \(gcdocs.gc.ca\)](#).

David Wilkinson

Senior Advisor – Radioactive Waste Policy / Conseiller principal – Politique sur les déchets radioactifs

Uranium and Radioactive Waste Division / Division de l'uranium et des déchets radioactifs
Natural Resources Canada / Ressources naturelles Canada

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Sent: Monday, November 27, 2023 9:10 AM

A0071973_1-000794

To: Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Wittmann, Tess (she, her | elle, elle) <tess.wittmann@nrcan-rncan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: Fwd: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

Good morning,

I know Kate was looking into these dockets before she left. Would you know where that is at?

Thanks!

PW

Sent from my iPhone

Begin forwarded message:

From: [REDACTED]

Date: November 27, 2023 at 8:28:53 AM EST

To: Susan O'Donnell <susanodo.ca@gmail.com>, "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>

Cc: "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>, Tanya.Hinton@international.gc.ca, [REDACTED]

Subject: Re: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

Thanks, Susan!

I look forward to receiving copies of the letters to me from Natural Resources Canada and will share them with the other US signatories of the three letters from US nonproliferation experts to Prime Minister Trudeau.

With very best regards,

[REDACTED]

From: Susan O'Donnell <susanodo.ca@gmail.com>

Date: Monday, November 27, 2023 at 5:01 AM

To: "Yuen, Pui Wai" <puiwai.yuen@nrcan-rncan.gc.ca>

Cc: "Prosser, Kathleen" <Kathleen.Prosser@nrcan-rncan.gc.ca>,

"Tanya.Hinton@international.gc.ca" <Tanya.Hinton@international.gc.ca>,
[REDACTED]

Subject: Q re response(s) from NRCan to open letter to PM Trudeau re reprocessing from U.S. experts

Good morning Pui Wai and colleagues,

I'm following up on a point raised during our zoom meeting on November 17. [REDACTED]
[REDACTED] will be sending out notes and official follow-up in due course.

I appreciate your engagement, Pui Wai, Kathleen and Tanya on the reprocessing topic. As I mentioned at the meeting, what most concerns me is the lack of transparency by the government / public service about the risks of reprocessing. Canadians need to understand both the risks and the perceived benefits to be able to make informed opinions about it.

Pui Wai, at the meeting [REDACTED] asked about the open letters to the PM from [REDACTED] and colleagues in the U.S. raising concerns about the Moltex project and reprocessing. You stated that NRCan had responded twice to those letters. I mentioned that I had communicated with [REDACTED] who had not received a response. Last week I checked again and he confirmed that he had not received a response.

We invited [REDACTED] to our Nov. 17 meeting but he was unable to attend. I'm cc'ing him here along with [REDACTED] who signed the last open letter and who were able to attend the meeting. I've also cc'd [REDACTED] who was also at the meeting and is communicating with me about this.

Pui Wai you seemed certain that NRCan did respond to those open letters; by sending this email I'm not trying to put you on the spot but rather to clear up what's obviously a miscommunication. The letters that NRCan sent did not reach the intended recipient so something went awry somewhere.

If the NRCan responses were open letters could you please send them to us by reply email. If they were sent personally to [REDACTED] could you please resend to him and he can forward them to us if he so wishes.

Thanks everyone for your engagement on this important topic.

Susan
Coalition for Responsible Energy Development in New Brunswick (CRED-NB)

Susan O'Donnell, PhD
Adjunct Research Professor
Lead investigator, the [CEDAR](#) project
Environment and Society Program
St. Thomas University
Fredericton, New Brunswick, Canada
susanodo.ca@gmail.com

[REDACTED] This email originated from outside of NRCan. **Do not click links or open attachments unless you recognize the sender and believe the content is safe.** For information on how to recognize and report phishing emails, please

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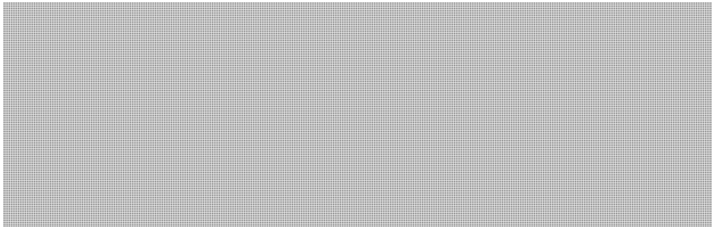
visit the [Phishing Spot](#) on the NRCan Intranet.

Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour plus d'informations sur la façon de reconnaître et de signaler les courriels d'hameçonnage, veuillez visiter le site [hameçonnage](#) sur l'intranet de RNCan.



Natural Resources
Canada

Ressources naturelles
Canada



Dear [REDACTED] and co-signatories:

Thank you for your correspondence of September 22, 2023, addressed to the Minister of Energy and Natural Resources, the Honourable Jonathan Wilkinson, as well as Prime Minister Trudeau and other ministers, about the reprocessing of used CANDU fuel. I am responding on behalf of Minister Wilkinson.

Protecting the health and safety of Canadians and the environment is a top priority when it comes to the Government's approach to nuclear energy and radioactive waste. All radioactive waste in Canada is currently being safely managed according to Canadian legislation and in respect of international standards at facilities that are licensed and monitored by Canada's independent nuclear regulator – the Canadian Nuclear Safety Commission (CNSC). The CNSC reviews all nuclear projects carefully to determine their effects on the environment and on the people living or working in nearby communities.

To ensure that all radioactive waste in Canada is managed safely for generations to come, Natural Resources Canada (NRCan) recently released Canada's modernized Policy for Radioactive Waste Management and Decommissioning. It ensures that the safe management of radioactive waste in Canada continues to align with international standards and best practices, and that Canada's policy framework reflects the values and principles of Canadians following extensive engagement.

Canada

- 2 -

The Government of Canada is aware of the draft document on used nuclear fuel reprocessing prepared by the CANDU Owners Group through subject matter expert participation in small modular reactor (SMR) related working groups. This document was generated by the CANDU Owners Group and is, in its entirety, an industry led and owned document. It does not in any way represent a policy of or by the federal government.

While the government is not currently developing a reprocessing policy, it is monitoring the research and development of technologies related to the reprocessing of used CANDU fuel in Canada, and it remains receptive to understanding the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non-proliferation obligations. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and non-proliferation – prior to its deployment.

There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some SMR technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.

Any potential reprocessing of used nuclear fuel in Canada would be subject to the Canadian regulatory framework under the *Nuclear Safety and Control Act*, as well as safeguards verification by the International Atomic Energy Agency (IAEA), and any proposal for commercial deployment of used fuel reprocessing would be subject to a regulatory review with opportunities for the public to provide input. Canada remains committed to the *Treaty on the Non-Proliferation of Nuclear Weapons*, including the full implementation of IAEA safeguards to provide assurances that nuclear materials are used solely for peaceful purposes in Canada. If ever brought forward, the radioactive waste from a reprocessing project would fall within the scope of Canada's Policy for Radioactive Waste Management and Decommissioning.

Thank you for sharing your views on this important matter.

- 3 -

Yours sincerely,

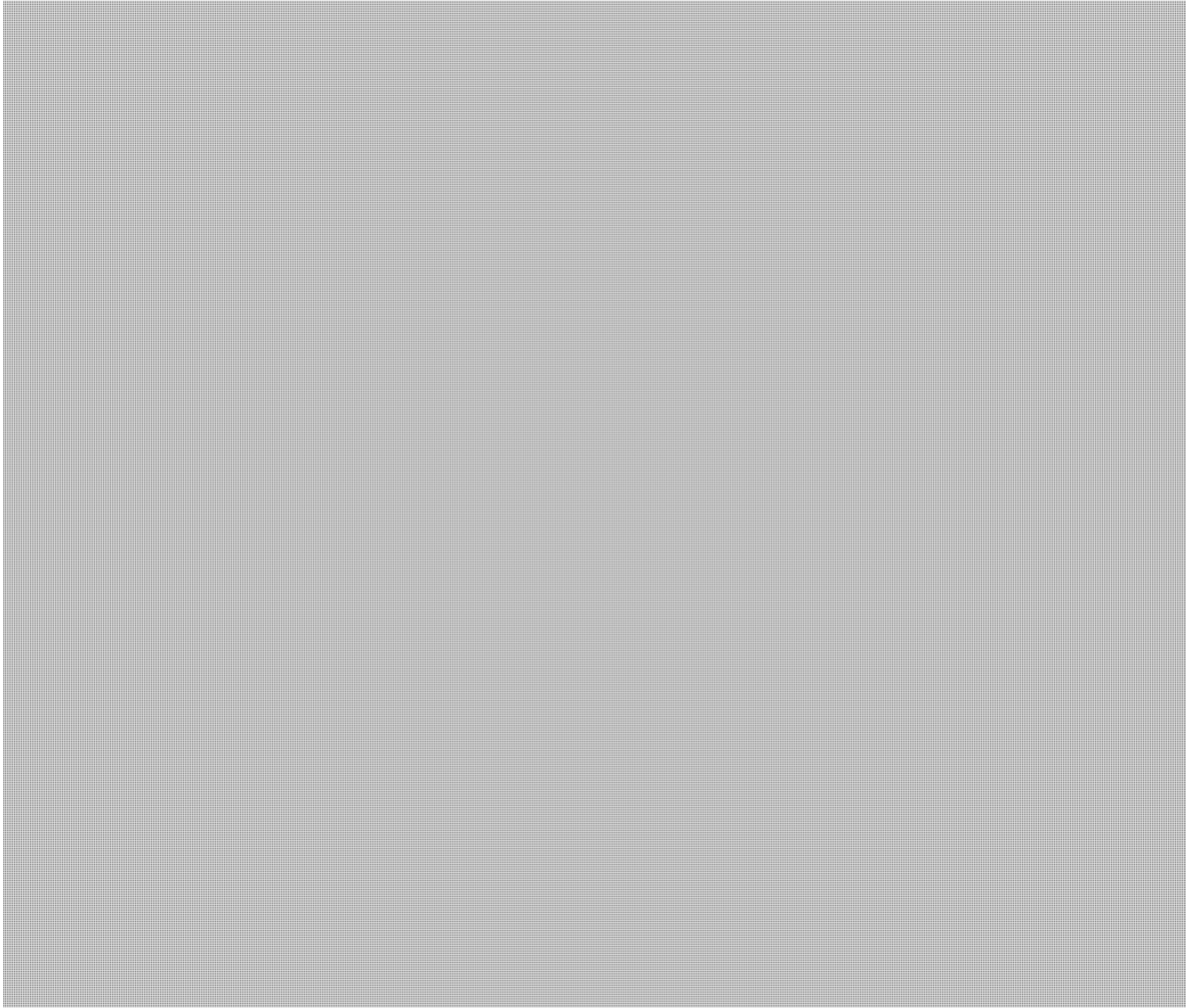
Debbie Scharf
Assistant Deputy Minister
Energy Systems Sector
Natural Resources Canada

Cc:



s.19(1)

- 4 -



FW: Moltex - Due Diligence

April 26, 2024 3:46 PM

Subject	FW: Moltex - Due Diligence
From	Prosser, Kathleen
To	Yuen, Pui Wai; Wilkinson, David
Sent	October 18, 2023 11:59 AM

PROTECTED B - PROTÉGÉ B

As requested, sending over all the correspondences..

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Sent: Tuesday, October 17, 2023 9:37 AM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>
Subject: RE: Moltex - Due Diligence

PROTECTED B - PROTÉGÉ B

Yes. 


From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: Monday, October 16, 2023 6:54 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>
Subject: Re: Moltex - Due Diligence

Geoff. Thanks for the quick review.

Just make sure any details in any report does not contain specifics of Moltex's process.

Thanks

Dan

s.20(1)(b)

s.20(1)(c)

s.21(1)(a)

s.21(1)(b)

Sent from my iPhone

On Oct 16, 2023, at 10:43 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

PROTECTED A - PROTÉGÉ A

Hi Geoff,

Thanks very much for the thorough review and excellent summary. Appreciate the quick turn around!

Fred is planning to follow up with Moltex so I will suggest that we ask [REDACTED] [REDACTED] Hopefully we'll get clarification on that quickly, and then can provide your analysis to ISED tomorrow. I will keep everyone in the loop.

I think this analysis can also be used to respond to ACOA. I'll discuss with Erica/Chelsea.

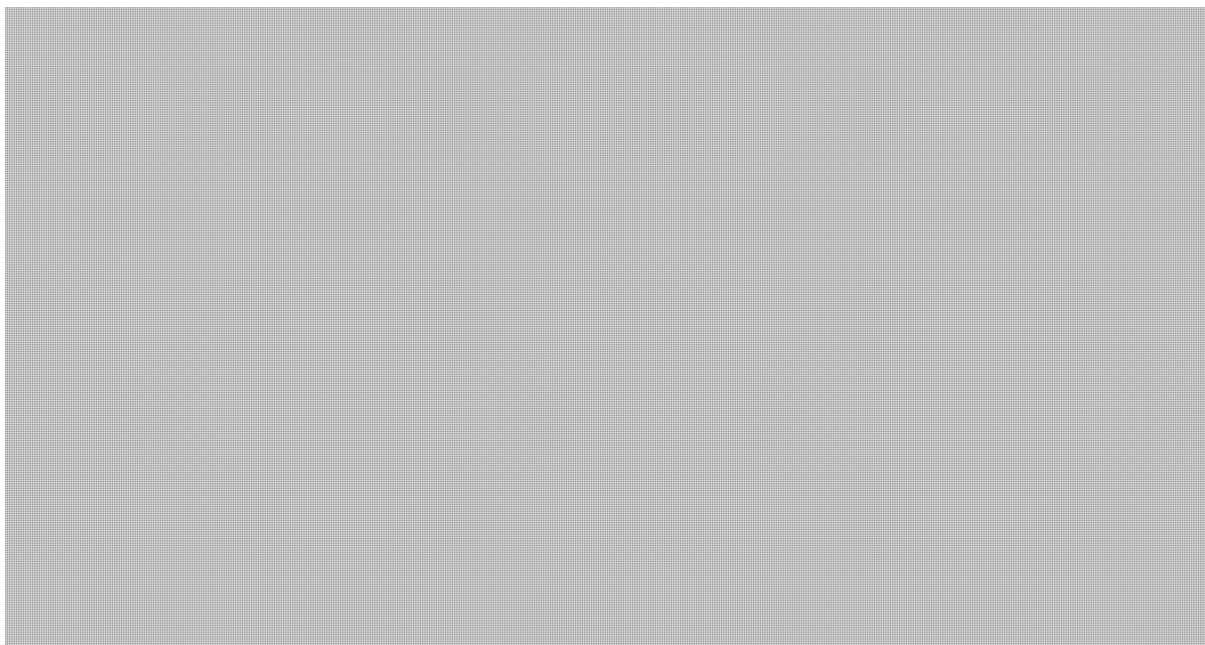
Stay tuned regarding next steps.

Thanks,
Jessica

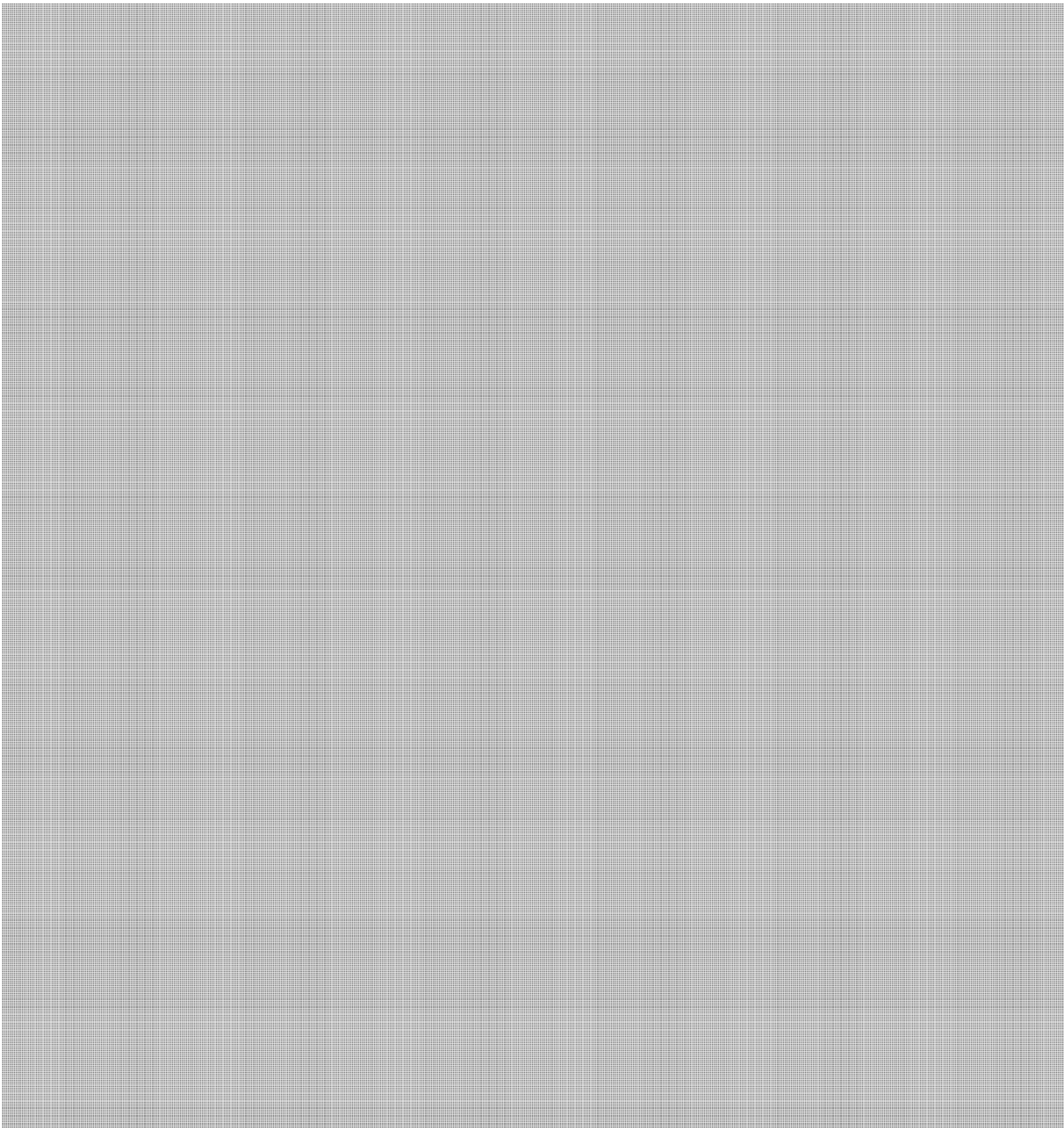
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Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: Moltex - Due Diligence

PROTECTED A - PROTÉGÉ A

I have reviewed the interesting results of the Moltex experiments at Chalk River. In regards to the ISED questions:



s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)



I'll be interested to hear from Kathleen if I have misunderstood any of the chemistry ☺

Geoff

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Sunday, October 15, 2023 9:47 PM
To: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: FW: Moltex - Due Diligence

Declassified by ATIP /
Déclassifié par L'APPRI
PROTÉGÉ A - PROTÉGÉ A

Hi Geoff,

We have 2 requests regarding Moltex: the ACOA request for NRCan to do a technical assessment and also a related request from ISED (see below).

ISED has specific questions that they would like us to address. I think these questions will essentially be the conclusion of the technical assessment.

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

We'll discuss on Monday.

Thanks,
Jessica

From: Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>
Sent: Sunday, October 15, 2023 9:26 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: FW: Moltex - Due Diligence

Hi Jessica,

In James, absence, I wanted to follow-up on Dan's e-mail below. Dan has indicated that the report will likely not be ready till the end of next week. We would like to brief up early next week, so I was wondering if you would be able to provide your opinion on the following points prior to completing the report:

1.

2.

3.

If it's easier to chat over MS Teams, please let me know. I will be happy to set one up.

Thank you for your help,

Cindy Lin
(she, her | elle, la)

Sr Investment Analyst, Strategic Innovation Fund
Innovation, Science and Economic Development Canada / Government of Canada
cindy.lin2@ised-isde.gc.ca / Tel: 343-597-4537 / TTY: 1-866-694-8389

Analyste princ. d'investissements, Fonds strategique pour l'innovation
Innovation, Sciences et Développement économique Canada / Gouvernement du Canada
cindy.lin2@ised-isde.gc.ca / Tél: 343-597-4537 / ATS : 1-866-694-8389

----- Original message -----

From: "Brady, Daniel" <daniel.brady@NRCan-RNCan.gc.ca>
Date: 2023-10-13 4:41 p.m. (GMT-05:00)
To: "Campbell2, James (ISED/ISDE)" <James.Campbell2@ised-isde.gc.ca>, "Poupore, Jessica" <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: "Clarke, Pamela (ISED/ISDE)" <Pamela.Clarke@ised-isde.gc.ca>, "Lin2, Cindy (she, her | elle, la) (ISED/ISDE)" <Cindy.Lin2@ised-isde.gc.ca>, "Di Palma, Gabriel (he, him | il, le) (ISED/ISDE)" <Gabriel.DiPalma@ISED-ISDE.GC.CA>

A0072192_4-000805

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

Subject: RE: Moltex - Due Diligence

Declassified by ATIP/
PROTÉGÉ PAR L'ATIP
DECLASSIFIED BY ATIP /
PROTÉGÉ PAR L'ATIP

Hi James

We are working to have a report done for later next week.

I am away next week, but Jessica (on this email) is leading the review. Please feel free to reach out to her.

dan

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Sent: Friday, October 13, 2023 10:30 AM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: Moltex - Due Diligence

Good morning Daniel,

Hope you are doing well. It has been a while since we have been in touch on the SMR files and I understand that your work in that area is continuing, in particular with regards to due diligence on Moltex



If that is easier via a short MS Teams meeting I am happy to arrange it. I can be available any time today for a call if that works for you.

Thanks very much!

James Campbell

Investment Analyst

Innovation, Science and Economic Development Canada / Government of Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

Analyste des investissements

Innovation, Sciences et Développement économique Canada/ Gouvernement du Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

FW: Moltex - Due Diligence

April 26, 2024 3:48 PM

Subject	FW: Moltex - Due Diligence
From	Prosser, Kathleen
To	Yuen, Pui Wai; Wilkinson, David
Sent	October 19, 2023 2:55 PM

UNCLASSIFIED - NON CLASSIFIÉ

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Thursday, October 19, 2023 2:55 PM
To: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: FW: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

FYI

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Sent: Thursday, October 19, 2023 2:03 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>; Mar, Amy (ISED/ISDE) <Amy.Mar@ised-isde.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Hi Jessica.

OK, great. That does help.

Thank you very much for this clarification.

A0072193_1-000807

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

Kind regards,
James

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: October 19, 2023 1:37 PM
To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>; Mar, Amy (ISED/ISDE) <Amy.Mar@ised-isde.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Hi James,



Hope that helps.

Jessica

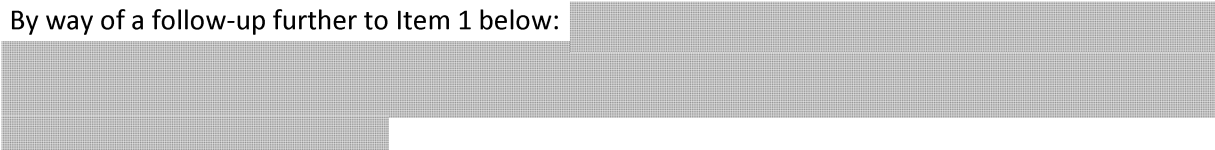
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Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Good morning Jessica,

Thank you very much for providing this input. Much appreciated!

By way of a follow-up further to Item 1 below:



Thanks again very much for input on this item.

Kind regards,

James Campbell
Investment Analyst

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

Innovation, Science and Economic Development Canada / Government of Canada
James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

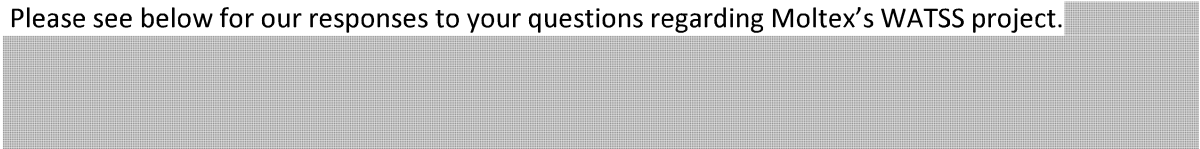
Analyste des investissements
Innovation, Sciences et Développement économique Canada/ Gouvernement du Canada
James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: October 19, 2023 9:25 AM
To: Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>; Mar, Amy (ISED/ISDE) <Amy.Mar@ised-isde.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Hi Cindy,

Please see below for our responses to your questions regarding Moltex's WATSS project.



1.



A0072193_3-000809

s.20(1)(b)

s.20(1)(c)

s.21(1)(a)

s.21(1)(b)

1.
1.

Happy to answer questions or provide clarification.

Best regards,
Jessica

Jessica Poupore
(she/her/elle)

A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire

Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada
jessica.poupore@nrcan-rncan.gc.ca Mobile: 613-292-8981

From: Lin2, Cindy (she, her | elle, la) (ISED/ISDE)

Sent: October 16, 2023 8:34 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>

Subject: RE: Moltex - Due Diligence

Hello Jessica,

Thank you for your response.

Attached is the market and technical due diligence report that was completed by NRCan back in 2019.

Have a nice day,

Cindy Lin
(she, her | elle, la)

A0072193_4-000810

s.20(1)(b)
s.20(1)(c)
s.21(1)(b)

Sr Investment Analyst, Strategic Innovation Fund
Innovation, Science and Economic Development Canada / Government of Canada
cindy.lin2@ised-isde.gc.ca / Tel: 343-597-4537 / TTY: 1-866-694-8389

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cindy.lin2@ised-isde.gc.ca / Tél: 343-597-4537 / ATS : 1-866-694-8389

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Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Hi Cindy,

NRCan has met with Moltex a few times over the last several weeks. [REDACTED]
[REDACTED] I don't think we'll be in a position to answer your questions early this week, but we appreciate the urgency and will do our best. Thank you for the questions as this will help us focus the analysis.

I believe there was a technical review done a few years ago as part of the SIF application / funding agreement process. I wasn't able to find a copy in NRCan's records – could you please send me the original technical review? Daniel Brady was involved in the review at the time.

Many thanks,
Jessica

Jessica Poupore
(she/her/elle)

A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire

Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada
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s.20(1)(b)

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s.21(1)(b)

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Subject: RE: Moltex - Due Diligence

Declassified by ATIP/
Déclassifié par l'ATIP
PROTECTED / PROTÉGÉ A

Hi James

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Sent: Friday, October 13, 2023 10:30 AM

A0072193_6-000812

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

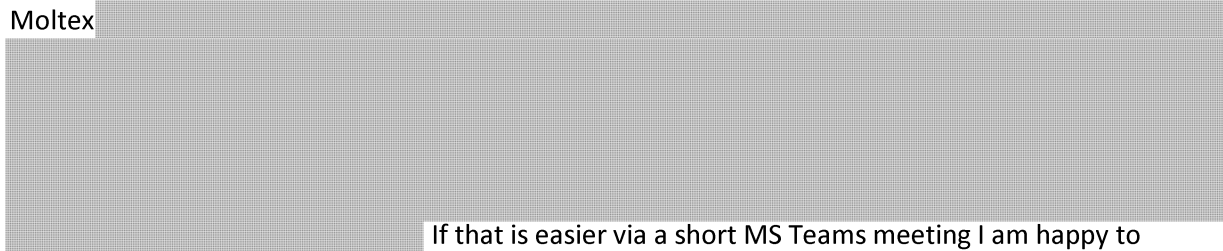
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Subject: Moltex - Due Diligence

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Thanks very much!

James Campbell

Investment Analyst

Innovation, Science and Economic Development Canada / Government of Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

Analyste des investissements

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s.20(1)(b)
s.20(1)(c)
s.21(1)(b)

FW: Moltex - Due Diligence

April 26, 2024 3:49 PM

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From	Prosser, Kathleen
To	Yuen, Pui Wai; Wilkinson, David
Sent	October 18, 2023 11:59 AM

PROTECTED A - PROTÉGÉ A

As requested, sending over all the correspondences..

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(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
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Subject: RE: Moltex - Due Diligence

PROTECTED A - PROTÉGÉ A

Hi Geoff,

Thanks very much for the thorough review and excellent summary. Appreciate the quick turn around!

Fred is planning to follow up with Moltex so I will suggest that we ask [REDACTED] Hopefully we'll get clarification on that quickly, and then can provide your analysis to ISSED tomorrow. I will keep everyone in the loop.

I think this analysis can also be used to respond to ACOA. I'll discuss with Erica/Chelsea.

Stay tuned regarding next steps.

Thanks,
Jessica

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Sent: Monday, October 16, 2023 4:35 PM

s.20(1)(b)

s.20(1)(c)

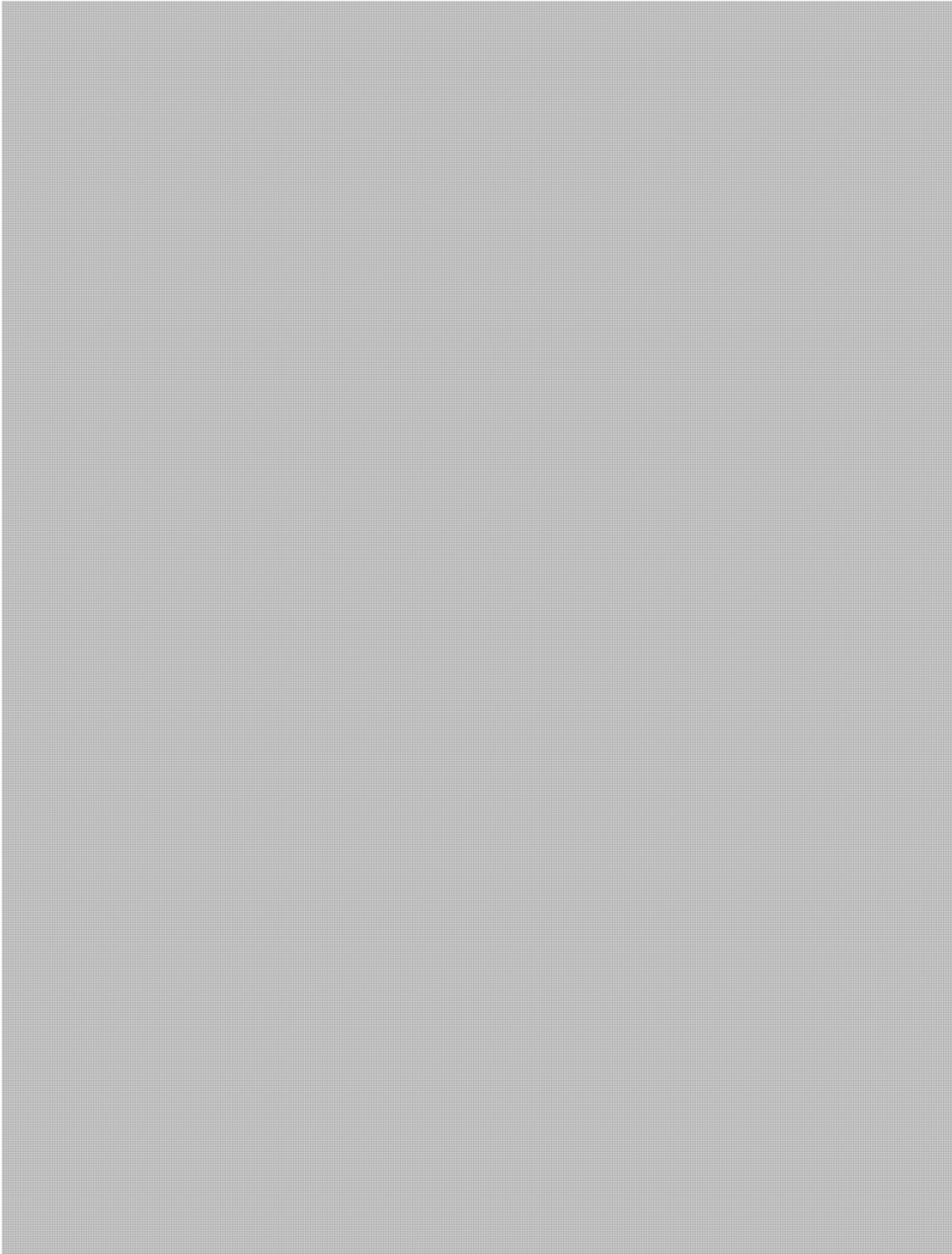
s.21(1)(a)

s.21(1)(b)

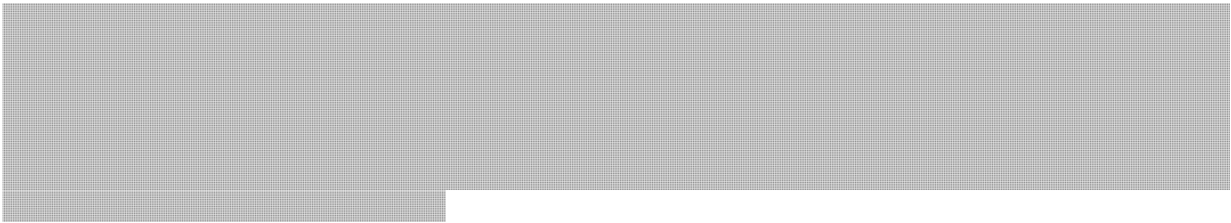
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Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Prosser, Kathleen
<Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: Moltex - Due Diligence

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Déclassifié par l'ATIP
PROTECTED A - PROTÉGÉ A

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ISED questions:



s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)



I'll be interested to hear from Kathleen if I have misunderstood any of the chemistry 😊

Geoff

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PROTÉGÉ A / PROTÉGÉ A

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Sent: Sunday, October 15, 2023 9:26 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: FW: Moltex - Due Diligence

Hi Jessica,

In James, absence, I wanted to follow-up on Dan's e-mail below. Dan has indicated that the report will likely not be ready till the end of next week. We would like to brief up early next week, so I was wondering if you would be able to provide your opinion on the following points prior to completing the report:

1.



2.

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

3. [REDACTED]

If it's easier to chat over MS Teams, please let me know. I will be happy to set one up.

Thank you for your help,

Cindy Lin
(she, her | elle, la)

Sr Investment Analyst, Strategic Innovation Fund
Innovation, Science and Economic Development Canada / Government of Canada
cindy.lin2@ised-isde.gc.ca / Tel: 343-597-4537 / TTY: 1-866-694-8389

Analyste princ. d'investissements, Fonds strategique pour l'innovation
Innovation, Sciences et Développement économique Canada / Gouvernement du Canada
cindy.lin2@ised-isde.gc.ca / Tél: 343-597-4537 / ATS : 1-866-694-8389

----- Original message -----

From: "Brady, Daniel" <daniel.brady@NRCan-RNCan.gc.ca>
Date: 2023-10-13 4:41 p.m. (GMT-05:00)
To: "Campbell2, James (ISED/ISDE)" <James.Campbell2@ised-isde.gc.ca>, "Poupore, Jessica" <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: "Clarke, Pamela (ISED/ISDE)" <Pamela.Clarke@ised-isde.gc.ca>, "Lin2, Cindy (she, her | elle, la) (ISED/ISDE)" <Cindy.Lin2@ised-isde.gc.ca>, "Di Palma, Gabriel (he, him | il, le) (ISED/ISDE)" <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: RE: Moltex - Due Diligence

Declassified by ATIP/
Déclassifié par l'ATIP
PROTECTED A / PROTÉGÉ A

Hi James

We are working to have a report done for later next week.

I am away next week, but Jessica (on this email) is leading the review. Please feel free to reach out to her.

dan

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Sent: Friday, October 13, 2023 10:30 AM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: Moltex - Due Diligence

Good morning Daniel,

Hope you are doing well. It has been a while since we have been in touch on the SMR files and I understand that your work in that area is continuing, in particular with regards to due diligence on Moltex [REDACTED]

A0072194_4-000817

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)



If that is easier via a short MS Teams meeting I am happy to arrange it. I can be available any time today for a call if that works for you.

Thanks very much!

James Campbell

Investment Analyst

Innovation, Science and Economic Development Canada / Government of Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

Analyste des investissements

Innovation, Sciences et Développement économique Canada/ Gouvernement du Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

FW: SIF/NRCan - Moltex Evaluation

April 26, 2024 3:51 PM

Subject	FW: SIF/NRCan - Moltex Evaluation
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	November 8, 2023 1:26 PM

UNCLASSIFIED - NON CLASSIFIÉ

fyi

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: 8 novembre 2023 13:25
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: FW: SIF/NRCan - Moltex Evaluation

UNCLASSIFIED - NON CLASSIFIÉ

FYI



Kathleen Prosser, PhD.
 (she/her/elle)

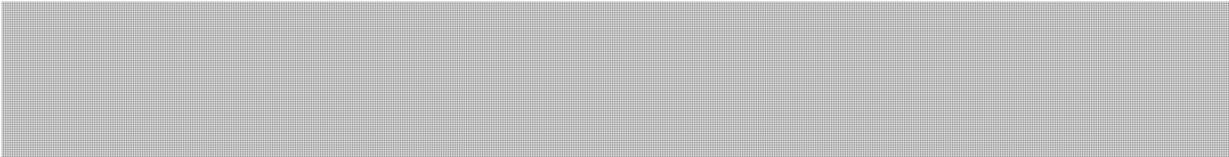
Uranium and Radioactive Waste Division | Natural Resources Canada
 Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: November 8, 2023 12:01 PM
To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: RE: SIF/NRCan - Moltex Evaluation

UNCLASSIFIED - NON CLASSIFIÉ

Hi James,

We had a meeting with Moltex to confirm our understanding of the WATSS process 




s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)



It would still be worthwhile to meet with NRC to discuss the project. We are available to meet later this week or early next week. We can find availability most days, except Thursday afternoon. Right now, the following slots are available: Friday 1-2pm or Tuesday 1-2:30pm.

Best regards,
Jessica

Jessica Poupore
(she/her/elle)

A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire

Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada
jessica.poupore@nrcan-rncan.gc.ca Mobile: 613-292-8981

From: Poupore, Jessica
Sent: Friday, November 3, 2023 4:20 PM
To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: RE: SIF/NRCan - Moltex Evaluation

Hi James,

That's correct. Based on our review and current understanding [REDACTED]

That being said, we are taking a deeper dive [REDACTED]
[REDACTED] We would like to meet with Moltex next week to discuss. We can provide another update next week.

Best regards,
Jessica

Jessica Poupore
(she/her/elle)

A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire

Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada

s.20(1)(b)

s.20(1)(c)

s.21(1)(a)

s.21(1)(b)

jessica.poupore@nrcan-rncan.gc.ca Mobile: 613-292-8981

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>

Sent: Friday, October 27, 2023 2:49 PM



To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

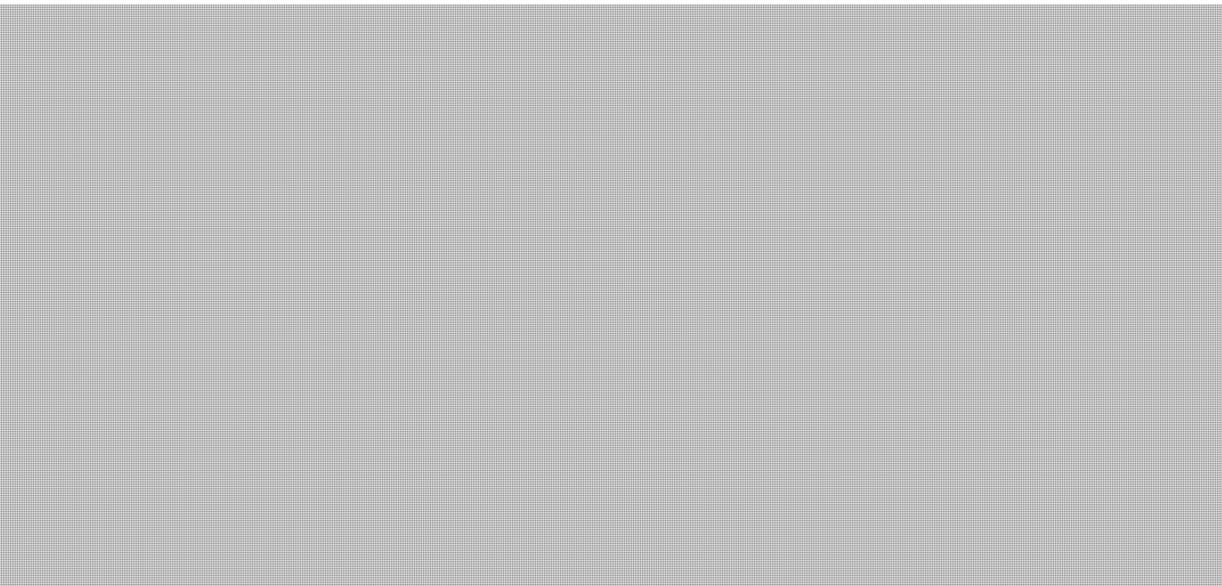
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>

Subject: SIF/NRCan - Moltex Evaluation


Hi Jessica and Dan,

Thanks again for meeting this afternoon to discuss Moltex in a bit more detail. This follow-up email will attempt to close the loop on this item.

As discussed, here is the 




For convenience I have attached Jessica's email containing the NRCan assessment of the criteria.

Based on our conversation today regarding your assessment, and the data provided by Moltex, it appears  Can you confirm our understanding?

Thanks very much, and please feel free to reach out if I can provide further clarification.

Kind regards,

James Campbell

Investment Analyst

Innovation, Science and Economic Development Canada / Government of Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

Analyste des investissements

Innovation, Sciences et Développement économique Canada/ Gouvernement du Canada


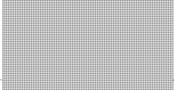
James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

A0072197_3-000821

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FW: nrcan review

April 26, 2024 3:44 PM

Subject	FW: nrcan review
From	Prosser, Kathleen
To	Yuen, Pui Wai; Wilkinson, David
Sent	October 18, 2023 11:59 AM
Attachments	 

UNCLASSIFIED - NON CLASSIFIÉ

As requested, sending over all the correspondences..


Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Tuesday, October 17, 2023 9:59 PM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>
Subject: FW: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Additional info from Moltex

From: Rory O'Sullivan <**Sent:** Tuesday, October 17, 2023 7:01 PM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Re: nrcan review

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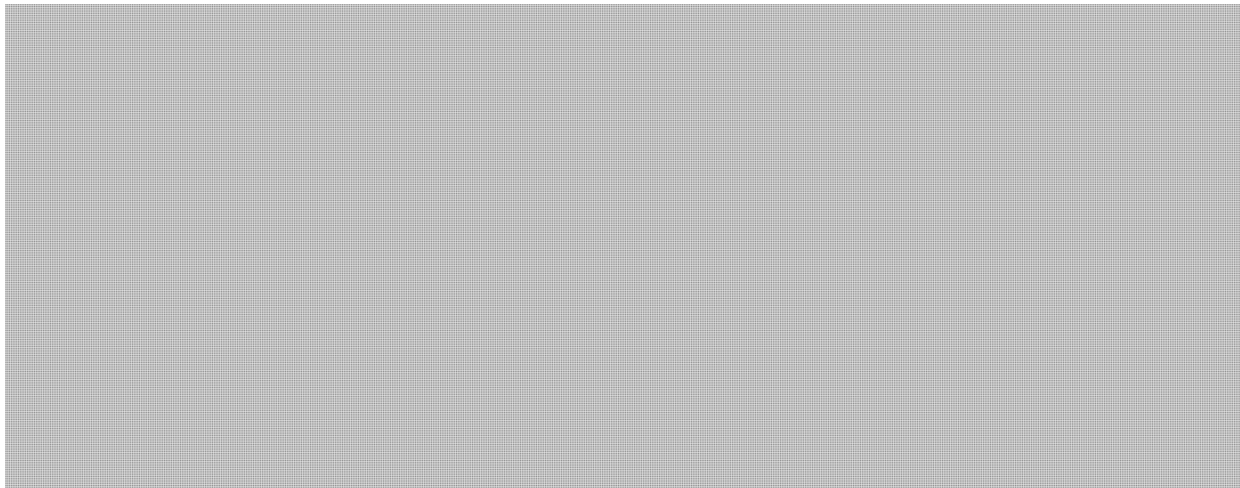
s.19(1)

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

Hi Fred,



Rory

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>

Sent: 17 October 2023 17:02

To: Rory O'Sullivan <[REDACTED]>

Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Subject: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Hi Rory,

We have reviewed the test results that you provided to Dan.



We plan to provide our analysis/advice to ISED and ACOA in the next couple days.

Thanks

Fred

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
**Pages 825 to / à 826
are withheld pursuant to sections
sont retenues en vertu des articles**

20(1)(c), 20(1)(b)

**of the Access to Information Act
de la Loi sur l'accès à l'information**

FW: Industry support letters

April 26, 2024 3:52 PM

Subject	FW: Industry support letters
From	Yuen, Pui Wai
To	Wilkinson, David
Sent	October 26, 2023 2:04 PM
Attachments	 Moltex industry s...

UNCLASSIFIED - NON CLASSIFIÉ

fyi

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>

Sent: 26 octobre 2023 12:13

To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Prosser, Kathleen
<Kathleen.Prosser@NRCan-RNCan.gc.ca>

Subject: FW: Industry support letters

UNCLASSIFIED - NON CLASSIFIÉ

From: Rory O'Sullivan [REDACTED]

Sent: Thursday, October 26, 2023 11:54 AM

To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>; Brady, Daniel
<daniel.brady@NRCan-RNCan.gc.ca>; Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Subject: Fw: Industry support letters

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dessous***

fyi

From: Rory O'Sullivan

Sent: 26 October 2023 12:52

To: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Clarke, Pamela (ISED/ISDE)
<Pamela.Clarke@ised-isde.gc.ca>

Cc: Amy.Mar@ised-isde.gc.ca <Amy.Mar@ised-isde.gc.ca>; John Mauti

<[REDACTED]>; Tristan Jackson <[REDACTED]>

Subject: Industry support letters

James and Pamela,

We are getting very strong responses from our industry piers on the support letter request.

A0072201_1-000827

Please see attached the latest letters also including Kinectrics and BWXT, two of the largest suppliers in Canada. OPG has confirmed they will be drafting one also.

Rory O'Sullivan
Chief Executive Officer
+1 437 778 4232
[REDACTED]

Moltex Energy
75 Prince William Street | Unit 102 | Saint John | New Brunswick | Canada | E2L 2B2
+1 506 214 8551 | info@moltexenergy.com | www.moltexenergy.com

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NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

Laurie Swami, PRESIDENT AND CEO
Tel. 647.259.3010
Email lswami@nwmo.ca

September 28, 2023

NWMO-CORR-00520-55460

The Honourable Francois-Philippe Champagne
Minister of Innovation, Science, and Industry
235 Queen Street
Ottawa, ON
Canada
K1A 0H5

Dear Minister Champagne,

I am writing to offer the NWMO's perspective on research funding to develop future methods of reusing used nuclear fuel.

Now more than ever, research into emerging nuclear technologies is of paramount importance. Countries around the world are looking to nuclear energy as one of the critical tools in our toolbox to address climate change. Indeed, Canada's federal government has been clear that there is no path to achieve our country's climate change targets without nuclear power.

With the opportunity of nuclear energy comes the responsibility of managing the waste. Canada has a proud place among global leaders in this space, with a decades-long track record of safe management, and an internationally recognized plan to keep it safe for the future. Indeed, the project my organization is implementing is designed to contain and isolate used nuclear fuel in a deep geological repository, ensuring there's a safe path forward for the waste while the country continues to invest in new energy projects.

But it would be a mistake to take this leadership position for granted and to rest on our laurels as the world around us evolves. If research can validate new processes to further address the hazard or volume of used fuel associated with our growing nuclear fleet, it would be a wonderful development for our country. In that case, the NWMO would stand committed to provide disposal services for any new waste streams generated from these processes.

One of the reasons Canada is a Tier 1 nuclear country with an advanced waste management program is because we had the foresight years ago to invest in research. And new research undertaken today could very well lead us to new ways to support the nuclear renaissance of the

Tel. 416.934.9814
Fax 416.934.9526
Toll Free 1.866.249.6966

22 St. Clair Avenue East, Fourth Floor
Toronto, Ontario M4T 2S3, Canada
www.nwmo.ca

A0072202_1-000829

s.19(1)

future – including efficiencies in how we handle the resulting waste -- that is rapidly emerging not just in Canada, but around the world.

We at the NWMO believe providing financial support to Moltex Clean Energy, for their research program to reuse CANDU used fuel, could lead to such a breakthrough. At the same time, implementing Canada's plan for the safe, environmentally responsible long term management of used nuclear fuel will continue

Sincerely,

Laurie Swami
President and CEO



October 18, 2023

The Honourable Francois-Philippe Champagne, Minister of Innovation, Science, and Industry
The Honourable Jonathan Wilkinson, Minister of Energy and Natural Resources
Ottawa, ON
Canada

Dear Minister Champagne, Minister Wilkinson,

The nuclear industry welcomes the federal government's support for nuclear energy as an essential element in achieving a net-zero carbon future, bolstering Canada's climate and technology leadership, maintaining affordability, and creating high-quality, well-paid jobs. This commitment underscores the critical role of nuclear power in reducing fossil fuel dependence, enhancing energy security, and ensuring a just transition to a low-carbon economy.

As Canada embraces the benefits of nuclear energy, it must also shoulder the responsibility of efficiently managing nuclear waste, which includes ensuring that it has explored the best available technologies to minimize the impact on future generations.

Canada has a reputation as a global leader in this field, with a long history of safe waste management practices and a well-recognized plan for safeguarding used fuel in the future. However, it must not take its leadership position for granted or become complacent as the world continues to make major technological advances. If research can validate new processes to increase the safety or decrease the volume and radioactive life of used fuel produced by an expanding nuclear fleet, it would be a significant achievement for the nation and for the world.

Moltex's research has the potential to usher in advancements in Canada's waste management practices while increasing energy security by avoiding the need to import or mine new fuel. Being one of the few companies whose IP resides exclusively in Canada, its success could bring substantial social and economic advantages to Canada, whether the technology is adopted at home or abroad.

Providing financial support for Moltex's ongoing research into used fuel recycling could greatly benefit Canada and the broader nuclear industry. The next phase of work Moltex has planned, which focuses on validating its core technical process with used CANDU fuel at the Chalk River laboratories, represents a crucial proof-point in demonstrating the potential commercial viability and advantages of this technology.

Sincerely,



John Gorman
President and Chief Executive Officer
Canadian Nuclear Association



October 16, 2023

The Honourable Francois-Philippe Champagne, Minister of Innovation, Science, and Industry
The Honourable Jonathan Wilkinson, Minister of Energy and Natural Resources
Ottawa, ON
Canada

Dear Minister Champagne, Minister Wilkinson,

The nuclear industry welcomes the federal government's support for nuclear energy as an essential element in achieving a net-zero carbon future, bolstering Canada's climate and technology leadership, maintaining affordability, and creating high-quality, well-paid jobs. This commitment underscores the critical role of nuclear power in reducing fossil fuel dependence, enhancing energy security, and ensuring a just transition to a low-carbon economy.

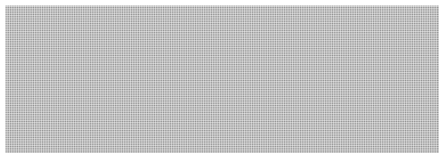
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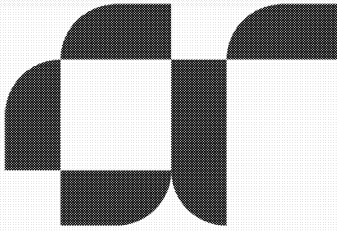
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Sincerely,



President & CEO

NB Power



The Honourable Francois-Philippe Champagne,
Minister of Innovation, Science, and Industry

Classification

The Honourable Jonathan Wilkinson,
Minister of Energy and Natural Resources
Ottawa, ON
Canada

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Dear Minister Champagne, Minister Wilkinson,

October 19, 2023

Candu Energy Inc.
2251 Speakman Drive
Mississauga
ON L5K 1B2
Canada
Tel: +1 905-823-9040

atkinsrealis.com

The nuclear industry welcomes the federal government's support for nuclear energy as an essential element in achieving a net-zero carbon future, bolstering Canada's climate and technology leadership, maintaining affordability, and creating high-quality, well-paid jobs. This commitment underscores the critical role of nuclear power in reducing fossil fuel dependence, enhancing energy security, and ensuring a just transition to a low-carbon economy.

As Canada embraces the benefits of nuclear energy, it must also shoulder the responsibility of efficiently managing nuclear waste, which includes ensuring that it has explored the best available technologies to minimize the impact on future generations.

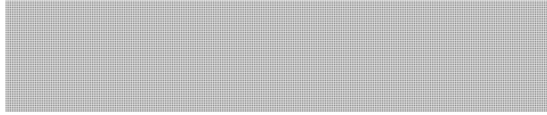
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Providing financial support for Moltex's ongoing research into used fuel recycling could greatly benefit Canada and the broader nuclear industry. The next phase of work Moltex has planned, which focuses on validating its core technical process with used CANDU fuel at the

Chalk River laboratories, represents a crucial proof-point in demonstrating the potential commercial viability and advantages of this technology.

Sincerely,



Gary Rose

Executive Vice-President, Nuclear – Canada, AtkinsRéalis and
President & CEO, Candu Energy

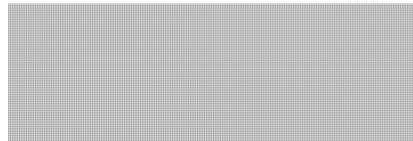
AtkinsRéalis

Candu Energy Inc.

 Tel /  Cell

2251 Speakman Drive

Mississauga, Ontario, L5K 1B2, Canada



Julianne den Decker

Senior Vice-President, Major Projects

AtkinsRéalis

Candu Energy Inc.

 Tel /  Cell

2251 Speakman Drive

Mississauga, Ontario, L5K 1B2, Canada



October 24, 2023

The Honourable Francois-Philippe Champagne, Minister of Innovation, Science, and Industry
The Honourable Jonathan Wilkinson, Minister of Energy and Natural Resources
Ottawa, ON
Canada

Dear Minister Champagne, Minister Wilkinson,

The nuclear industry welcomes the federal government's support for nuclear energy as an essential element in achieving a net-zero carbon future, bolstering Canada's climate and technology leadership, maintaining affordability, and creating high-quality, well-paid jobs. This commitment underscores the critical role of nuclear power in reducing fossil fuel dependence, enhancing energy security, and ensuring a just transition to a low-carbon economy.

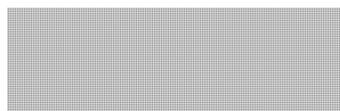
As Canada embraces the benefits of nuclear energy, it must also shoulder the responsibility of efficiently managing nuclear waste, which includes ensuring that it has explored the best available technologies to minimize the impact on future generations.

Canada has a reputation as a global leader in this field, with a long history of safe waste management practices and a well-recognized plan for safeguarding used fuel in the future. However, it must not take its leadership position for granted or become complacent as the world continues to make major technological advances. If research can validate new processes to increase the safety or decrease the volume and radioactive life of used fuel produced by an expanding nuclear fleet, it would be a significant achievement for the nation and for the world.

Moltex's research has the potential to usher in advancements in Canada's waste management practices while increasing energy security by avoiding the need to import or mine new fuel. Being one of the few companies whose IP resides exclusively in Canada, its success could bring substantial social and economic advantages to Canada, whether the technology is adopted at home or abroad.

Providing financial support for Moltex's ongoing research into used fuel recycling could greatly benefit Canada and the broader nuclear industry. We look forward to Moltex continuing to advance this technology. Please let us know if you have any question.

Sincerely,



John MacQuarrie
President, BWXT Canada Ltd.



October 24, 2023

The Honourable Francois-Philippe Champagne, Minister of Innovation, Science, and Industry
The Honourable Jonathan Wilkinson, Minister of Energy and Natural Resources
Ottawa, ON
Canada

Dear Minister Champagne, Minister Wilkinson,

The nuclear industry welcomes the federal government's support for nuclear energy as an essential element in achieving a net-zero carbon future, bolstering Canada's climate and technology leadership, maintaining affordability, and creating high-quality, well-paid jobs. This commitment underscores the critical role of nuclear power in reducing fossil fuel dependence, enhancing energy security, and ensuring a just transition to a low-carbon economy.

As Canada embraces the benefits of nuclear energy, it must also shoulder the responsibility of efficiently managing nuclear waste, which includes ensuring that it has explored the best available technologies to minimize the impact on future generations.

Canada has a reputation as a global leader in this field, with a long history of safe waste management practices and a well-recognized plan for safeguarding used fuel in the future. However, it must not take its leadership position for granted or become complacent as the world continues to make major technological advances. If research can validate new processes to increase the safety or decrease the volume and radioactive life of used fuel produced by an expanding nuclear fleet, it would be a significant achievement for the nation and for the world.

Moltex's research, supported by capable Canadian nuclear R&D companies such as CNL and Kinectrics, has the potential to usher in advancements in Canada's waste management practices while increasing energy security by avoiding the need to import or mine new fuel. Being one of the few companies whose IP resides exclusively in Canada, its success could bring substantial social and economic advantages to Canada, whether the technology is adopted at home or abroad.

Providing financial support for Moltex's ongoing research into used fuel recycling could greatly benefit Canada and the broader nuclear industry. The next phase of work Moltex has planned, which focuses on validating its core technical process with used CANDU fuel at the Chalk River laboratories, represents a crucial proof-point in demonstrating the potential commercial viability and advantages of this technology.

Sincerely,



David Harris
President and CEO, Kinectrics Inc.



Fort Capital Partners
1010–510 Burrard Street, Vancouver, B.C. V6C 3A8

October 2, 2023

Mr. Rory O’Sullivan
Chief Executive Officer
Moltex Energy Canada Inc.
Unit 102, 75 Prince William Street
Saint John, New Brunswick E2L 2B2

Dear Rory,

We are pleased to provide this summary regarding the role of Fort Capital Partners (“FCP”) in working with Moltex Energy Canada Inc. (“MEC”) to raise growth capital to fund development of the company’s innovative small modular reactor (“SMC”) solutions.

FCP was engaged by MEC in May 2022 as a co-advisor to the Company, working with Hamilton Clark the company’s lead advisor, in a targeted \$100M Series A raise. FCP was retained to lead discussions with potential investors in Canada.

Prior to engaging with MEC, FCP had discussions with four companies pursuing the development of SMR technologies. Each was considering engaging FCP, but we elected to accept the offer to work with MEC and Hamilton Clark when we concluded that the company’s solution was the most compelling. The combination of economic and social value of the “WATSS” and “SSR-W” solutions struck us unique, and it remains our view that this will be a differentiated and valuable set of technologies when advanced to a commercial stage.

We have reached out to over 50+Canadian prospects, however the process has been undertaken in difficult and deteriorating equity markets, which has clearly impacted the terms and access to capital for companies across all sectors.

Our discussions with investors have surfaced significant interest in MEC’s novel and proprietary technologies. Interestingly, many investors that were already familiar with the potential for SMR solutions have expressed interest in MEC’s WATSS technology, with some even seeing WATSS as a compelling stand-alone solution for what is a complex, large-scale and global problem.

What has become clear through our discussions is that the fundamental requirement for “WATSS to work” has impacted investors’ willingness to fund the large Series A originally envisioned. In the more robust equity markets experienced prior to our engagement, these

risks may have been more acceptable to investors. However, given the realities of the current market risk-return appetite, we agree with MEC and Hamilton Clark that increasing the technology readiness of WATSS will be a critical step to accessing the substantial funding required to further refine and commercialize the company's WATSS and SSR-W solutions.

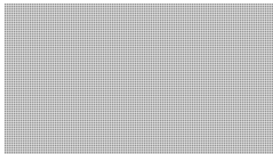
While we are restricted in the ability to attribute any comments to specific prospective investors, we offer the following observations:

- There is significant interest from strategics, including globally relevant producers that want to participate in the near term to support MEC. Advancing WATSS viability will be particularly important to these investors:
- We view the potential for investment from Canadian strategic investors to be very real, at significant levels, when the pathway is clearer.
 - One well-known Canadian industrial has expressed interest in a significant investment (\$50M), as soon as next year if certain milestones can be achieved;
 - Another very large Canadian strategic, which would be a customer, is prepared to support the company today, but is not prepared to lead a round.
- Dual risk technology is a consideration for all investors, but particularly for financial sponsors that are already concerned about the timelines for commercialization in regulated industries:
 - With this, advancing the TRL levels of WATSS (in particular) and SSR-W will open the company up to larger financial (and strategic) investors;
 - Clarity around interdependent timelines and regulatory support would in our opinion bring material interest.
- Several financial investors that have expressed interest in MEC are themselves struggling to arrange limited partnership investment (their capital to invest) – we expect many of these investors to be interested in MEC when they have funding.
- Other large (Canadian) financial investors are reviewing their internal investment mandates, given a balance of positive and negative realities that drives from their interest in supporting the energy transition but needing to deploy capital at scale:
 - Interest in MEC from these parties are expected to come at a later stage (the early TRL levels that might have been supportable in recent years are being rethought) as these larger funds are refocusing and telling us that are looking to make very large dollar investments in later-than-MEC stage companies;
 - These investors will be keen to review a more advanced MEC, for investment in the equity of the company but also to be advanced as a potential funder of plant development.

On balance, the support and interest in MEC and its potential is robust. However, given the market conditions, the company has had to significantly reconsider its timeline and order of operations in development (for both WATSS and SSR-W), and we support the recent decisions to target bridge capital to advance the technology issues set out above.

Importantly for us, we have become only more confident in our assessment that MEC's technologies are differentiated, merited, and will be funded as the readiness of WATSS is evidenced. We look forward to continuing to work towards the funding that will support the success of the company.

Sincerely,



Dave Bustos

Partner, Investment Banking
Fort Capital Partners

HAMILTONCLARK

HAMILTON CLARK SUSTAINABLE CAPITAL, INC.
1701 PENNSYLVANIA AVENUE NW, SUITE 200
WASHINGTON, DC 20006
TEL 202 461 2252
FAX 202 461 2254

October 2, 2023

Mr. Rory O'Sullivan
Chief Executive officer
Moltex Energy Canada Inc.
75 Prince William Street
Unit 302
Saint John, New Brunswick E2L 2B2

Dear Rory:

To date we have contacted approximately 100 potential institutional financial and strategic investors for Moltex Energy Canada Inc. ("MEC"). The overwhelming interest in MEC's novel and proprietary technologies for recycling spent nuclear fuel in order to power its molten salt, small modular reactors has been tempered by an overall concern relative to the level of technology readiness principally of the spent fuel recycling ("WATSS"). In our opinion, increasing the technology readiness of WATSS will unlock substantial funding.

Specifically, comments of the 10 leading investors, who together could easily finance MEC's needs over the next five years, are summarized below.

VC subsidiary of large US utility	Prepared to co-lead the investment once a financial lead has been identified and a term sheet agreed (\$5-\$7 million circled). Also seeking a commercial agreement focused initially on WATSS validation.
VC subsidiary of major oil & gas company	Keen to participate but we do not lead deals. Get a large utility-focused fund to lead, and we would be very interested.
VC subsidiary of large tech corporate investor	Interested but need to fully brief senior management which will not happen until late October. We are prepared to support multiple reactor developers, and potentially enter into discrete PPAs, but no funds will be committed prior to management signoff. Moltex is on the short list of companies on our "radar screen."
VC composed of leading electric utilities	<ul style="list-style-type: none"> • Dual tech risk – We think the reactor technology (especially in relation to corrosion mitigation) is innovative and the WATSS technology is exciting. While the system is (understandably) being designed to take advantage of the integrated benefits of the two technologies, this pairing of two FOAK technologies creates exponential technical risk. • Timelines – While we appreciate the uniqueness of the paired technologies, the 2035 timeline for the FOAK deployment is likely to be several years behind alternative reactors. • Impact Assessment – The added risk (at least in terms of timeline) for the Impact Assessment is difficult to handicap. It seems like NB Power's Moltex deployment could be one of the first projects to go

	<p>through that assessment. One of the key drivers of interest in a Canadian-focused opportunity is the track record of the CNSC. Having a separate process as part of permitting may negate that advantage. We appreciate that the assessment will occur in parallel, but it is hard to have confidence in that process at this stage.</p> <ul style="list-style-type: none"> • Project equity / financing— While this is certainly doable, Moltex is uniquely challenged by the need to raise capital for the two independent but interconnected assets. • US spent fuel regulations and market - While we think WATTS is an incredibly interesting reprocessing technology, the regulatory and policy hurdles in the US are substantial and a business model for US utilities (for stand-alone reprocessing) would have to be created.
Large energy Private Equity (PE) investor	We have concluded (for now) that the salt-cooled reactors are at a lower technical readiness level than HTGR and perhaps even metal-cooled reactors. Despite salt-cooled reactors having long-term operational advantages (~ambient pressure, higher fuel burn-up), we believe there is a longer road to licensing. That said, we will revisit this interim conclusion in the next 6-12 months and assess with updated market information.
Leading energy Venture Capital (VC) and PE investor	Too early for us but solve technical issues with WATSS and we will be a lot more interested.
Large sustainability family office	We were able to discuss as a partnership and have decided to not move forward with additional due diligence at this time. Without getting into too much detail, we do think you all have an interesting platform for addressing existing nuclear waste and providing a path forward for fission with less HLW generated. The partnership with SNC Lavalin is also helpful from a project de-risking perspective. However, we still struggle with the required changes in regulatory framework, public perception, and up-front capital required to demonstrate the first reactor and attract licensors.
Leading nuclear fission investor	Really like the Company but trying to close our next fund, that would be the investor in Moltex. Come back in six months.
Leading energy PE firm	Waiting on the close of our next fund before we can commit.

s.19(1)

<p>Leading sustainability family office</p>	<p>We actually had a formal Investment Committee discussion at the end of last week after spending a good deal of time working on the data room/industry research. At this point, our team is fundamentally excited by the idea and believe in the broader thesis for nuclear (and subsequently nuclear spent fuel services) over the next decade. However, the feedback from the formal IC was that the current business is likely just too early for us.</p>
---	--


Sincerely,



John J. McKenna
Managing Director

FW: Moltex - Due Diligence

April 26, 2024 3:42 PM

Subject	FW: Moltex - Due Diligence
From	Prosser, Kathleen
To	Yuen, Pui Wai; Wilkinson, David
Sent	October 18, 2023 11:59 AM
Attachments	 SMR NRCan market a...

UNCLASSIFIED - NON CLASSIFIÉ

As requested, sending over all the correspondences..

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Monday, October 16, 2023 10:38 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith
 <Griffith.Hawkins@NRCan-RNCan.gc.ca>
Subject: FW: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Fyi – previous technical assessment attached + ISED questions below

From: Poupore, Jessica
Sent: Monday, October 16, 2023 8:55 AM
To: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la)
 <brianna.rector@nrcan-rncan.gc.ca>
Subject: FW: Moltex - Due Diligence

fyi

From: Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>
Sent: Monday, October 16, 2023 8:34 AM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE)
 <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE)

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s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

<Gabriel.DiPalma@ISED-ISDE.GC.CA>

Subject: RE: Moltex - Due Diligence

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Hello Jessica,

Thank you for your response.

Attached is the market and technical due diligence report that was completed by NRCan back in 2019.

Have a nice day,

Cindy Lin
(she, her | elle, la)

Sr Investment Analyst, Strategic Innovation Fund
Innovation, Science and Economic Development Canada / Government of Canada
cindy.lin2@ised-isde.gc.ca / Tel: 343-597-4537 / TTY: 1-866-694-8389

Analyste princ. d'investissements, Fonds strategique pour l'innovation
Innovation, Sciences et Développement économique Canada / Gouvernement du Canada
cindy.lin2@ised-isde.gc.ca / Tél: 343-597-4537 / ATS : 1-866-694-8389

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: October 15, 2023 9:35 PM
To: Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Hi Cindy,

NRCan has met with Moltex a few times over the last several weeks. [REDACTED]
[REDACTED] I don't think we'll be in a position to answer your questions early this week, but we appreciate the urgency and will do our best. Thank you for the questions as this will help us focus the analysis.

I believe there was a technical review done a few years ago as part of the SIF application / funding agreement process. I wasn't able to find a copy in NRCan's records – could you please send me the original technical review? Daniel Brady was involved in the review at the time.

Many thanks,
Jessica

Jessica Poupore
(she/her/elle)

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s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire

Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada
jessica.poupore@nrcan-rncan.gc.ca Mobile: 613-292-8981

From: Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>

Sent: Sunday, October 15, 2023 9:26 PM

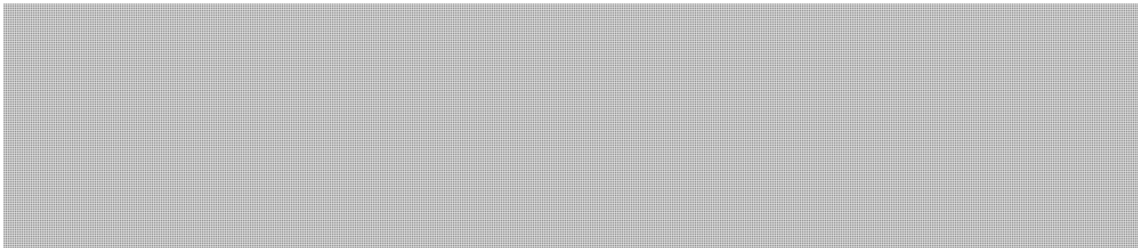


To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>

Subject: FW: Moltex - Due Diligence

Hi Jessica,

In James, absence, I wanted to follow-up on Dan's e-mail below. Dan has indicated that the report will likely not be ready till the end of next week. We would like to brief up early next week, so I was wondering if you would be able to provide your opinion on the following points prior to completing the report:

1. 
2. 
3. 

If it's easier to chat over MS Teams, please let me know. I will be happy to set one up.

Thank you for your help,

Cindy Lin
(she, her | elle, la)

Sr Investment Analyst, Strategic Innovation Fund
Innovation, Science and Economic Development Canada / Government of Canada
cindy.lin2@ised-isde.gc.ca / Tel: 343-597-4537 / TTY: 1-866-694-8389

Analyste princ. d'investissements, Fonds stratégique pour l'innovation
Innovation, Sciences et Développement économique Canada / Gouvernement du Canada
cindy.lin2@ised-isde.gc.ca / Tél: 343-597-4537 / ATS : 1-866-694-8389

----- Original message -----

From: "Brady, Daniel" <daniel.brady@NRCan-RNCan.gc.ca>

Date: 2023-10-13 4:41 p.m. (GMT-05:00)

To: "Campbell2, James (ISED/ISDE)" <James.Campbell2@ised-isde.gc.ca>, "Poupore, Jessica" <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: "Clarke, Pamela (ISED/ISDE)" <Pamela.Clarke@ised-isde.gc.ca>, "Lin2, Cindy (she, her | elle, la) (ISED/ISDE)" <Cindy.Lin2@ised-isde.gc.ca>, "Di Palma, Gabriel (he, him | il, le) (ISED/ISDE)"

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s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

<Gabriel.DiPalma@ISED-ISDE.GC.CA>

Subject: RE: Moltex - Due Diligence

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Hi James

We are working to have a report done for later next week.

I am away next week, but Jessica (on this email) is leading the review. Please feel free to reach out to her.

dan

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>

Sent: Friday, October 13, 2023 10:30 AM

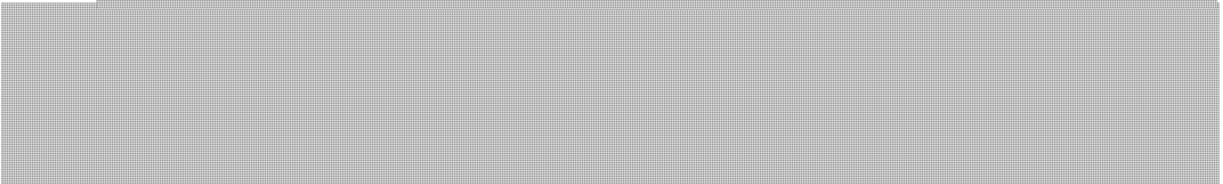
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>

Subject: Moltex - Due Diligence

Good morning Daniel,

Hope you are doing well. It has been a while since we have been in touch on the SMR files and I understand that your work in that area is continuing, in particular with regards to due diligence on Moltex



If that is easier via a short MS Teams meeting I am happy to arrange it. I can be available any time today for a call if that works for you.

Thanks very much!

James Campbell

Investment Analyst

Innovation, Science and Economic Development Canada / Government of Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

Analyste des investissements

Innovation, Sciences et Développement économique Canada/ Gouvernement du Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

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Small Modular Reactors

Initial Assessment Request

Prepared for: Strategic Innovation Fund

**Prepared by: Natural Resources Canada (Nuclear Energy Division)
with input from Atomic Energy of Canada Limited.**

Date: April 15, 2019

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	5
2	DESCRIPTION OF SMALL MODULAR REACTORS	10
2.1	WHAT ARE SMALL MODULAR REACTORS (SMRs)?	10
2.2	MARKET ANALYSIS	12
2.2.1	<i>Global Context</i>	12
2.2.2	<i>International Market Potential</i>	12
2.2.3	<i>Domestic Market Potential</i>	13
2.2.4	<i>Policy and Market Challenges addressed by SMRs</i>	16
2.2.5	<i>Competitiveness of SMRs</i>	18
2.2.6	<i>Canadian Nuclear Competencies</i>	22
2.3	SIX NECESSARY CONDITIONS FOR SUCCESS	23
2.4	POTENTIAL BENEFITS TO CANADA	24
2.5	A CLOSER LOOK AT SUPPLY CHAIN CAPACITIES AND OPPORTUNITIES	26
2.6	THE LIKELIHOOD OF THE BENEFITS TO CANADA MATERIALIZING	27
3	SMR TECHNOLOGIES	28
3.1	HEAT PIPE REACTOR	28
3.2	WATER-COOLED REACTOR	29
3.3	MOLTEN SALT REACTOR	30
3.4	HIGH TEMPERATURE GAS-COOLED REACTORS	31
3.5	SODIUM-COOLED FAST REACTOR	31
3.6	ALTERNATIVE FUEL CYCLES	32
3.6.1	<i>Fast Reactors vs. Thermal Reactors</i>	32
3.6.2	<i>Fuel Recycling and Advanced Fuel Cycles</i>	32
3.7	WHAT ABOUT FUSION?	33
4	REGULATORY PROCESS	33
4.1	THE ROLE OF THE CNSC	33
4.2	THE VENDOR DESIGN REVIEW (VDR) PROCESS	34
4.3	THE LICENSING PROCESS	35
4.4	LICENSING TIMELINE FOR A FIRST-OF-A-KIND REACTOR	35
4.5	LICENSING TIMELINE FOR AN NTH-OF-A-KIND REACTOR	37
5	37
5.1	48
5.2	57
5.3	TERRESTRIAL ENERGY	67
5.4	MOLTEX	77
5.5	85
6	SUMMARY FINDINGS	91
	APPENDIX A	95
	APPENDIX B	96
	APPENDIX C	100
	APPENDIX D	104
	APPENDIX E	108

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APPENDIX F	110
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List of Figures

Figure 1: Summary of current readiness and progress from SIF investments.....	9
Figure 2a: What is a Small Modular Reactor?.....	10
Figure 3: SMRs could unlock new applications for nuclear	11
Figure 4: Three distinct markets for SMRs	14
Figure 5: Canadian Domestic SMR Market Potential.....	15
Figure 6 Comparison of SMR LCOE to Benchmarks in 2030- On Grid	20
Figure 7: Cost advantage of SMRs over diesel	21
Figure 8:	26
Figure 9:	35
Figure 10:	36
Figure 11:	37
Figure 12:	38
Figure 13:	40
Figure 14:	45
Figure A-1: Electricity Rates and Subsidy in Select Canadian Jurisdictions.....	95
Figure A-2: Age of Diesel Generators in Nunavut.....	95
Figure B-1: Capital Cost Range.....	96
Figure B-2: Cost estimation in large complex projects	97
Figure B-4: Capital cost decline potential (\$/KWe).....	99
Figure F-1: Lifecycle emissions by technology	110

List of Tables

Table 1: Estimates of the size and value of the international SMR market.....	13
Table 2: Value of individual segments of the international SMR market	13
Table 3: Market challenges addressed by SMRs.....	16
Table 4: Nuclear Supply Chain Activities with Canadian Company Examples	26
Table 5: Corrected Applicant Product Timeline	39
Table 6: Key Enabling Conditions by Applicant.....	41
Table 7: Market Assessment.....	43
Table 8: Funding Status and Requirements	45
Table 9.	48
Table 10.	57
Table 11. Terrestrial Energy key information	67
Table 12. Moltex key information	77
Table 14.	85
Table C-1. Ease of Integration (On-Grid)	100
Table C-2. Ease of Integration (Mining/ Remote Communities).....	102
Table D-1. R&D Requirements by Technology.....	104
Table E-1. R&D Requirements by Technology	108

1 EXECUTIVE SUMMARY

Small Modular Reactors (SMRs) are an exciting area of nuclear energy innovation, garnering worldwide interest. SMRs are small nuclear reactors, both physically and in terms of power output, that could provide non-emitting energy for both on- and off-grid applications. SMRs could be a tool to reduce global emissions as well as a potential source of good jobs, timely innovation, and new economic opportunities across Canada. Canada has a long history in nuclear energy, and SMRs could represent an opportunity for us to be a leader in the nuclear energy industry of the future.

These reasons led Natural Resources Canada to convene the SMR Roadmap process to engage experts and stakeholders to better understand priorities and challenges related to the possible development and deployment of SMRs in Canada and around the world. The report of Canada's SMR Roadmap was released in November 2018 and can be found at: www.smrroadmap.ca

Among their many potential benefits, SMRs are projected to have lower capital costs than large scale nuclear power plants, due in part to modular construction of SMRs. By comparison, large scale conventional nuclear power plants have historically been almost entirely publicly financed.



Page 852

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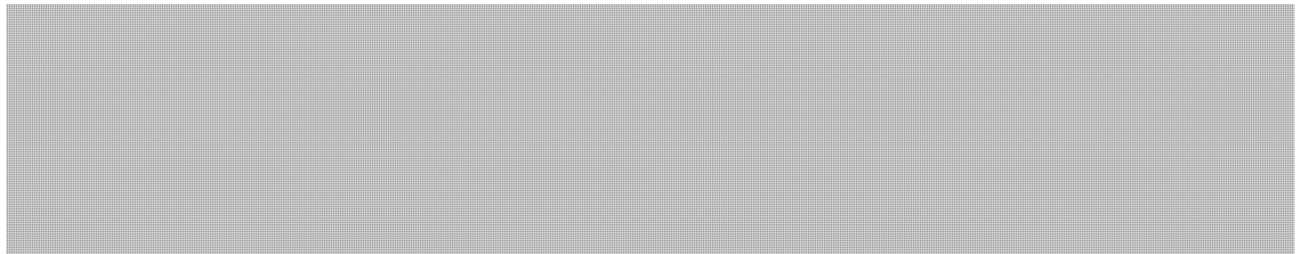
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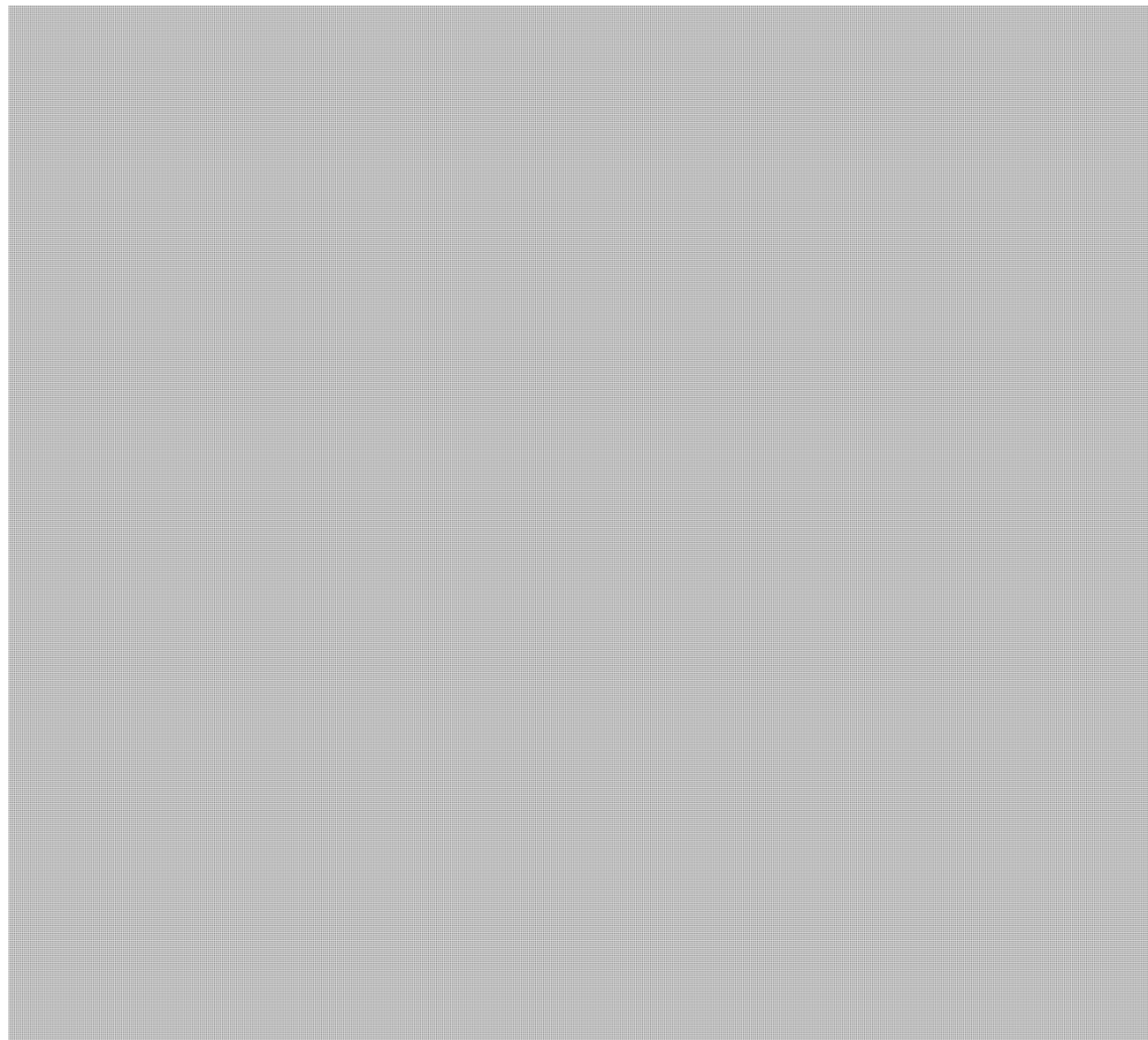
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Moltex – Stable Salt Reactor

Moltex is developing a stable salt reactor, an innovative technology for on-grid applications, which would recycle used CANDU fuel generated by existing nuclear power plants in Canada.



Pages 854 to / à 855
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sont retenues en vertu des articles

20(1)(c), 21(1)(a), 20(1)(b), 21(1)(b)

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de la Loi sur l'accès à l'information

2 DESCRIPTION OF SMALL MODULAR REACTORS

2.1 What are Small Modular Reactors (SMRs)?

Small Modular Reactors (SMRs) are an innovative nuclear reactor technology—characteristically different from existing nuclear power. They are smaller and simpler, factory-produced nuclear reactors designed to be easily transported, possibly assembled on site, operated and replaced, and sized to the needs of communities and industries—even in remote locations (Figure 1).

Figure 2a: What is a Small Modular Reactor?

Small

- Small in size and power output relative to conventional nuclear power reactors
- Some SMR designs are small enough to fit in a gymnasium, others are larger but still smaller than today's reactors

Modular

- Manufactured in factories and transported to site for lower capital costs as well as ease of installation, operation, and removal

Reactor

- SMRs use nuclear power, a non-emitting and efficient way to generate electricity
- Some SMR designs also provide district heating, heat for year-round greenhouses, desalination, and water purification
- Next generation SMR are designed for simplified ("passive") safety and proliferation resistance

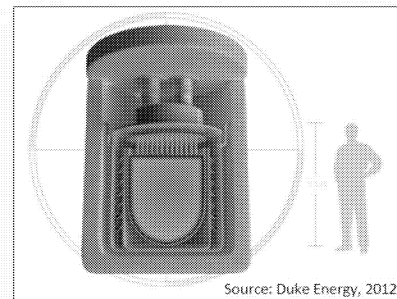
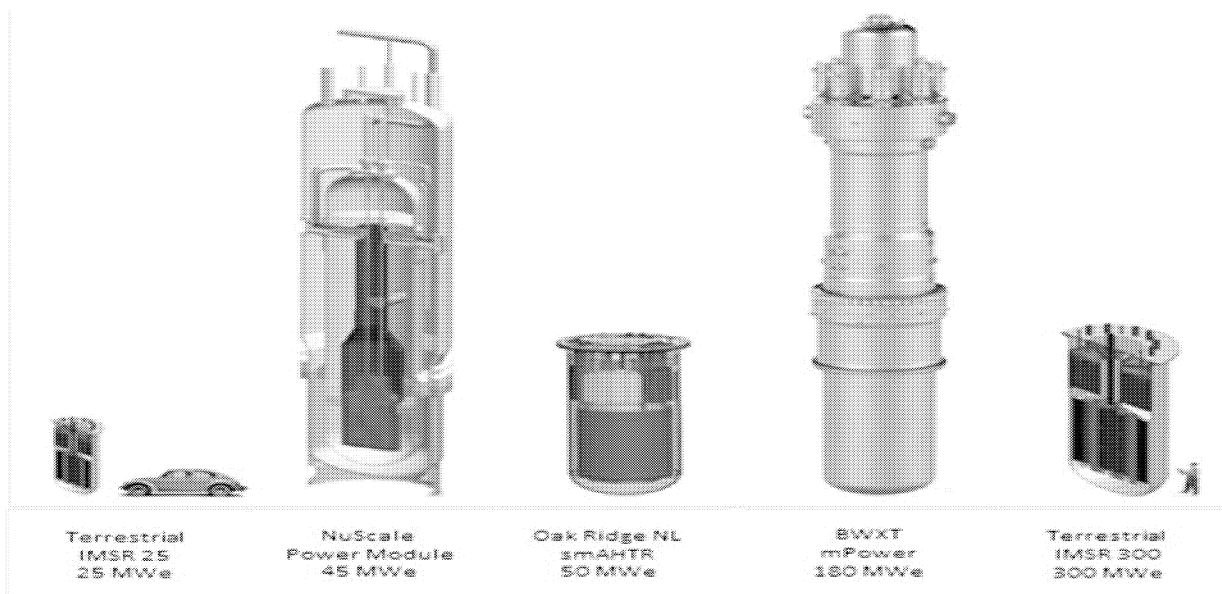


Figure 2b: SMR Scale

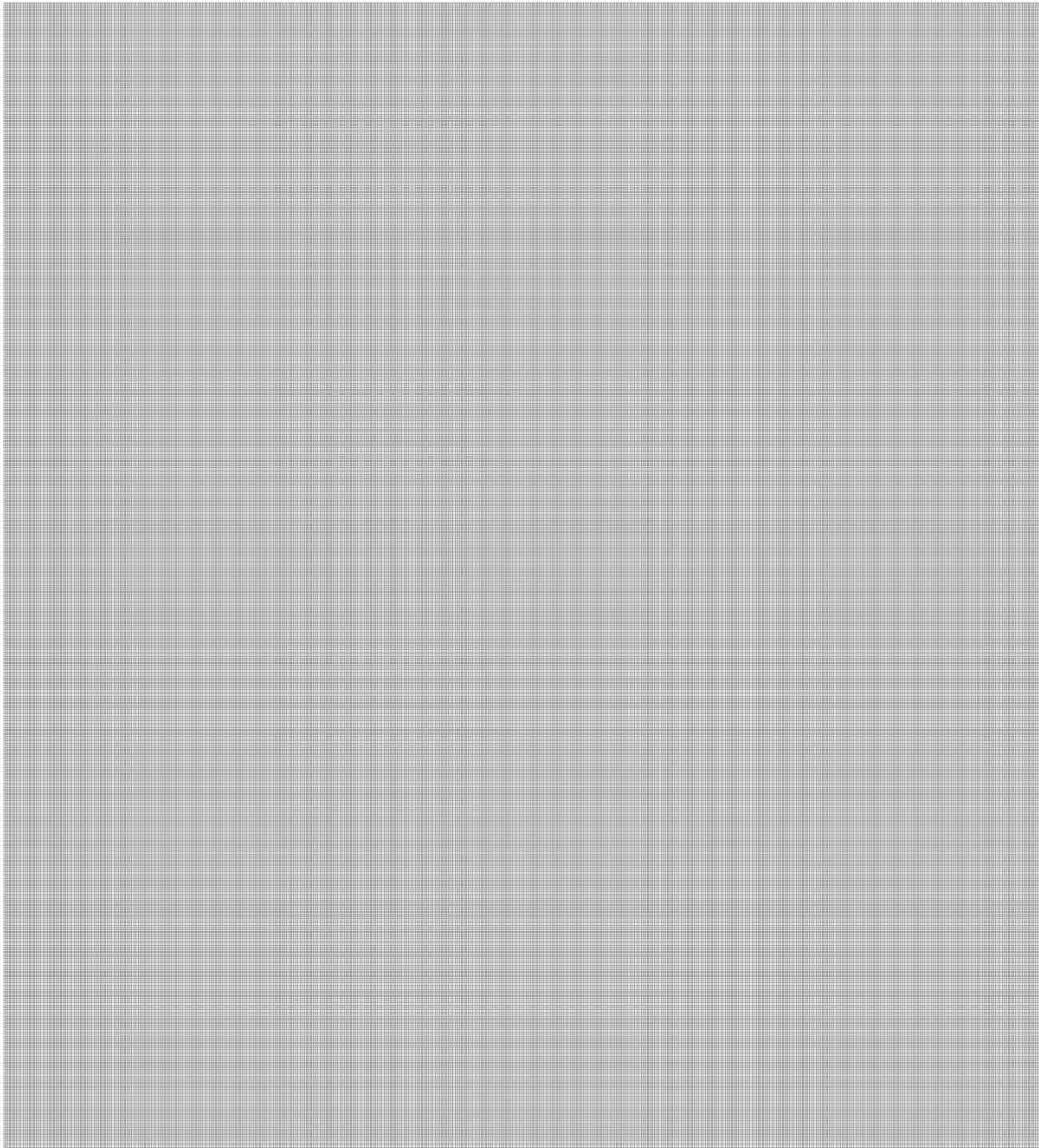


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Power is measured in units of megawatts (MW), and quoted as either thermal (th) or electrical (e). The size of SMRs ranges from 1 to 300 MWe, with the lower end of that range targeting smaller communities and off-grid mines, while the upper targets on-grid electricity generation and larger heavy industrial applications. To put this in perspective, 100 MWe is enough to power about 70 000 Canadian homes.



This section (section 2) provides background and analysis pertaining to the market opportunities, competitiveness, and required conditions for success of the eventual SMR product. Section 3 then provides background on the technologies, and section 4 a background of the CNSC licensing process.

2.2 Market Analysis

2.2.1 Global Context

The following section summarizes the current international landscape for SMRs and actions by major players in the field. SMRs are real and they are happening now. All major nuclear nations: China, Japan, France, Korea, Russia, the US, and the UK are actively funding and supporting various SMR designs.

- **China** has nearly completed its first SMR, a high-temperature gas reactor, and is designing other advanced SMRs, e.g. a molten salt reactor and a floating SMR.
- **Russia** has completed construction of a floating barge SMR (currently undergoing commissioning) to access remote locations, and continues the development of its nuclear powered ice-breakers.
- **The US** has established a program to support SMR development, providing \$CDN 755M for SMR development since 2012—including \$336M to a single developer. The US has provided this funding incrementally, with more to come. The current Administration provided a 20% increase in the US Department of Energy's (DoE) nuclear budget, and nuclear funding is generally an area that receives support from both US parties.
- **The UK** has previously announced an envelope of \$CDN 423M over five years for development of SMR technologies. In the past year, the UK has announced approximately \$150M for research and development for advanced SMR technologies, feasibility projects, advanced manufacturing and construction, and a supply chain improvement program. The UK is moving quickly to rebuild its nuclear supply chain and recently announced a "Sector Deal", whereby the government committed to fund SMRs and nuclear innovation, consider new-building financing options, and launch capacity building programs and supply chain support.

2.2.2 International Market Potential

There is a broader international context for SMR development and commercialization. For the *international* market, the total global export potential of SMRs is approximately **CDN\$150 billion** per year for 2030 to 2040 (EFWG, 2018). This includes applications for electricity generation, remote mine sites, island nations, and off-grid communities.

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2.2.3 Domestic Market Potential

Experts consider Canada to be a **promising “first market” for SMRs** in various applications. Analysis by experts and through consensus among key stakeholders through the 2018 Canadian Roadmap for Small Modular Reactors (the Roadmap) have identified three “core” markets for SMRs (Figure 4).

Figure 4: Three distinct markets for SMRs



These include:

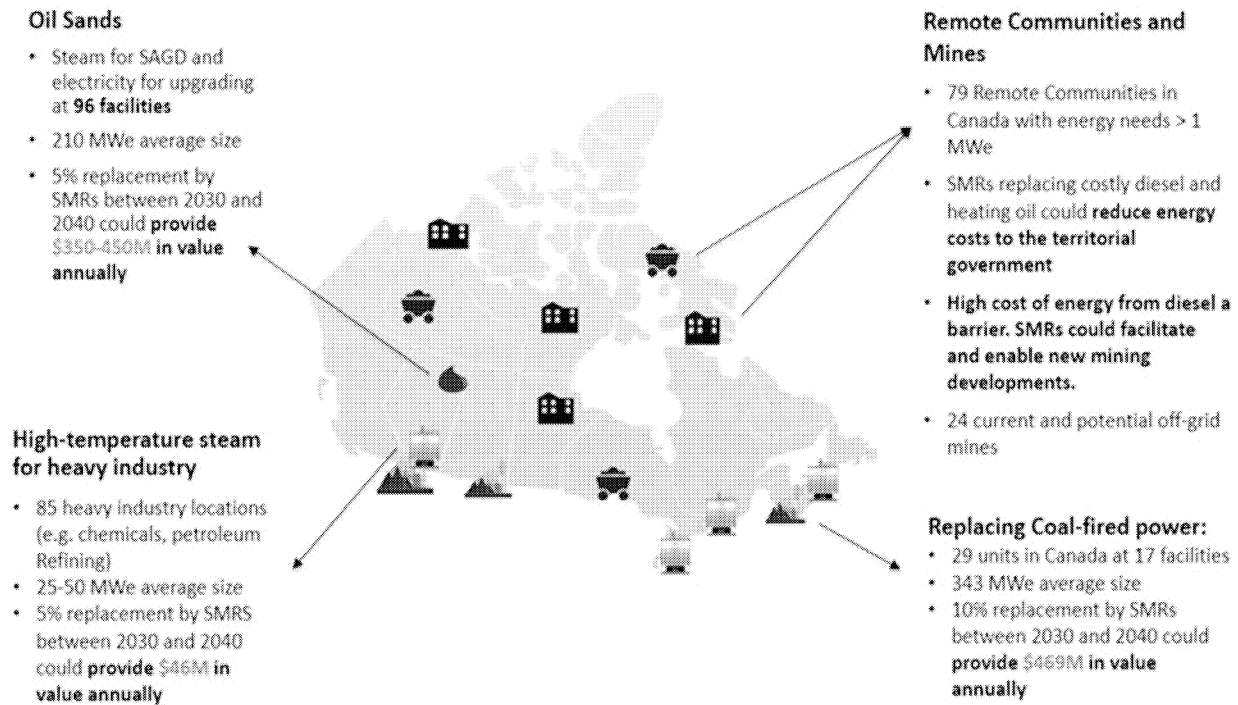
1. On-grid **power generation** to phase out coal
2. On- and off-grid **combined heat and power** for resource extraction and heavy industry (**oil sands and off-grid mines**)
3. Off-grid **remote communities** to reduce diesel dependence, with potential for district heat, local food production, desalination in remote and northern communities

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Figure 5: Canadian Domestic SMR Market Potential



Source: SMR Roadmap, 2018

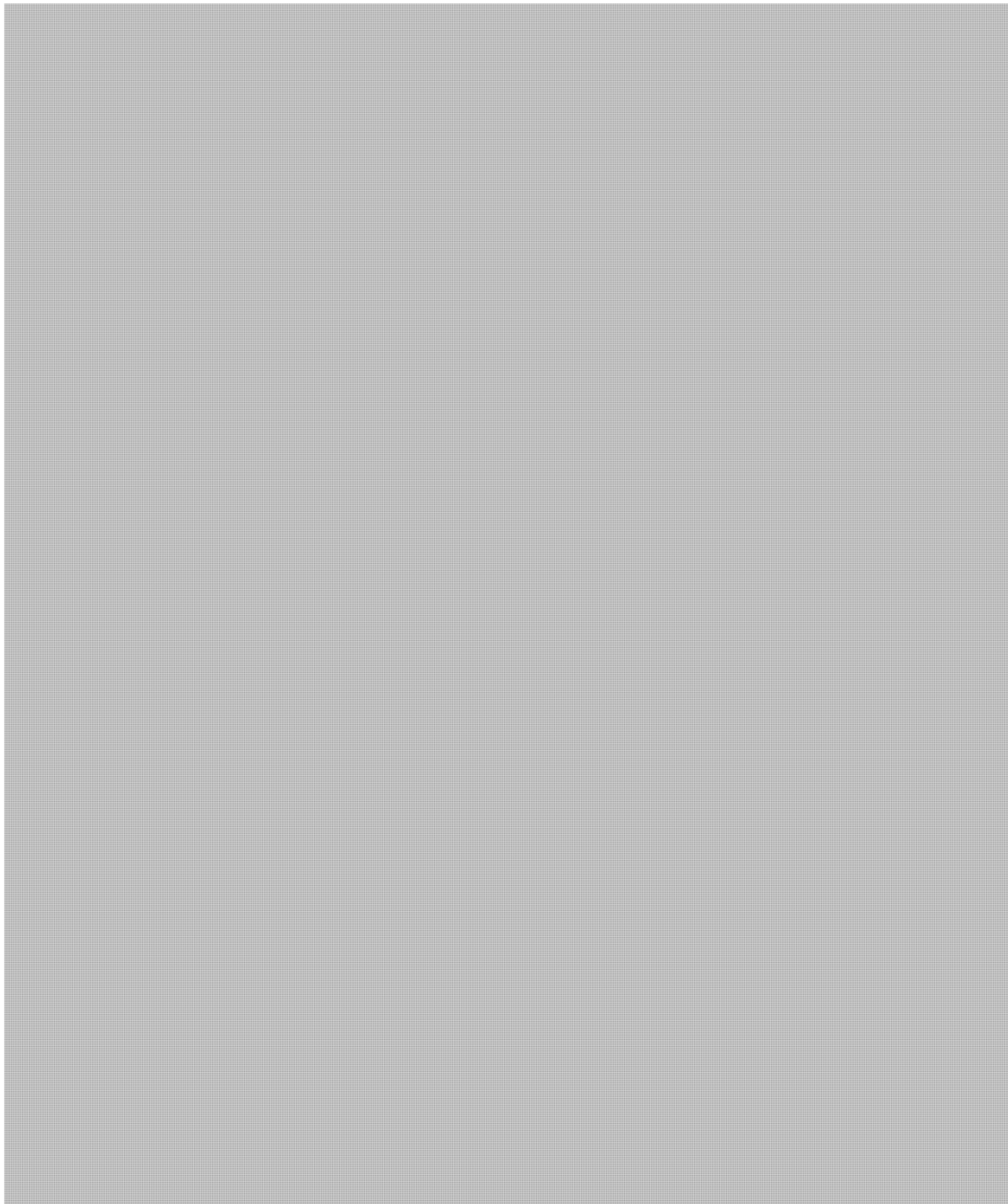
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2.2.4 Policy and Market Challenges addressed by SMRs

SMRs are a disruptive area of technological and business innovation that respond to market signals for smaller, simpler nuclear to integrate with increasingly distributed, dynamic, and low-carbon energy



Page 863

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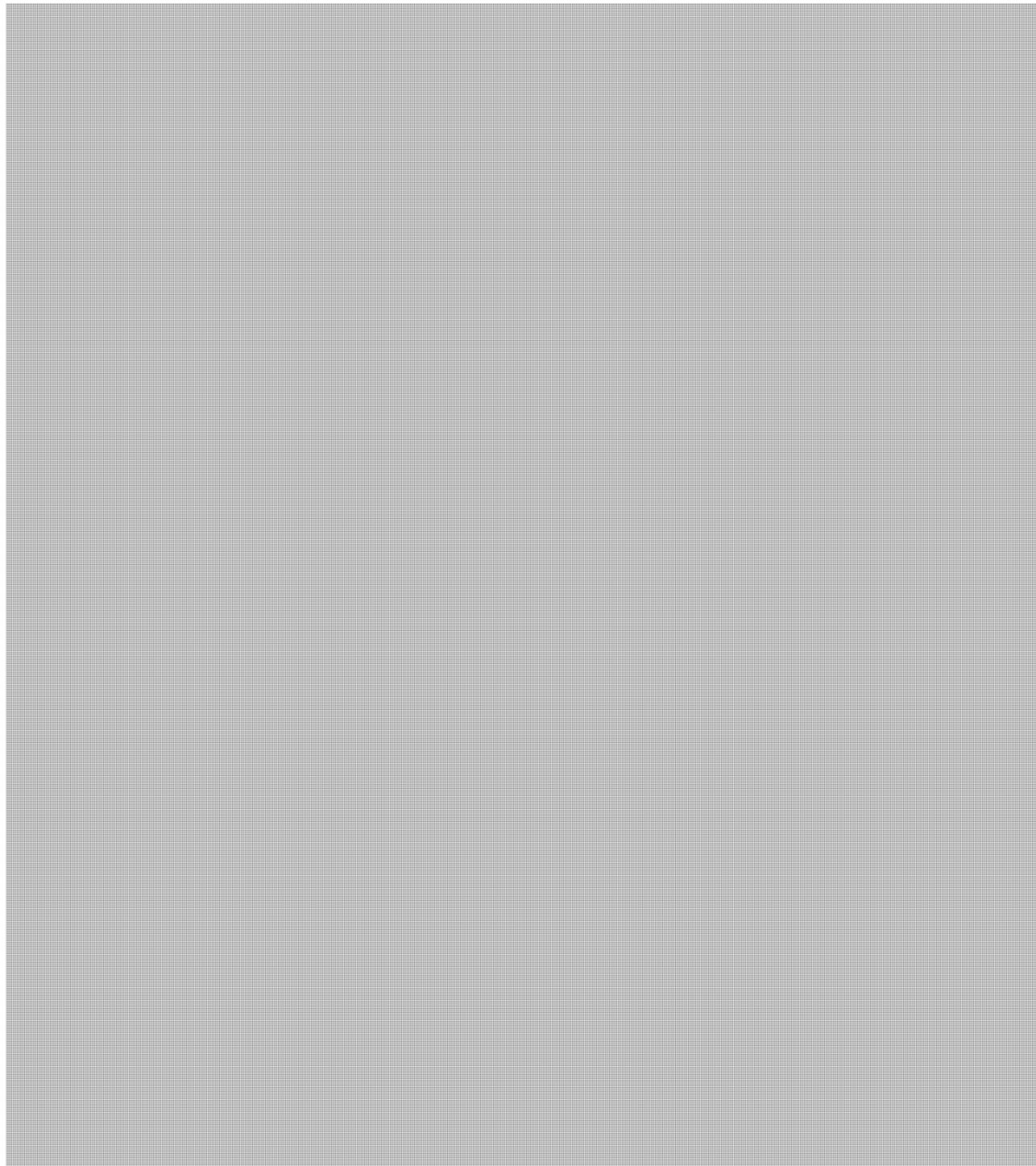
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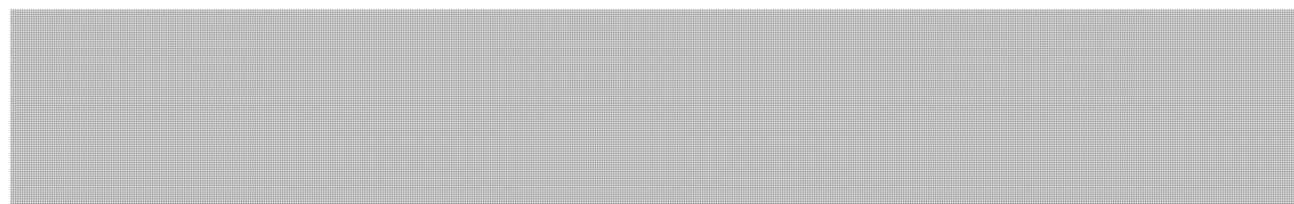
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2.2.5 Competitiveness of SMRs



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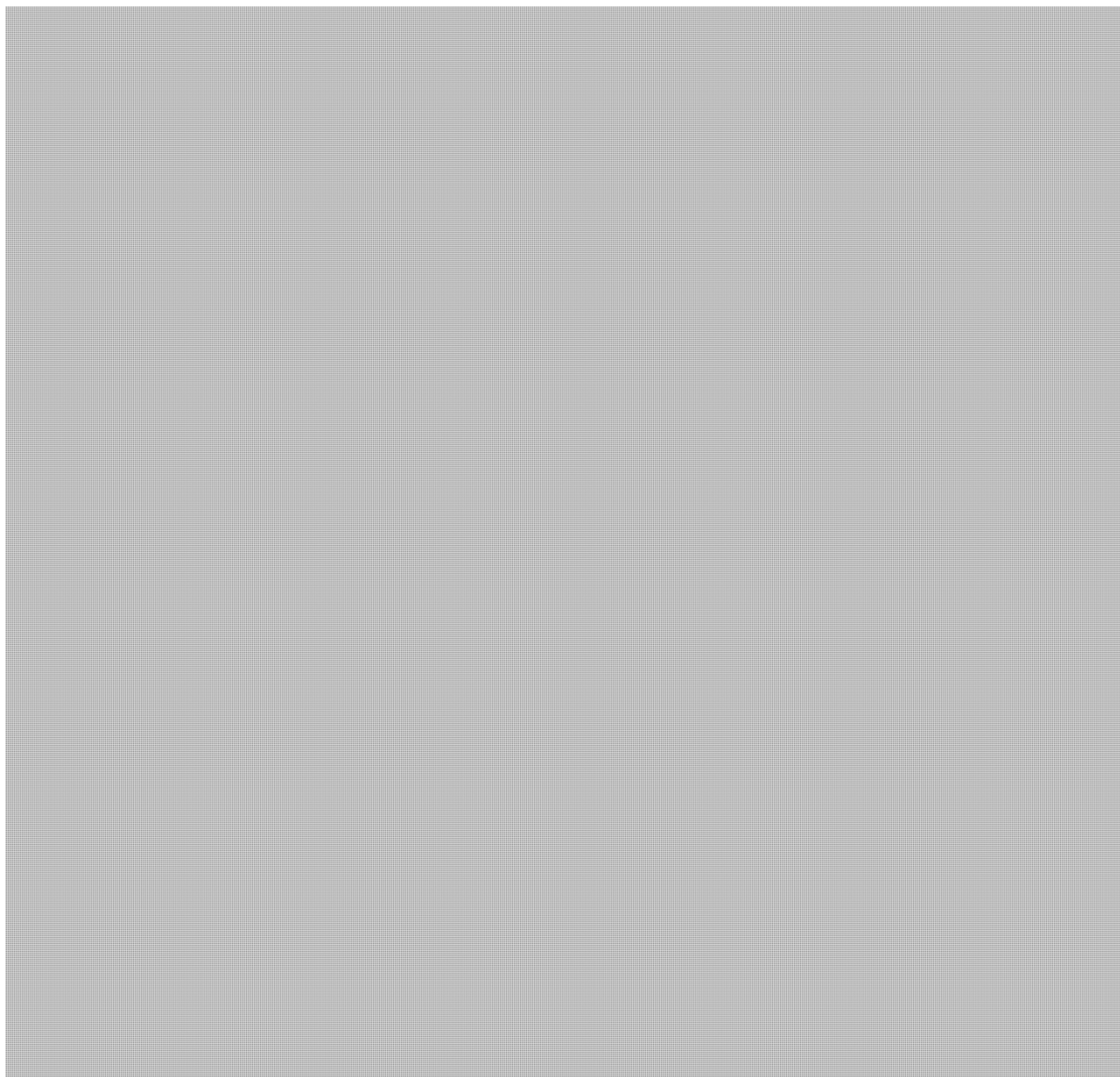
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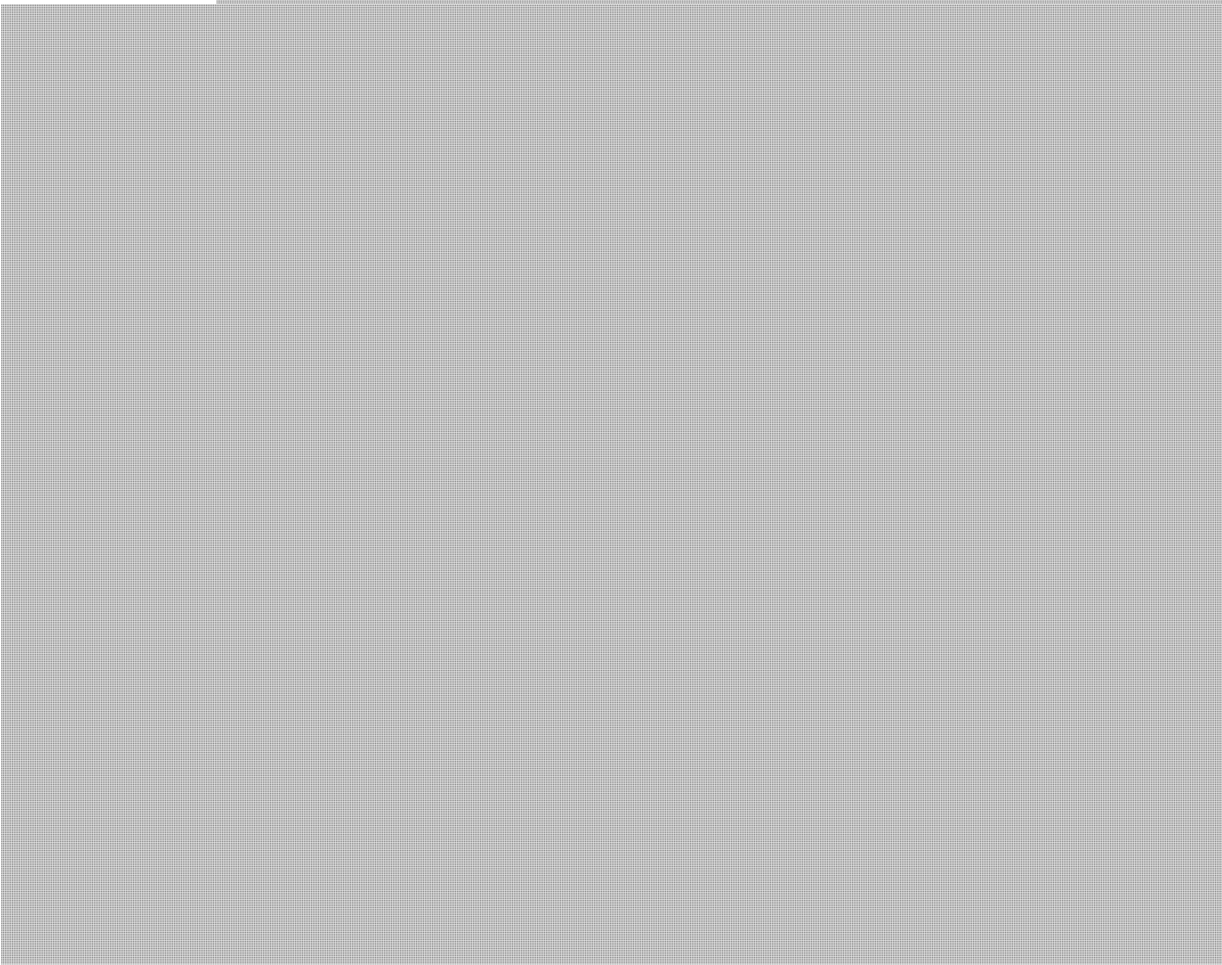
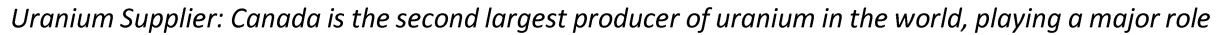

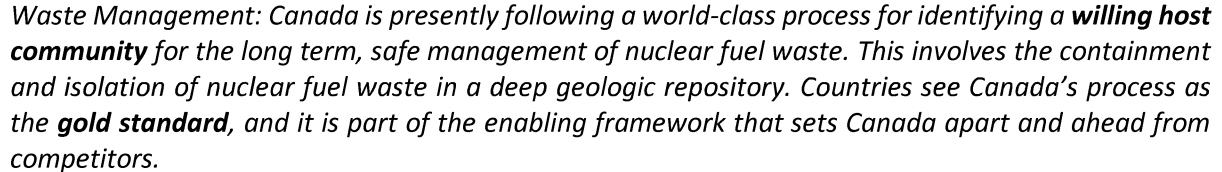
More details on this analysis are presented in Appendix B.



SMRs could provide important qualitative advantages over



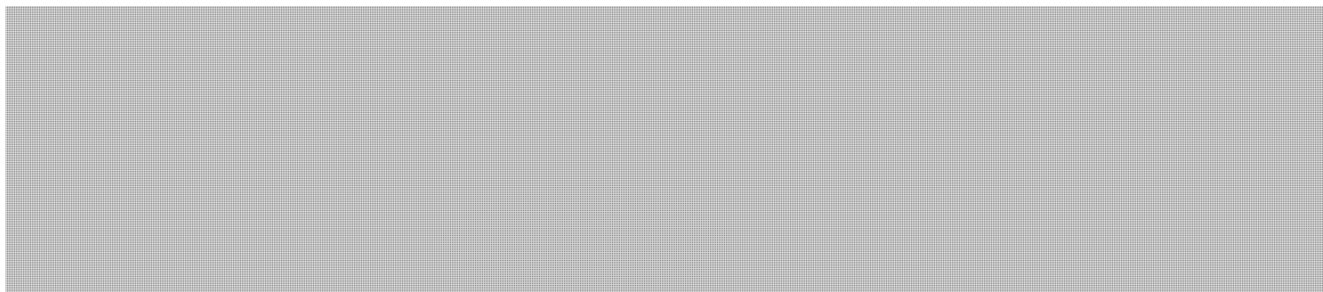
2.2.6 Canadian Nuclear Competencies

-  \$26 Billion is being invested in Ontario to refurbish Darlington and Bruce Nuclear facilities. 
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2.3 Six Necessary conditions for success

This section will summarize the key necessary conditions for success for an SMR demonstration and eventual successful commercialization.



2.4 Potential benefits to Canada

i) IP and Innovation:

Generally, the water-cooled have

Molten salt reactors and Lead fast reactors

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ii) Jobs:

iii) Economic Activity:

iv) GHGs:

The International Energy Agency (IEA) and Intergovernmental Panel on Climate Change (IPCC) shows nuclear energy as among the least carbon-intensive power sources on a life-cycle basis, comparable to renewable energy sources such as wind and solar (See figure F-1 in Appendix F; IPCC, 2014).

Accounting for approximately 15% of national electricity generation, nuclear

v) Positive Spillovers:

Given how much of the prevailing Canadian supply chain will also be engaged in and SMR

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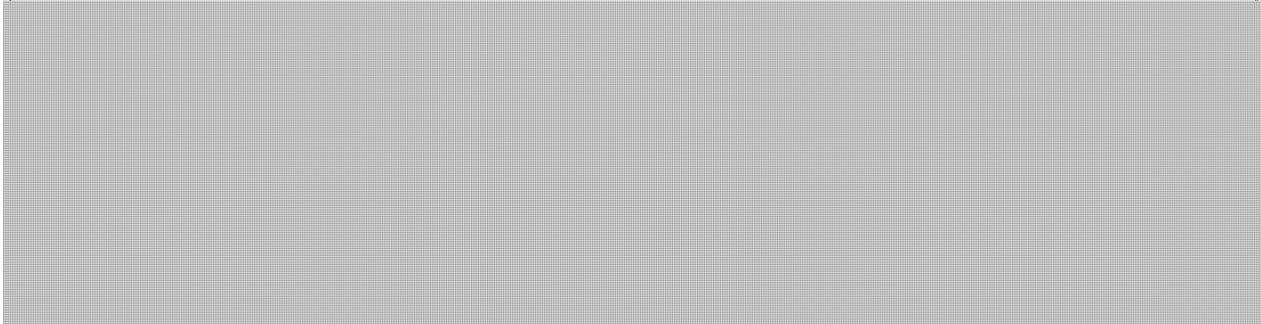
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2.5 A closer look at supply chain capacities and opportunities



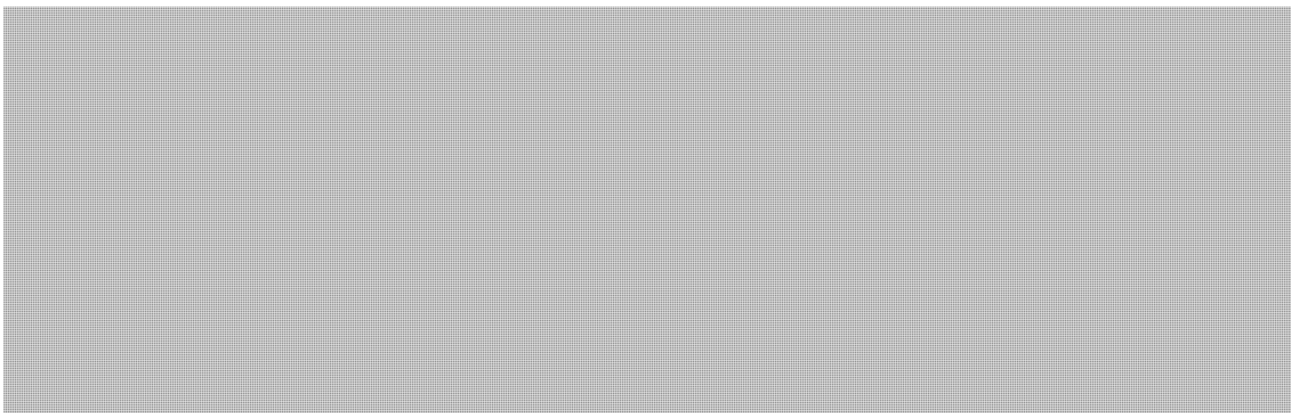
Table 4: Nuclear Supply Chain Activities with Canadian Company Examples

#	Activity	Company
1	Mining and Milling	Cameco (Saskatchewan)
2	Refining and Conversion	Cameco (Blind River Ontario)
3	Enrichment	Not presently conducted in Canada
4	Fuel Fabrication	BWXT, Cameco

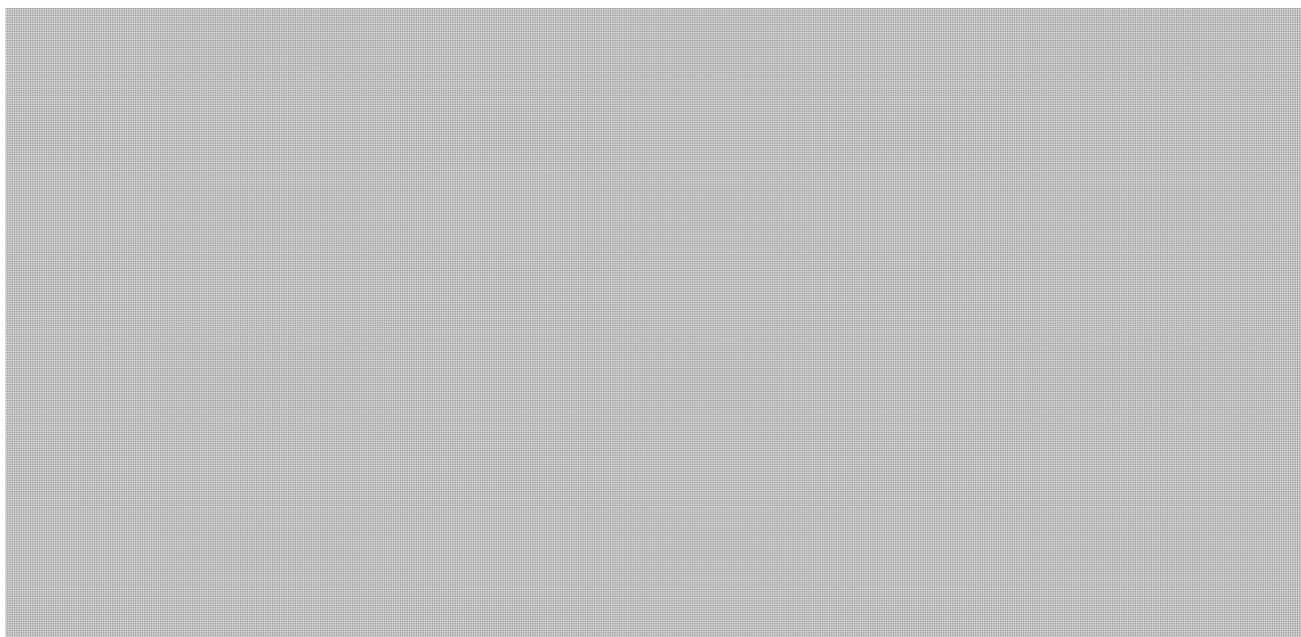


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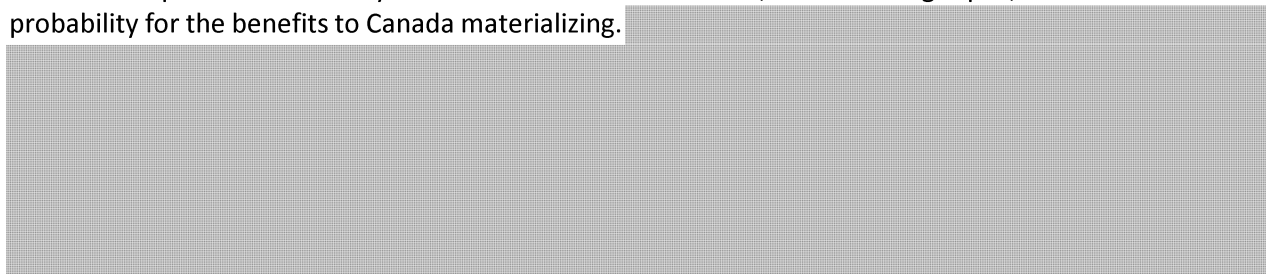


A comprehensive listing of Canadian companies involved in various stages of the nuclear industry can be found at the Organization of Canadian Nuclear Industries (OCNI) website <https://ocni.ca/membership/ocni-membership-directory/>



2.6 The likelihood of the benefits to Canada materializing

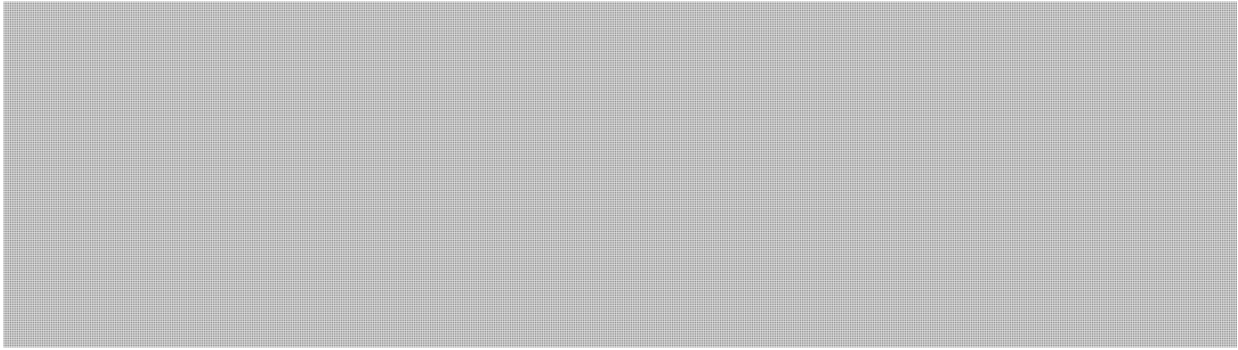
This section provides some key conditions and indicators that, all else being equal, would increase the probability for the benefits to Canada materializing.



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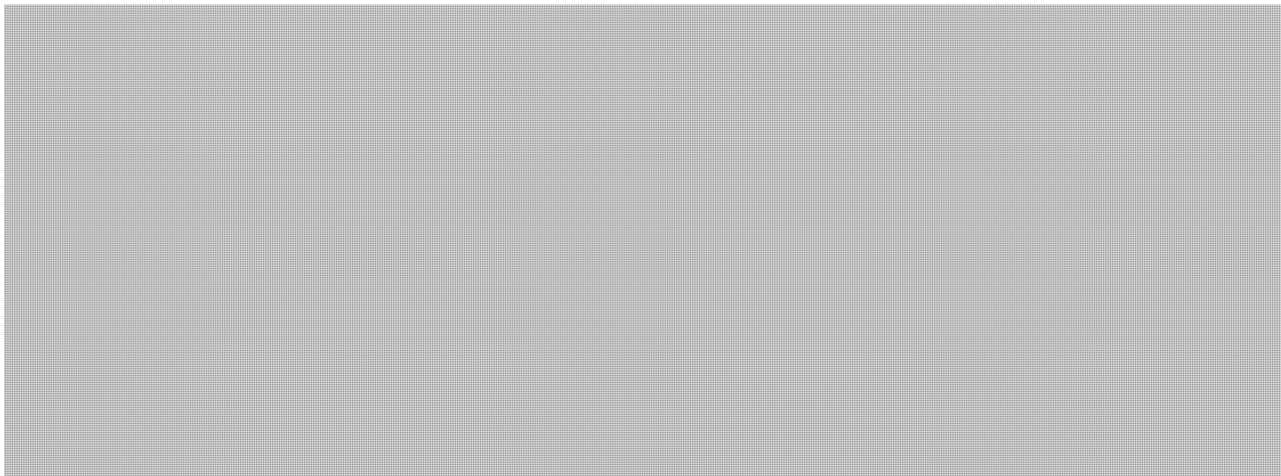
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3 SMR TECHNOLOGIES

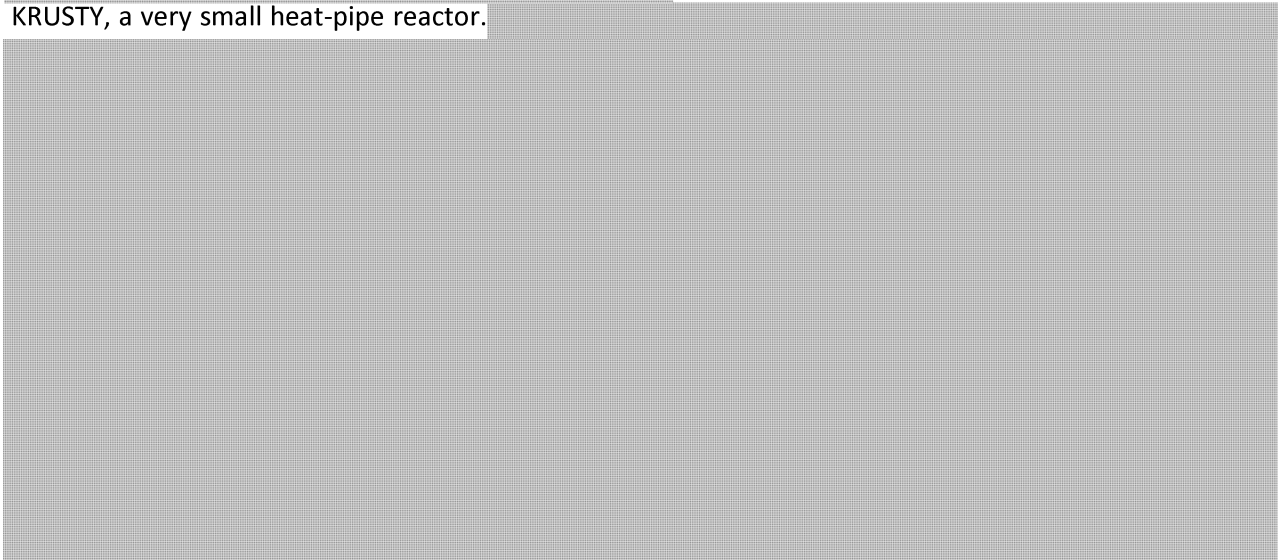
This section provides an overview of SMR technology categories and the key differences of each. The classification of the technology is typically based upon the means by which the heat is removed from the reactor core.

3.1 Heat Pipe Reactor



KRUSTY, a very small heat-pipe reactor.

In March 2018, NASA demonstrated the 10kw



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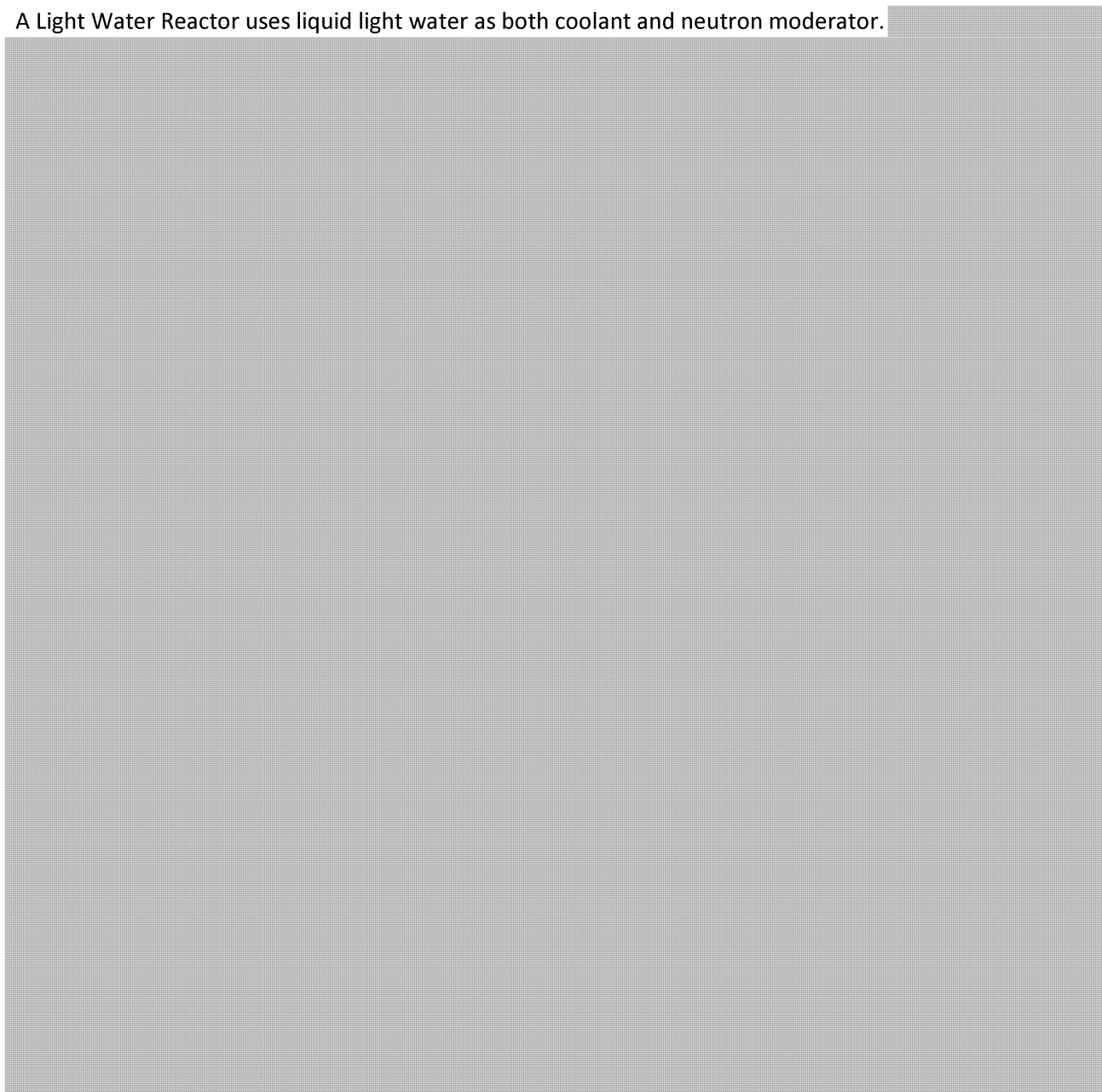


3.2 Water-Cooled Reactor

3.2.1 Light Water Reactors

Light Water Reactors (LWR) comprise a large portion of the world's nuclear energy capacity, and are an example of a well-tested technology. Active for over 50 years, as well as being the most common reactor type, 


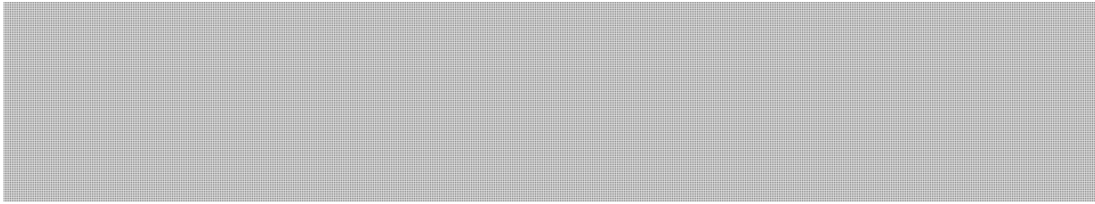
A Light Water Reactor uses liquid light water as both coolant and neutron moderator. 



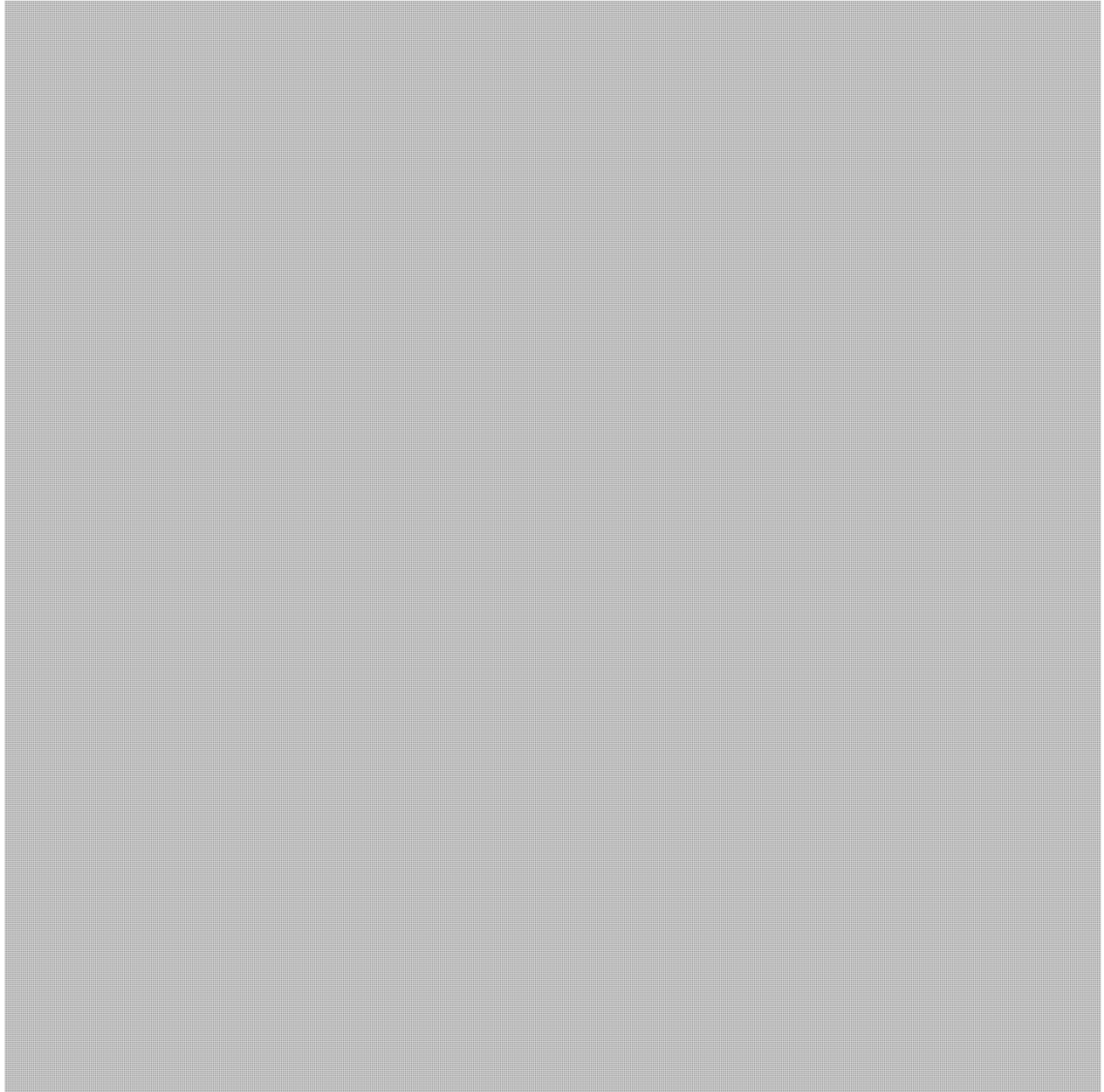
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3.3 Molten Salt Reactor



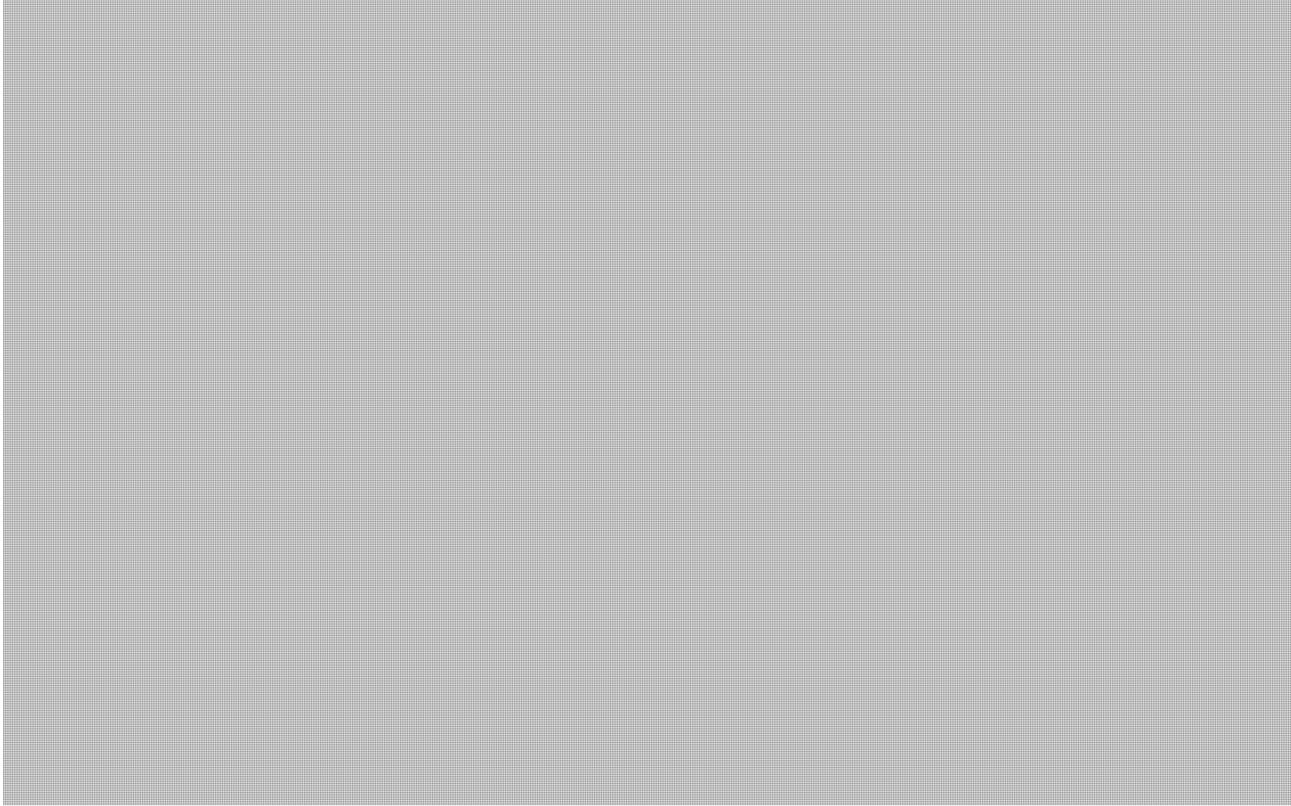
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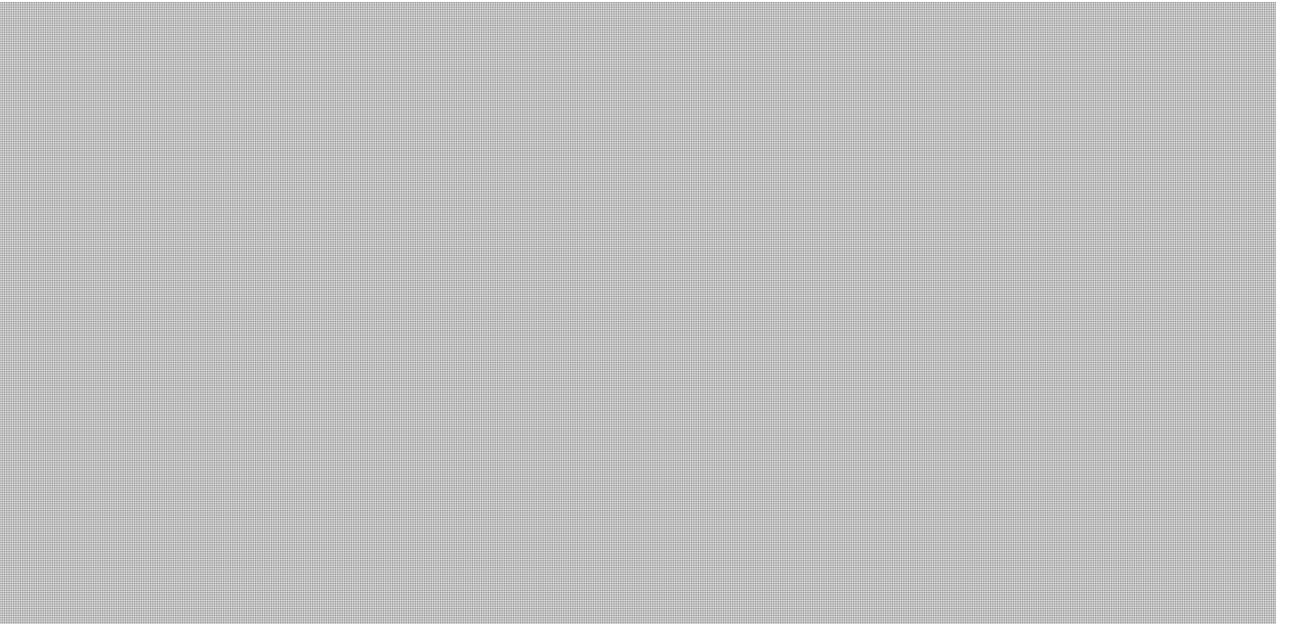
3.4 High Temperature Gas-Cooled Reactors

The High Temperature Gas-Cooled Reactor (HTGR), a variant of which is the Generation IV Very High Temperature Reactor (VHTR), is a reactor design that is graphite moderated and helium cooled. There are



3.5 Sodium-Cooled Fast Reactor

Sodium Fast Reactors (SFRs), may operate using oxide or metallic fuels and are cooled by liquid sodium



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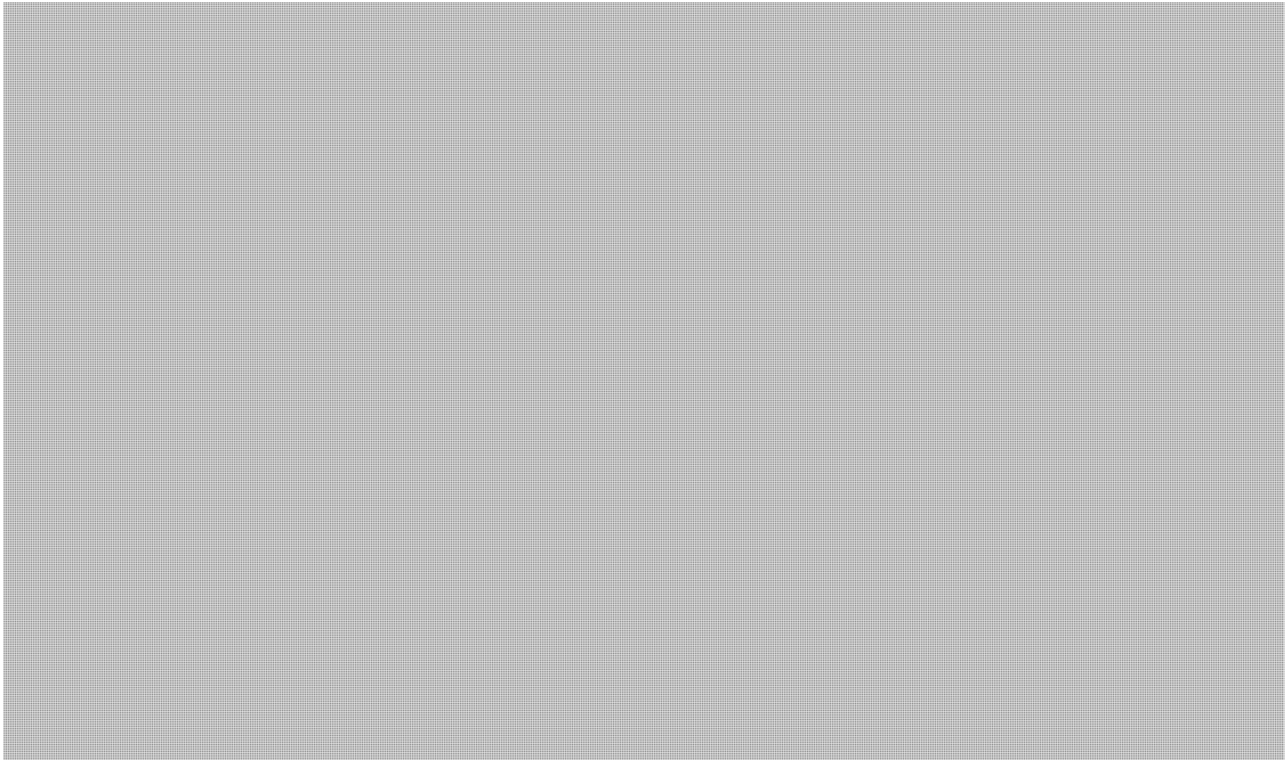
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- [REDACTED]
- Sodium is a highly reactive metal, and will react with both air and water.
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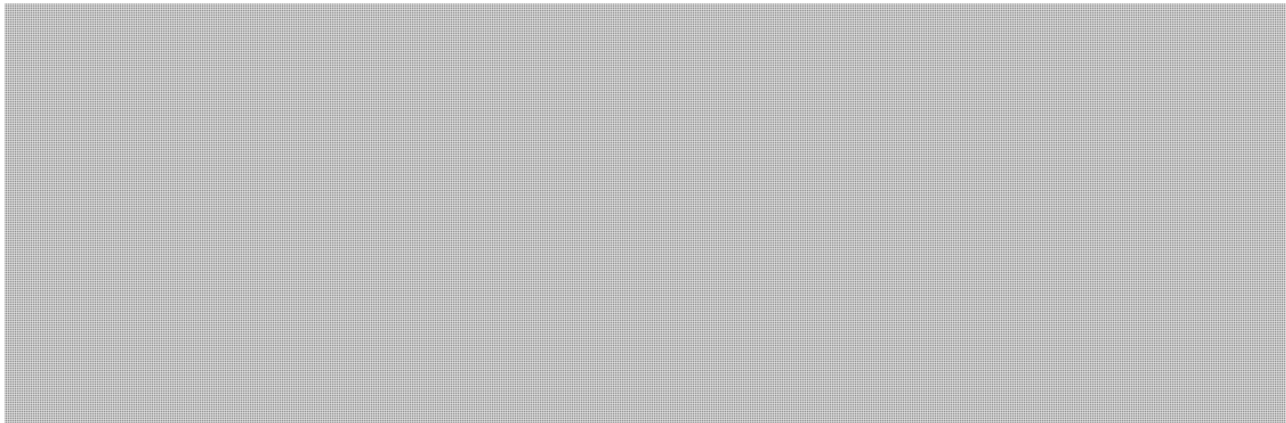
3.6 Alternative Fuel Cycles

3.6.1 Fast Reactors vs. Thermal Reactors

Nuclear reactors can be categorised in two major categories: thermal reactors and fast reactors.

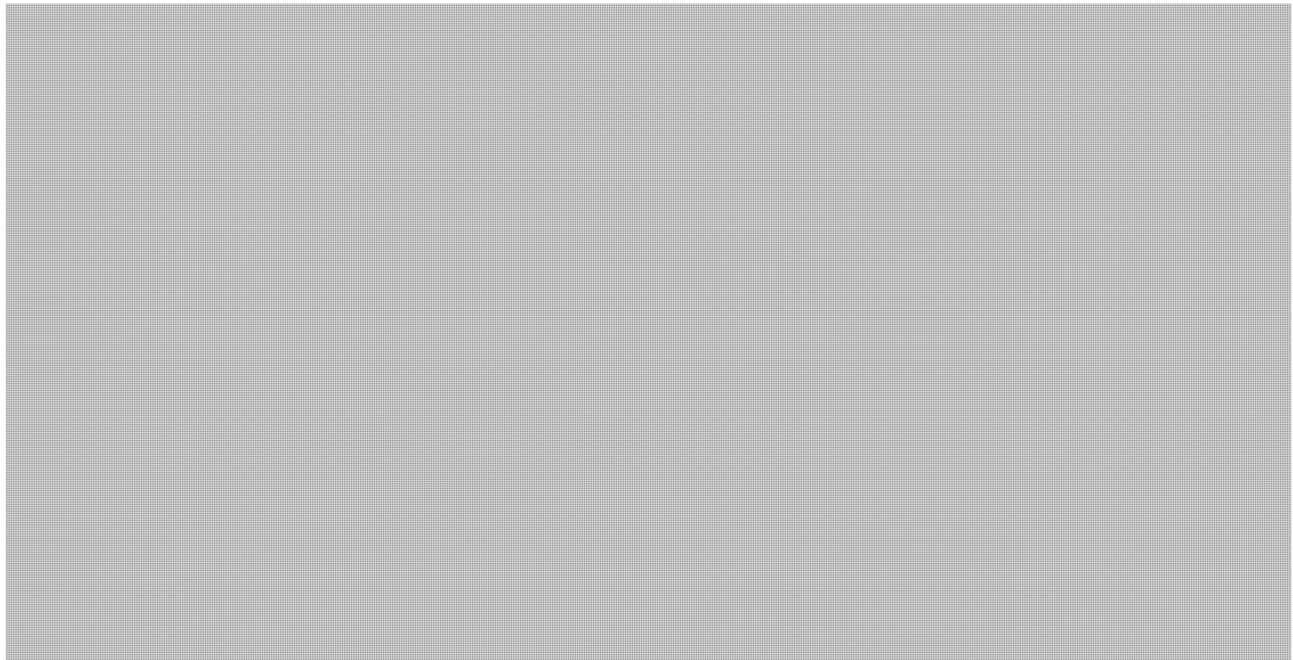


3.6.2 Fuel Recycling and Advanced Fuel Cycles



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3.7 What about Fusion?

Whereas fission is the splitting of an atom (as in conventional nuclear power reactors) fusion is the combining of atoms (i.e. fused together).



4 REGULATORY PROCESS

4.1 The Role of the CNSC

The Canadian Nuclear Safety Commission (CNSC) regulates all nuclear facilities and activities in Canada. This includes power plants and medical facilities, as well as a variety of other uses of nuclear technology.

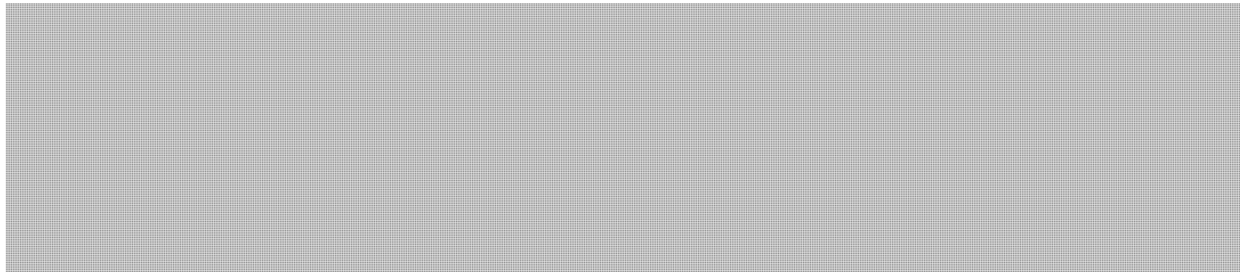
Since the turn of the century, there have been various changes in the regulatory environment:

- As of 2000, the Nuclear Safety Control Act and its regulations have been introduced.
- A new environmental assessment (EA) process must now be conducted before any licensing decision is made by the CNSC.
- A new joint review panel process allows both EAs and site preparation licensing to run at the same time. While these processes run concurrently, the decisions taken by the joint review panel occur sequentially.

- The CNSC is adapting international standards that draw on the experiences of other nuclear regulators, in order to enhance Canadian requirements.

4.2 The Vendor Design Review (VDR) Process

A Vendor Design Review (VDR) is an optional “pre-licensing” service provided by the CNSC when requested by a vendor. The objective is to verify, at a high level, the acceptability of a nuclear power plant design with respect to Canadian nuclear regulatory requirements and expectations, as well as Canadian codes and standards. These reviews also identify fundamental barriers to licensing a new design in Canada and assures that a resolution path exists for any design issues identified in the review.



The VDR does not certify a reactor design or involve the issuance of a license under the Nuclear Safety and Control Act. The VDR can, however, inform the licensing process.

Benefits of applying for a VDR:

- Enables vendors and utilities to communicate
- Identifies and addresses regulatory issues early enough so that delays in licensing and facility construction can be minimized
- Higher quality license applications
- Efficient and effective licensing process
- Assists decision makers in quantifying project risks

Phase 1 and 2 reviews have 19 review focus areas, representing key areas of importance for a future construction licence. Phase 3 review is tailored on a case-by-case basis.

Phase 1: Compliance with regulatory requirements



Phase 2: Pre-licensing assessment



Phase 3: Pre-construction follow-up



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4.3 The Licensing Process



4.4 Licensing timeline for a First-of-a-Kind Reactor



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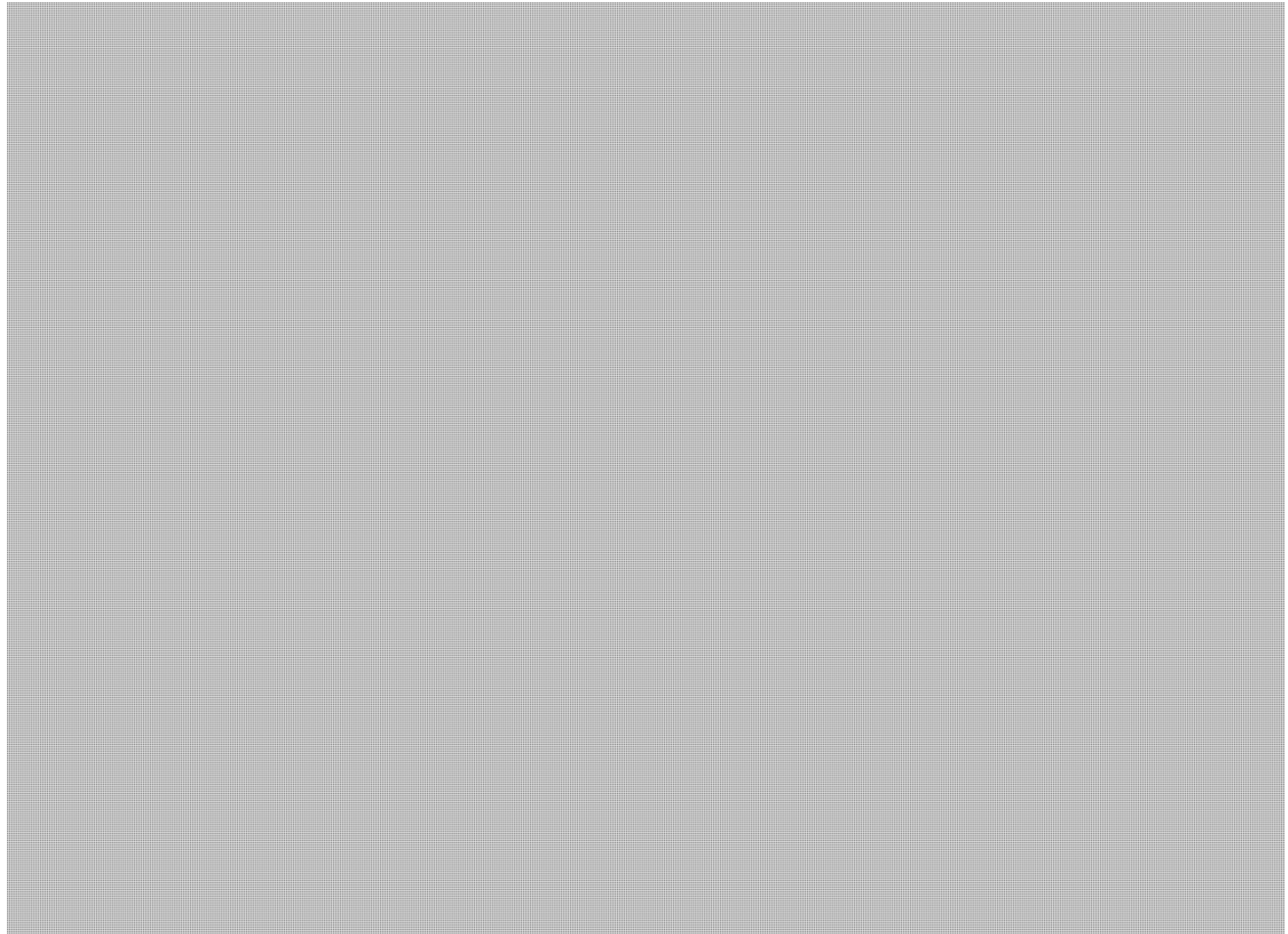
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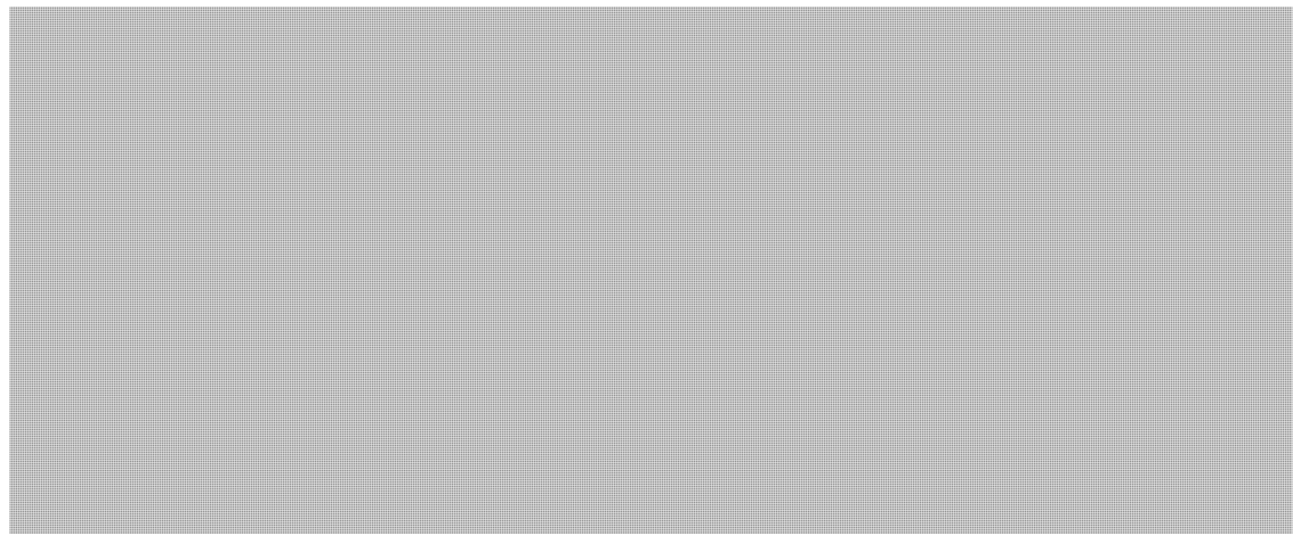
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4.5 Licensing Timeline for an Nth-of-a-Kind Reactor



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2. *On-Grid Electricity Generation:* Given the mandated 2030 phase out of coal, and recently introduced carbon price,

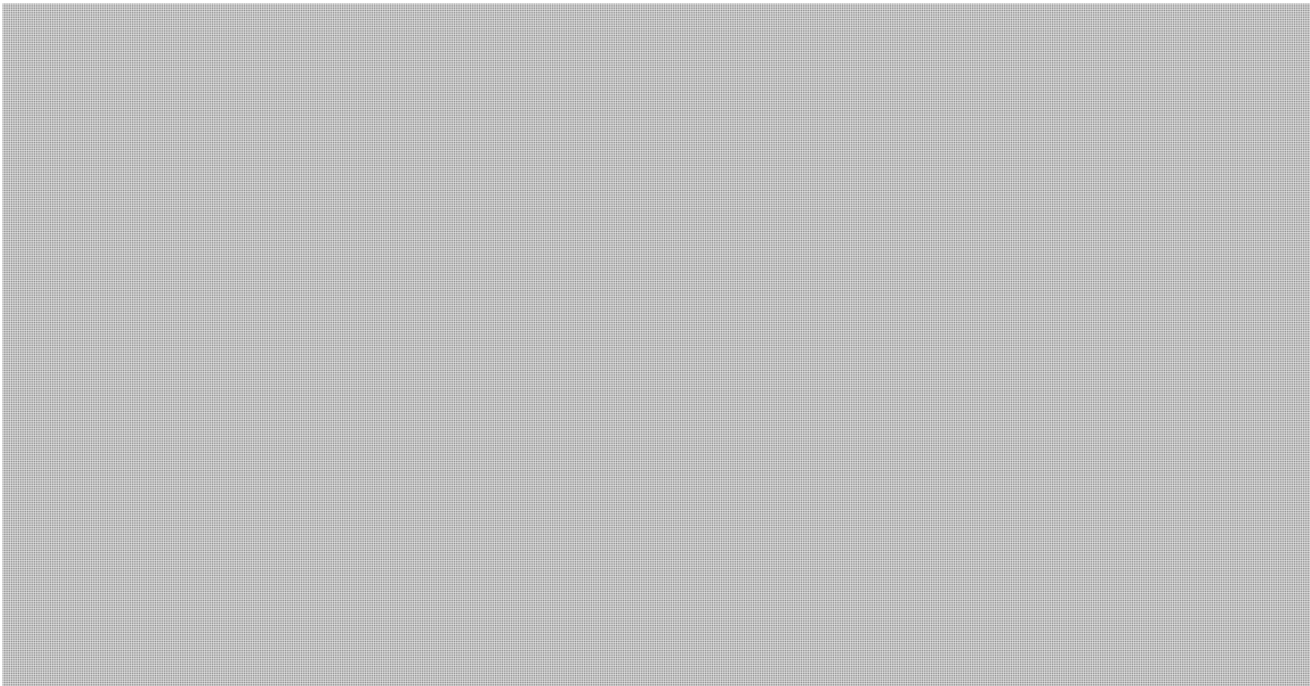
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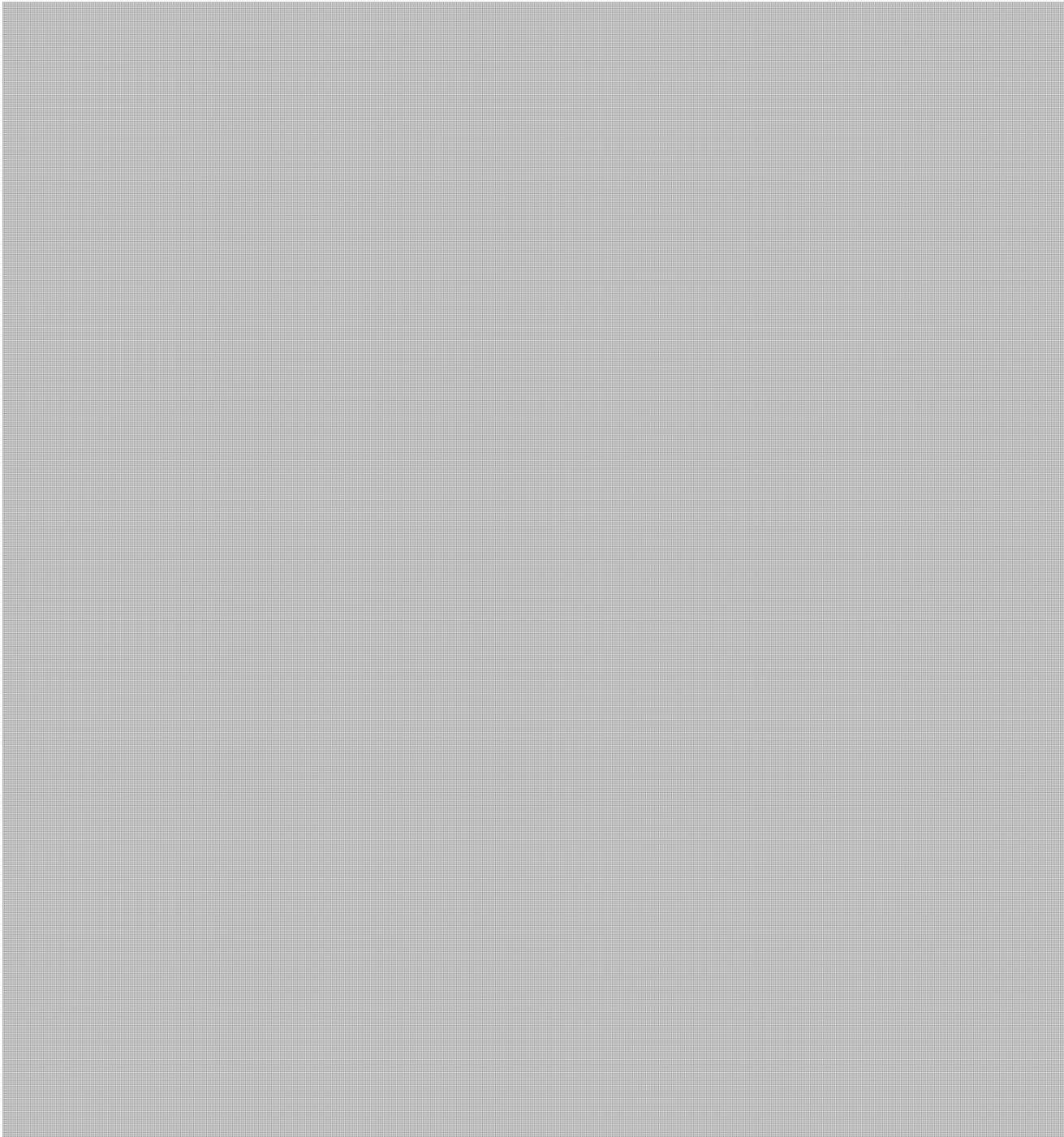


- The R&D activities 


- Activities under this project would focus on 
 - 
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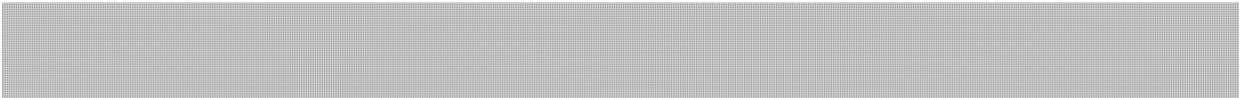
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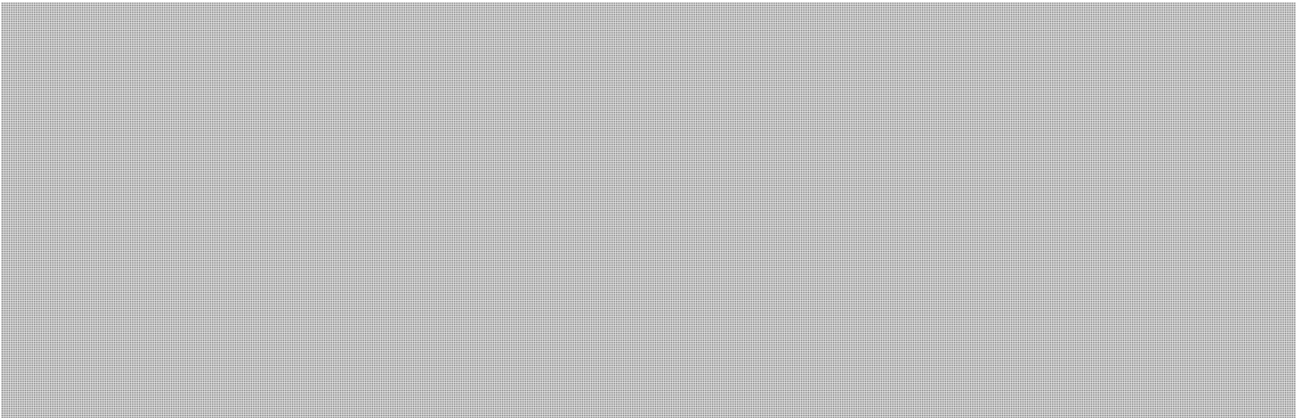
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Market Assessment



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	<ul style="list-style-type: none">○ [REDACTED]○ Discussions with un-named [REDACTED]○ [REDACTED]
	<p><u>Key Partners:</u></p> <ul style="list-style-type: none">• [REDACTED]• Establishes and implement [REDACTED] <p>[REDACTED]</p> <ul style="list-style-type: none">• Will assist in the initial [REDACTED] <p>[REDACTED]</p>
	<p>[REDACTED] which have built and operated in some jurisdictions, [REDACTED]</p> <p>[REDACTED]</p>

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Key milestones

- facility application:
- Site preparation:
- Construction:
- Commissioning:
- Operational:

Refer to section on licencing on proposed timelines.

The proposal states that

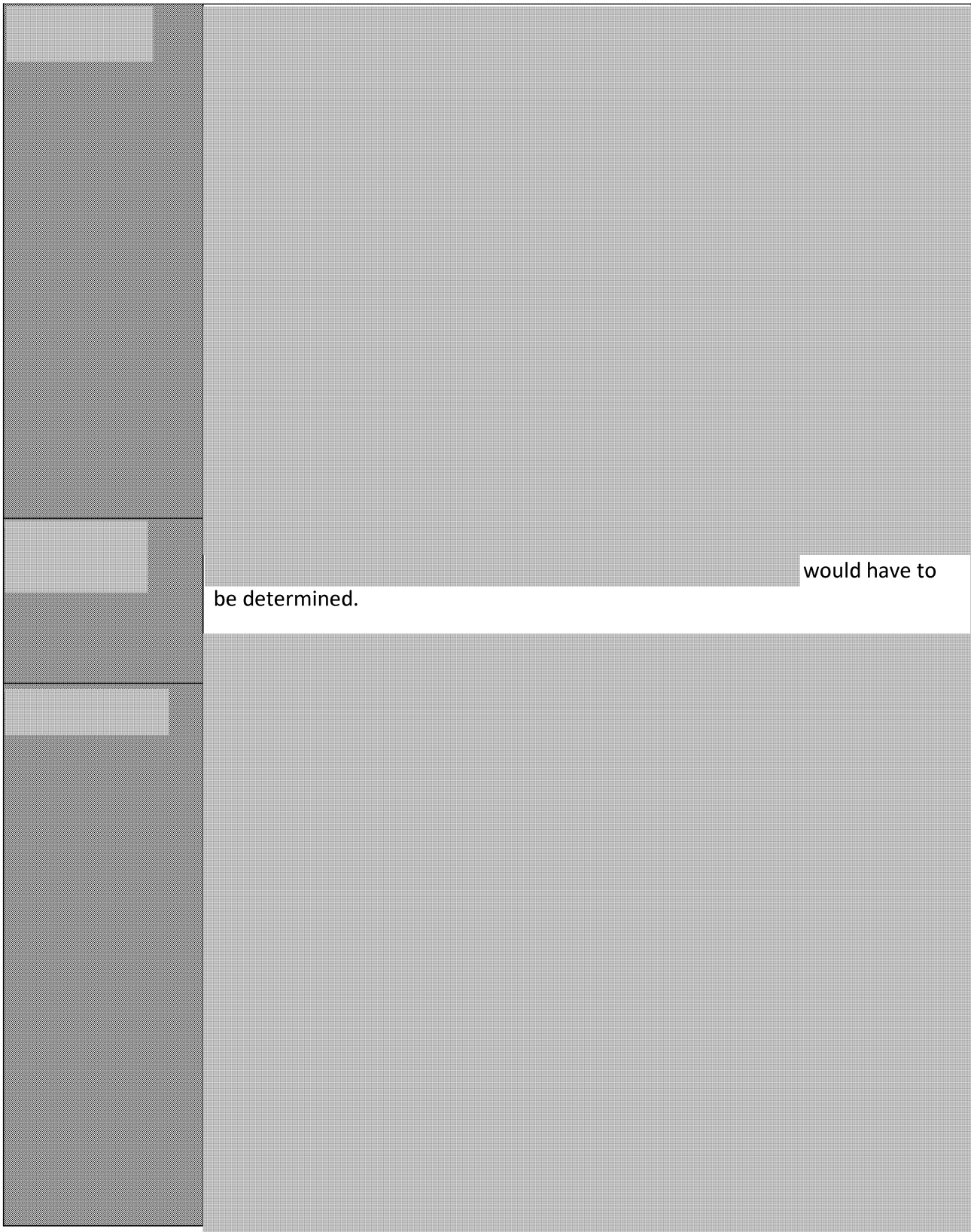
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would have to
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5.3 Terrestrial Energy



Country	Canada and USA
Description	<p>Corporate</p> <p>Main operation is in Canada with an established US corporation to leverage US financing, research facilities, and to support future sales in the US.</p> <p>The largest established SMR organization in Canada. They have well established advisory bodies with a high-profile, as well as recognized personal and companies.</p> <p>They seem to appreciate the role of various organizations from</p> 

Page 915

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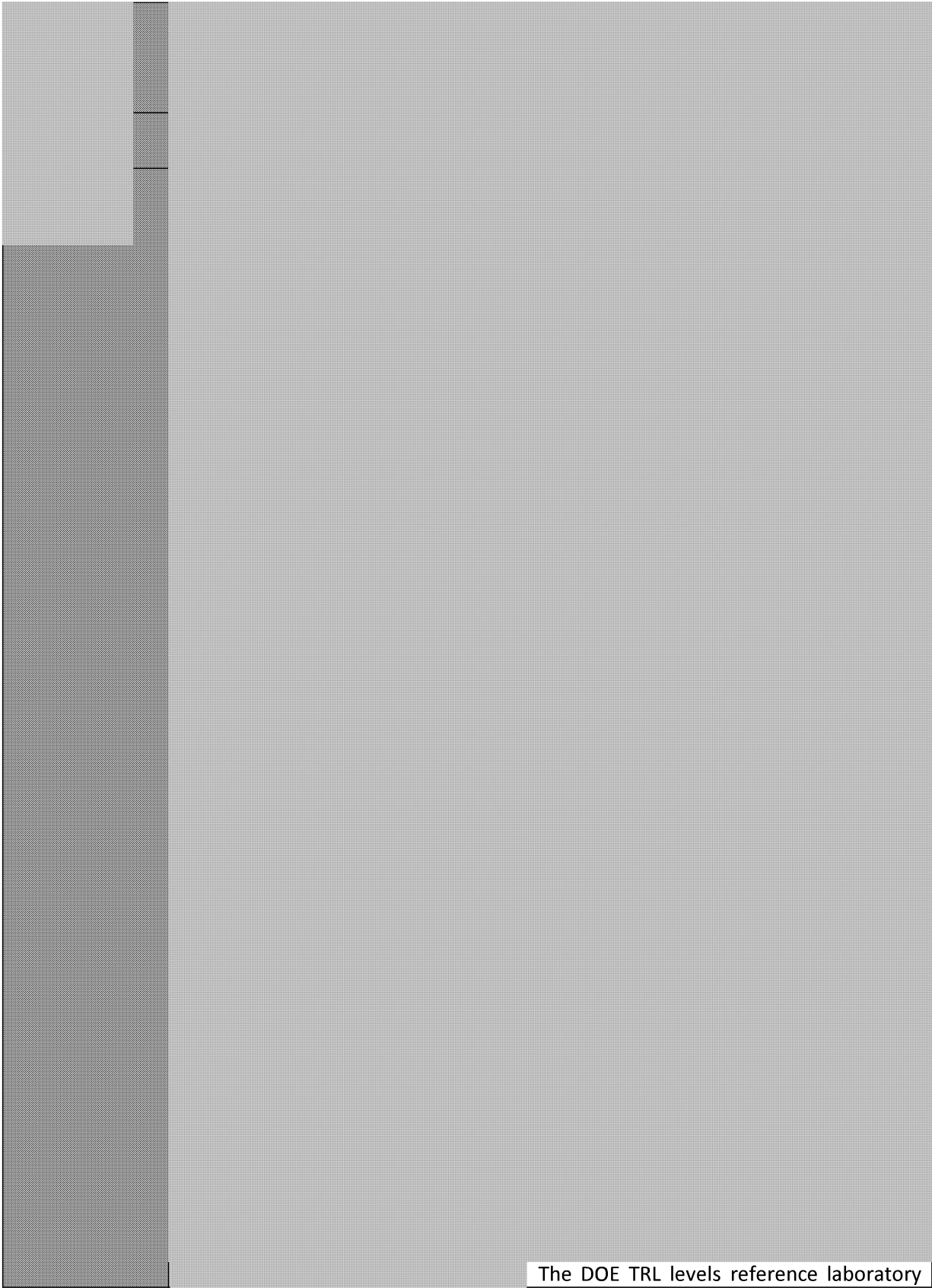
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s.21(1)(a)
s.21(1)(b)

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The DOE TRL levels reference laboratory

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

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testing of the components.

The recent report by UK
between TRL by vendors and what they viewed as the actually TRL.

A general view is there is

Pages 919 to / à 922
are withheld pursuant to sections
sont retenues en vertu des articles

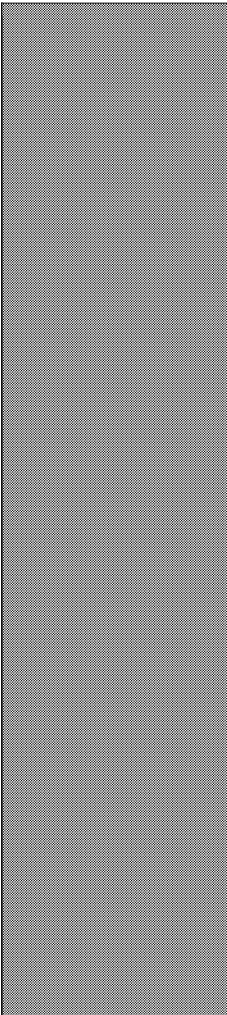
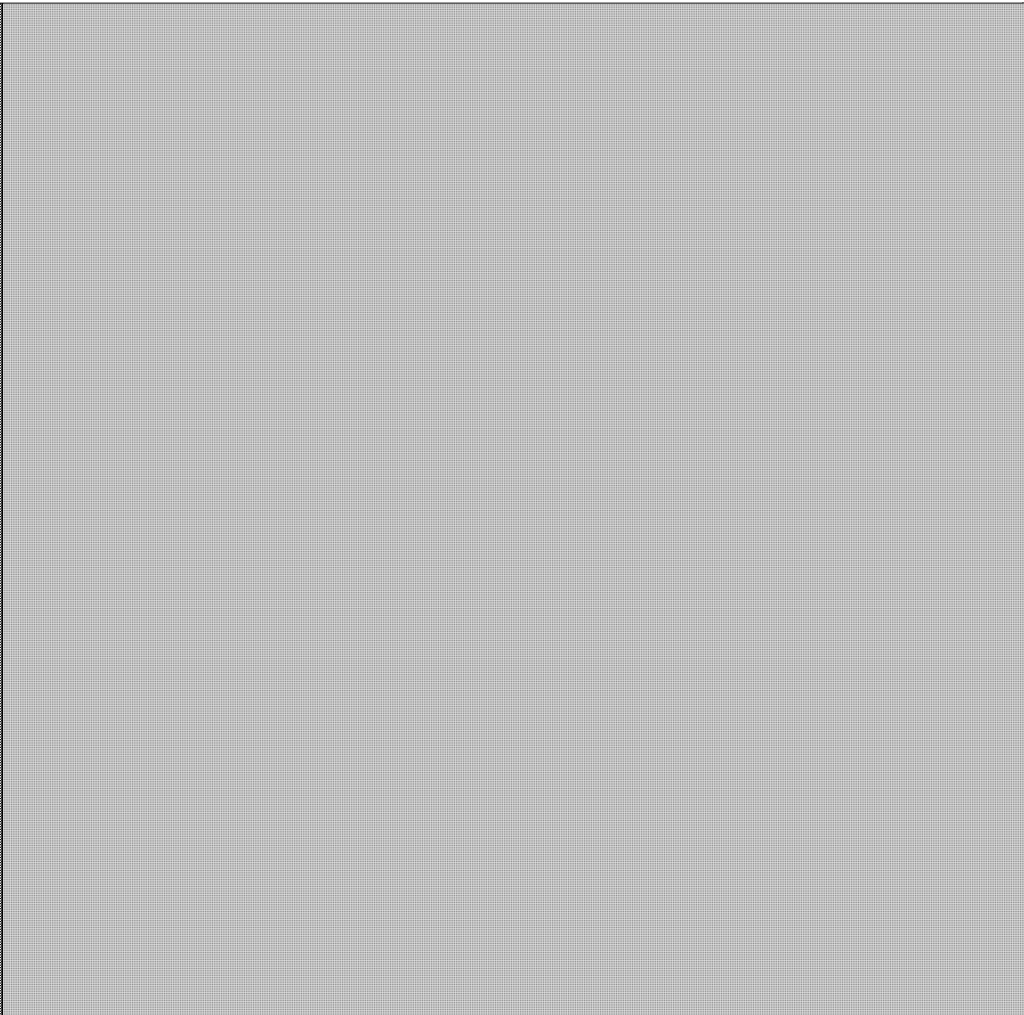


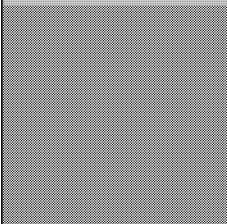


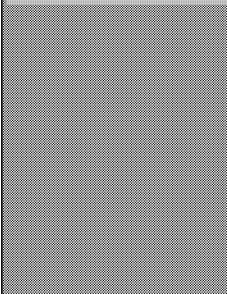

20(1)(c), 21(1)(a), 20(1)(b), 21(1)(b)

of the Access to Information Act
de la Loi sur l'accès à l'information

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s.20(1)(b)
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s.21(1)(a)
s.21(1)(b)

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<p>SOI states the Management team for the project and references boards that would the management team.</p>		
		

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

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	Refer below to a recent funding announcement [REDACTED] proposal for additional information on funding.
	[REDACTED]
	April 3 rd , Moltex announced it secured multi-million dollar investment from IDOM Consulting, which has experience in nuclear engineering.
	Partners refer to actors who are fully committed and will invest in product or project vs contractors who, while also important for product development, are contracted to perform a specific service for the applicant.
	[REDACTED]
	Likely expected movement along the TRL scale from [REDACTED]

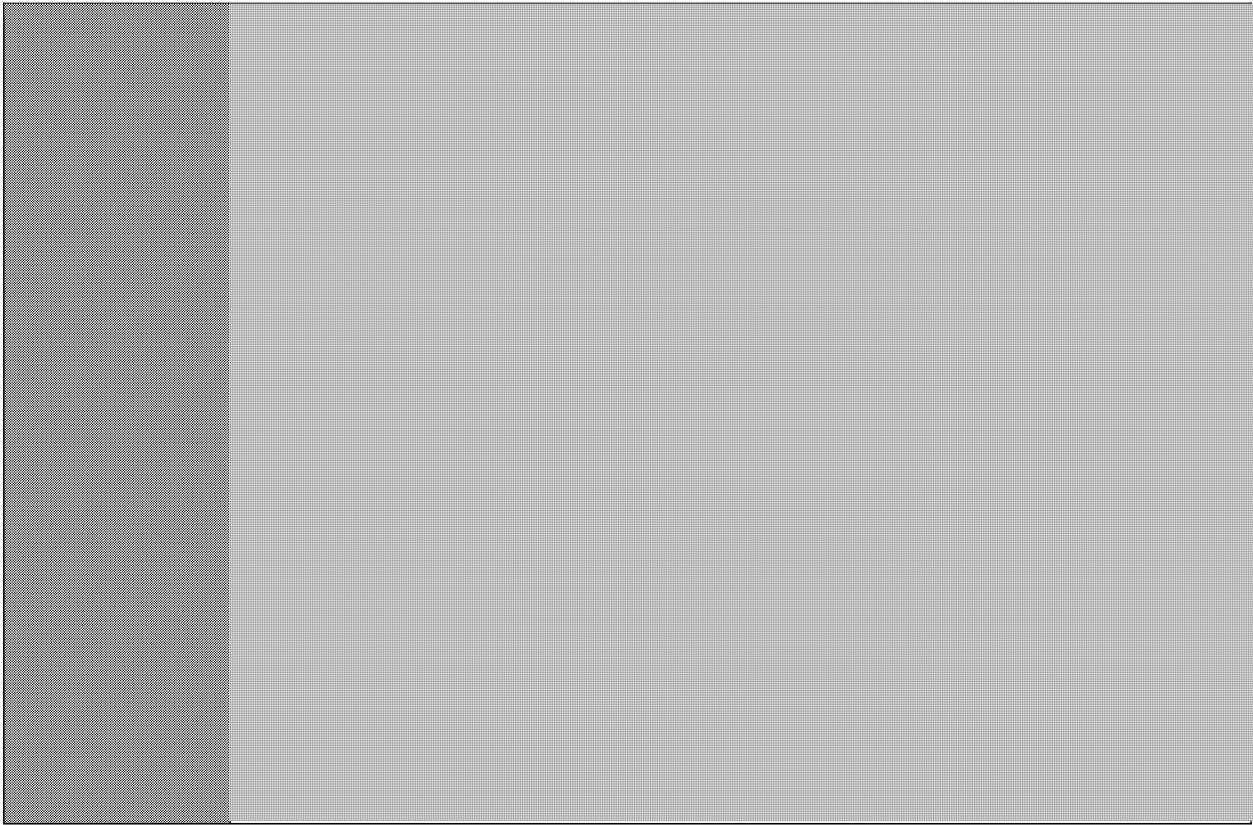
Pages 927 to / à 928
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sont retenues en vertu des articles

20(1)(c), 21(1)(a), 20(1)(b), 21(1)(b)

of the Access to Information Act
de la Loi sur l'accès à l'information

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s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

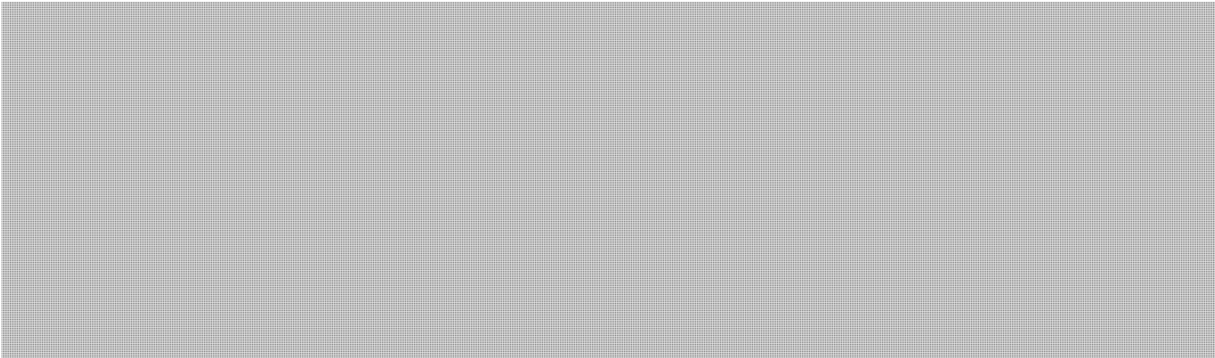
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Moltex Summary

- [Redacted]
- [Redacted]

[Redacted] Move TRL from [Redacted]



Pages 930 to / à 933
are withheld pursuant to sections
sont retenues en vertu des articles

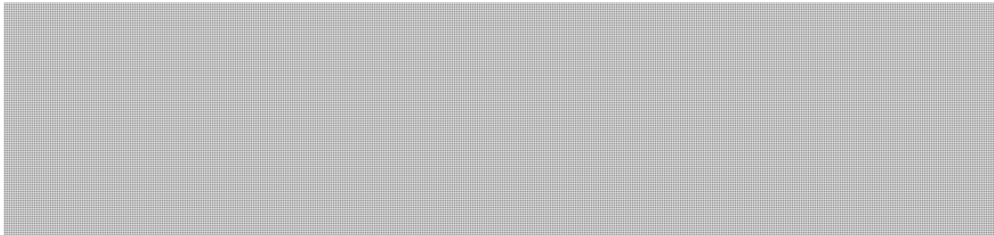
20(1)(c), 21(1)(a), 20(1)(b), 21(1)(b)

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de la Loi sur l'accès à l'information

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s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

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BUSINESS CONFIDENTIAL

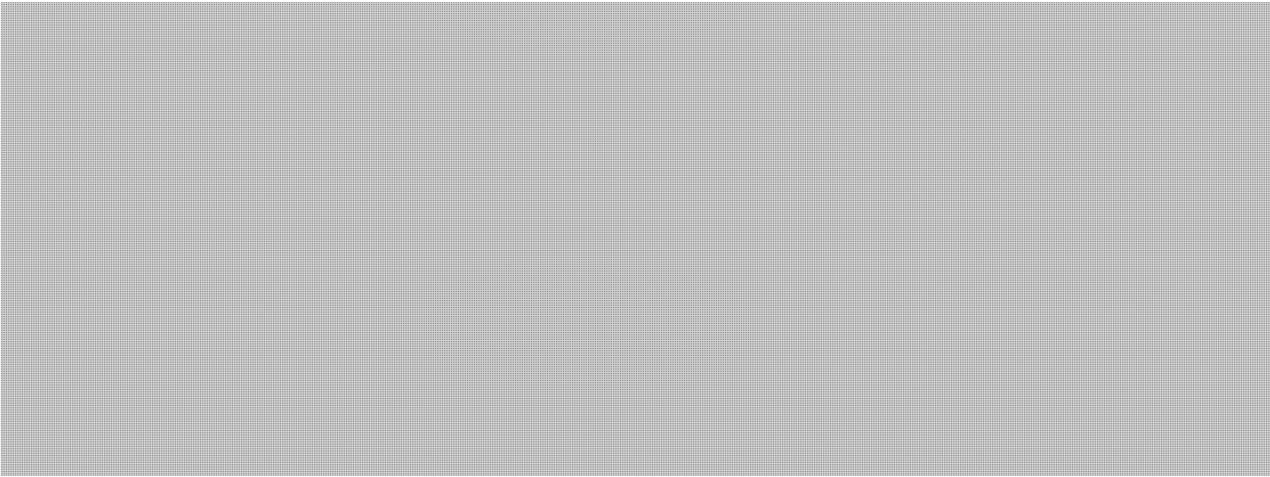
	
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	<ul style="list-style-type: none">• See below
	



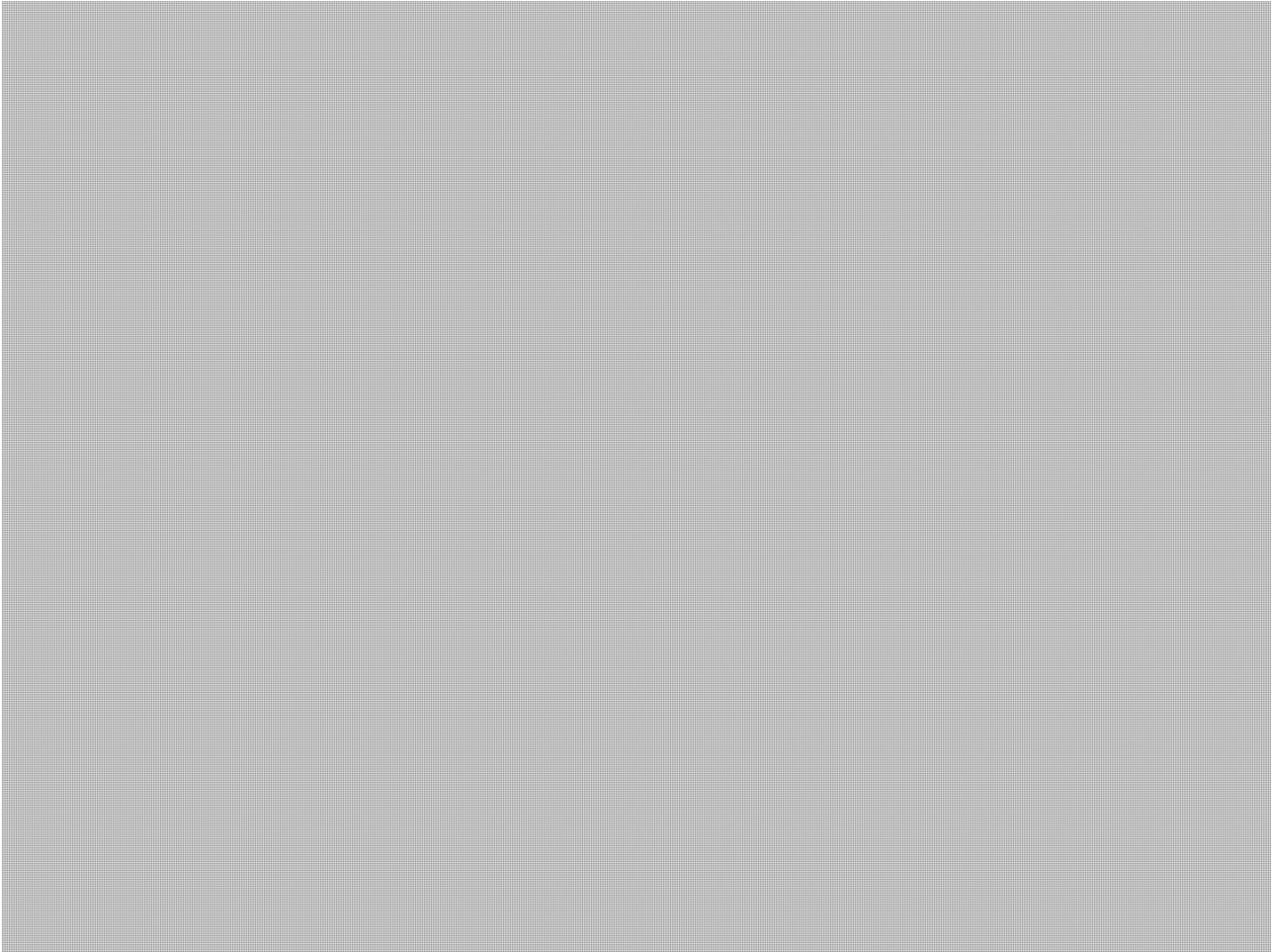
s.20(1)(b)
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s.21(1)(a)
s.21(1)(b)

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- [REDACTED] Move TRL from [REDACTED]



Technical Assessment



Page 936

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20(1)(c), 21(1)(a), 20(1)(b), 21(1)(b)

**of the Access to Information Act
de la Loi sur l'accès à l'information**

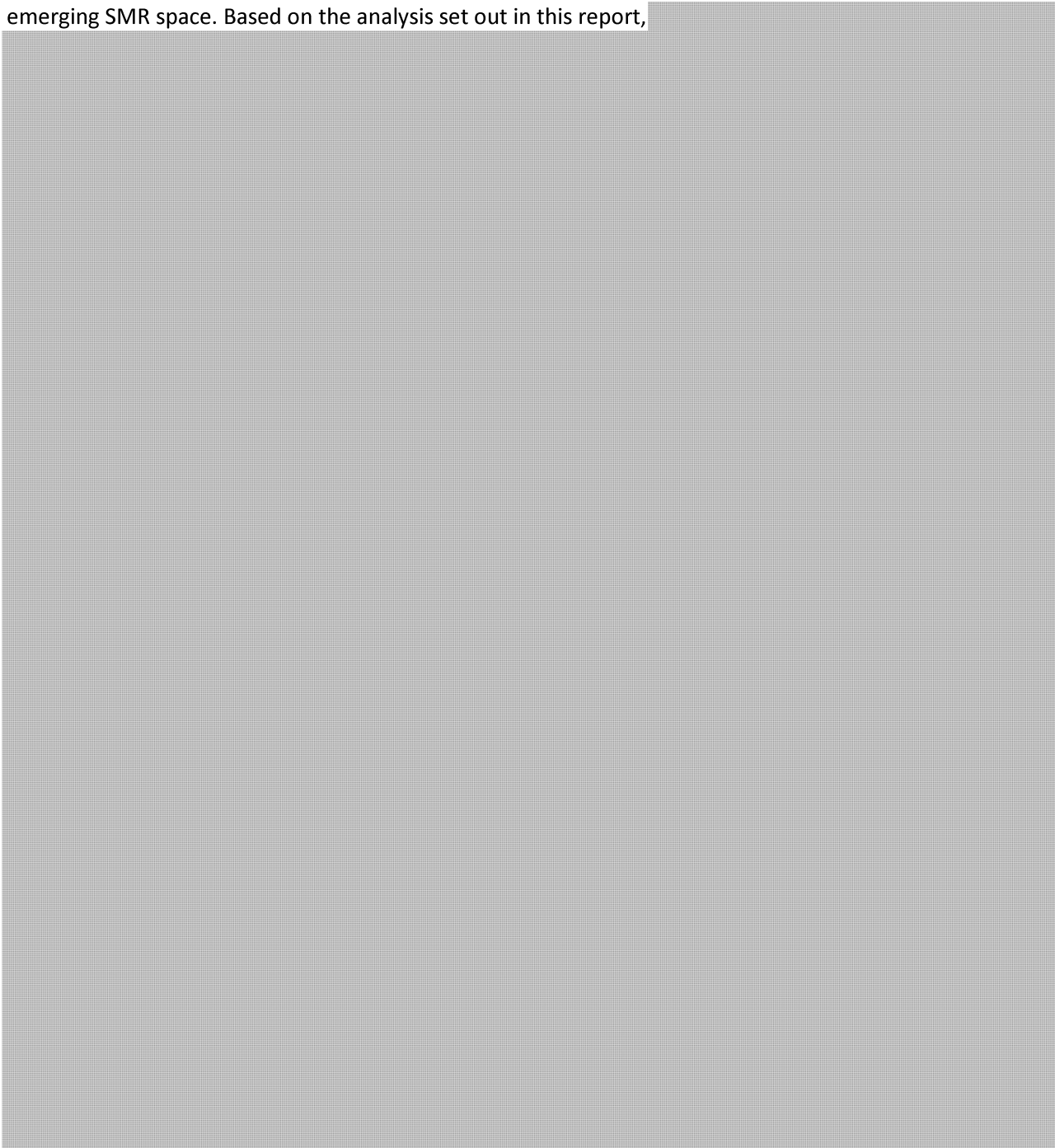
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s.21(1)(a)
s.21(1)(b)

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Déclassifié par l'AIAPP
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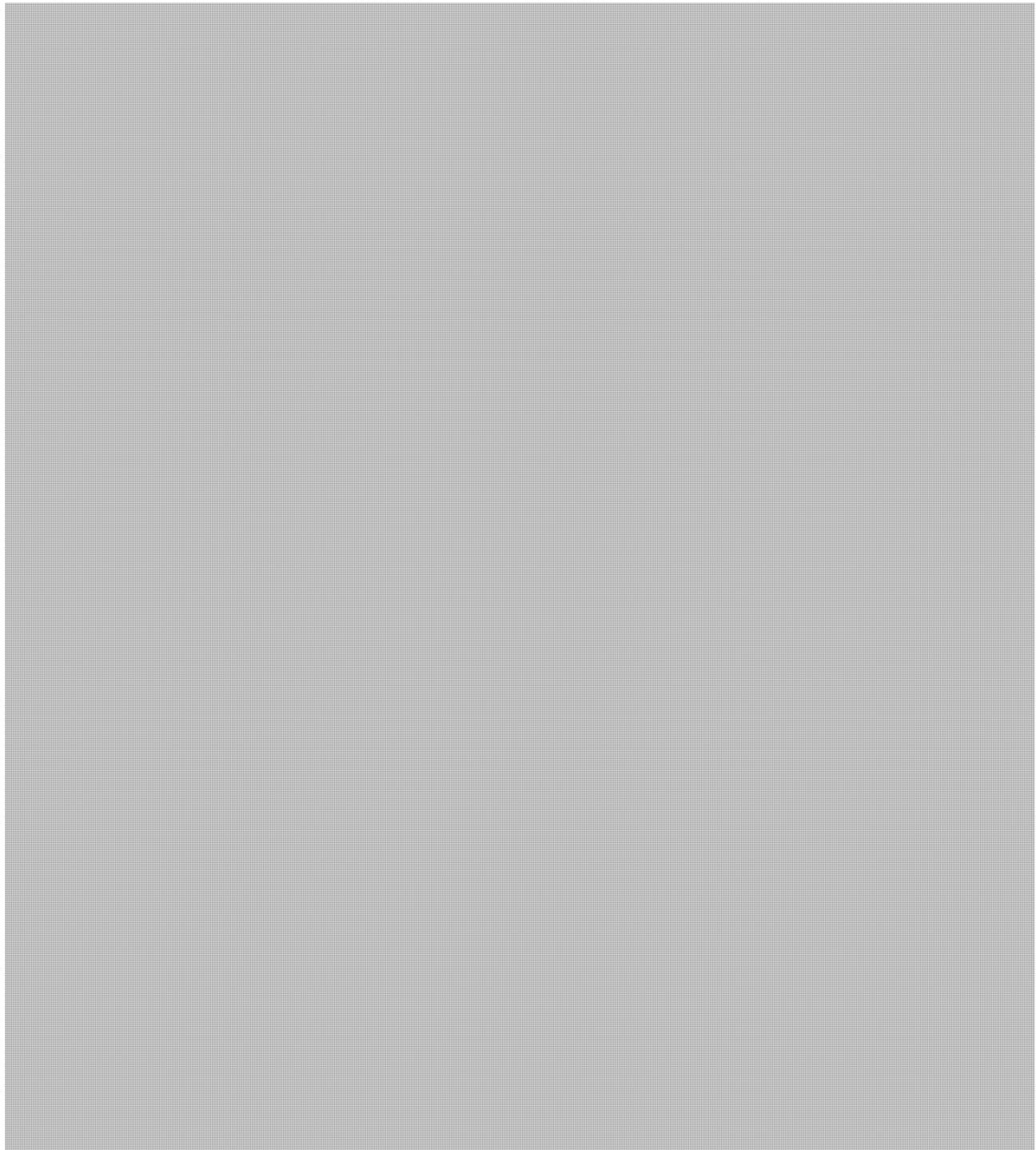
6 SUMMARY FINDINGS

This summary section provides a high-level assessment of where Canada can best position itself in the emerging SMR space. Based on the analysis set out in this report,



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SIF awards for either Terrestrial or Moltex would be employed to complete the next stages of VDRs, perform enabling R&D, and advance their respective designs; the proposals are not aimed at demonstration.



Page 939

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20(1)(c), 21(1)(a), 20(1)(b), 21(1)(b)

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de la Loi sur l'accès à l'information**

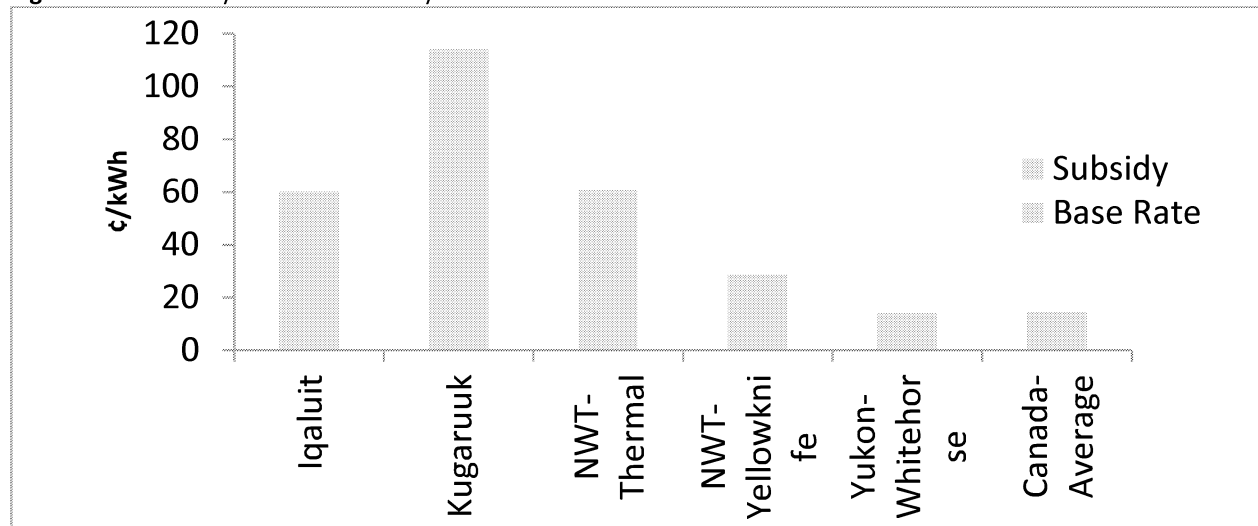
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APPENDIX A

Figure A-1: Provides electricity rates paid by consumers, and the per unit subsidy of electricity across a subset of Canadian jurisdictions. The key takeaways are that Northern communities reliant on diesel (first three bars in the graph) have electricity that is both expensive to provide, heavily subsidized, and still expensive at the point of end use, relative to the Canadian average.

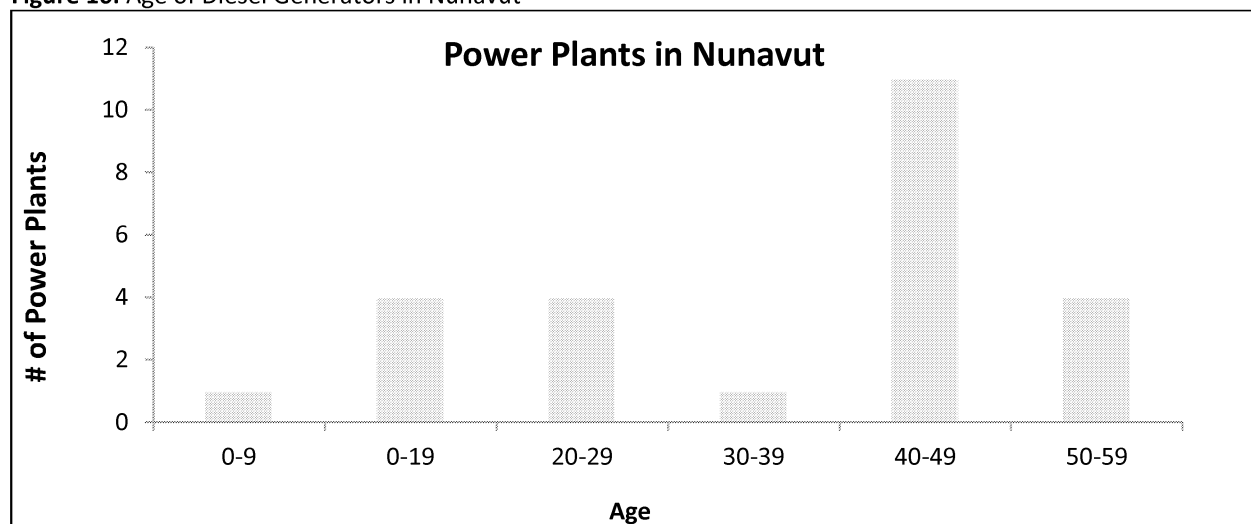
Figure A-2: Provides a distribution of the age of existing diesel generators in Nunavut. Note the heavy weighting of the distribution to the right of the graph, with most plants being above 40 years old.

Figure 15: Electricity Rates and Subsidy in Select Canadian Jurisdictions



Source: Standing Senate Committee on Energy, the Environment and Natural Resources (2014), Powering Canada's Territories

Figure 16: Age of Diesel Generators in Nunavut



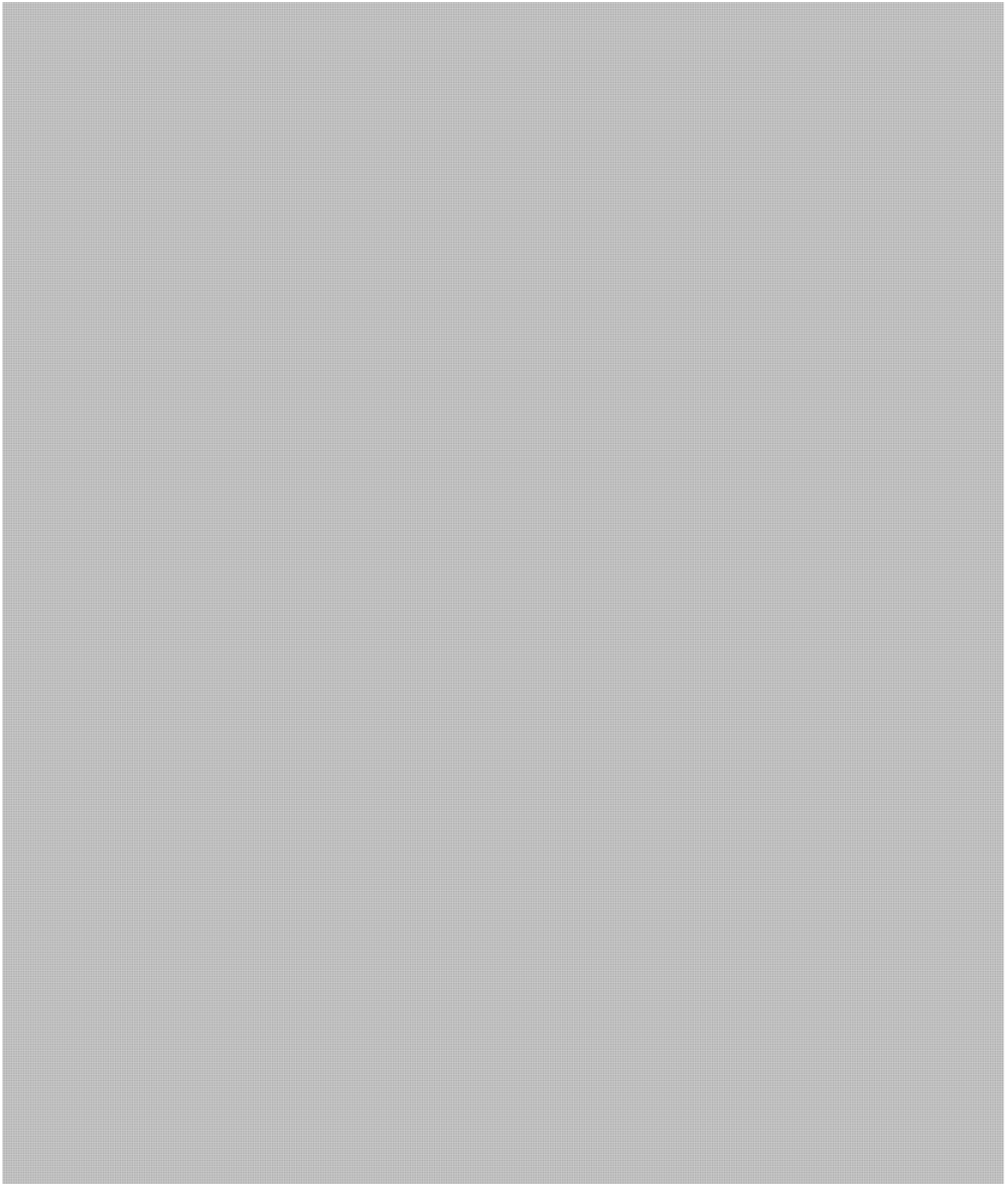
Source: Standing Senate Committee on Energy, the Environment and Natural Resources (2014), Powering Canada's Territories

s.21(1)(a)

s.21(1)(b)

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APPENDIX B



s.20(1)(c)
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s.21(1)(b)

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To correct for biases stemming from both optimism and project immaturity,



Source: MIT 2018

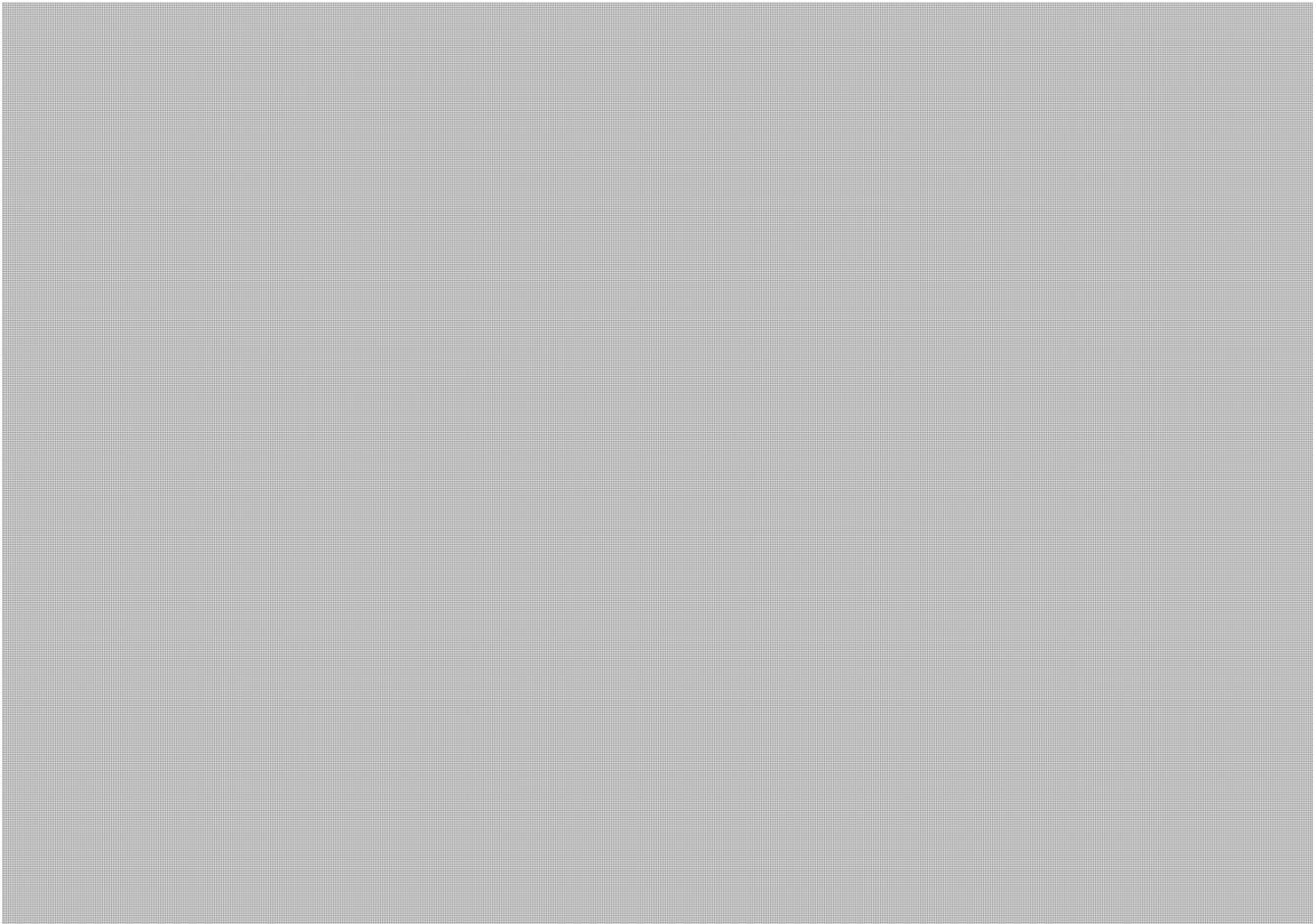
SMR Vendors lie at different areas



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[redacted] we projected forward the expected [redacted]
[redacted]

[redacted]

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21(1)(a), 21(1)(b)

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APPENDIX C

The technologies are then ranked relative to SMR and are provided a colour coding to reflect their position relative to SMRs (green = Improvement over SMRs on alternative; Yellow = Same; red = SMRs an Improvement)

Table C-1. Ease of Integration (On-Grid)

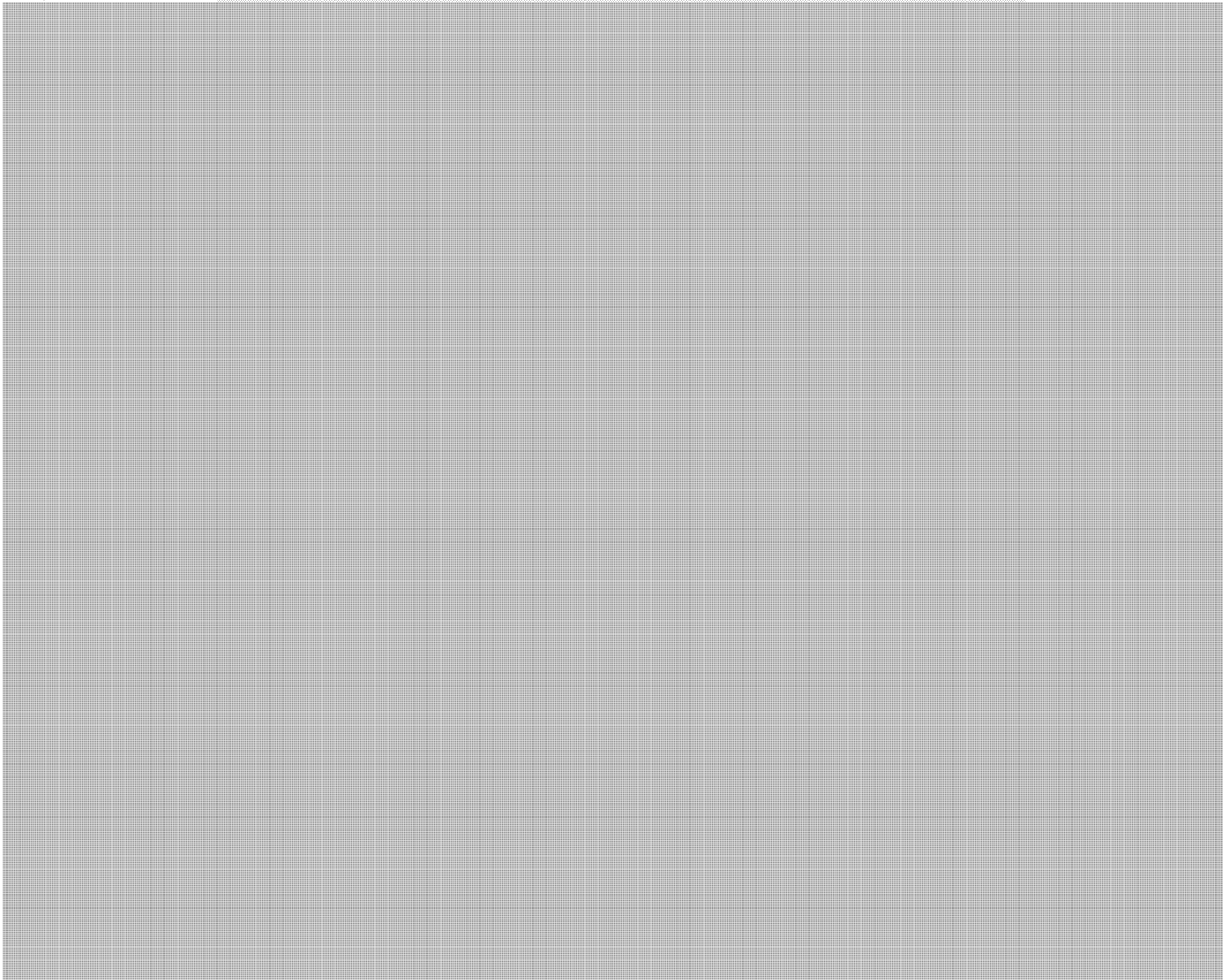
	Built to meet incremental demand?	
	Dev and Construction Time	
	Ramp Rate/Load Following	
	Additional Transmission buildout	
	Additional Requirements	
	Verdict	

s.21(1)(a)

s.21(1)(b)

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	Built to meet incremental demand?	Dev and Construction Time	Ramp Rate/Load Following	Additional Transmission buildout	Additional Requirements	Verdict
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s.21(1)(a)
s.21(1)(b)

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Table C-2. Ease of Integration (Mining/ Remote Communities)

	Dev and Construction Time	Ramp Rate/Load Following	Additional Transmission buildout	Site Specific	Logistics	Verdict
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s.21(1)(b)

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	Dev and Construction Time	Ramp Rate/Load Following	Additional Transmission buildout	Site Specific	Logistics	Verdict

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s.21(1)(a)
s.21(1)(b)

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APPENDIX D

Table 14. R&D Requirements by Technology

Technology	Current R&D State	Gaps

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s.21(1)(a)
s.21(1)(b)

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Technology	Current R&D State	Gaps

s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

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Technology	Current R&D State	Gaps

s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

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Technology	Current R&D State	Gaps

s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

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APPENDIX E

Table E-115. R&D Requirements by Technology

Technology	Supply Chain Readiness/Gaps	Categorization of Opportunity

Page 955

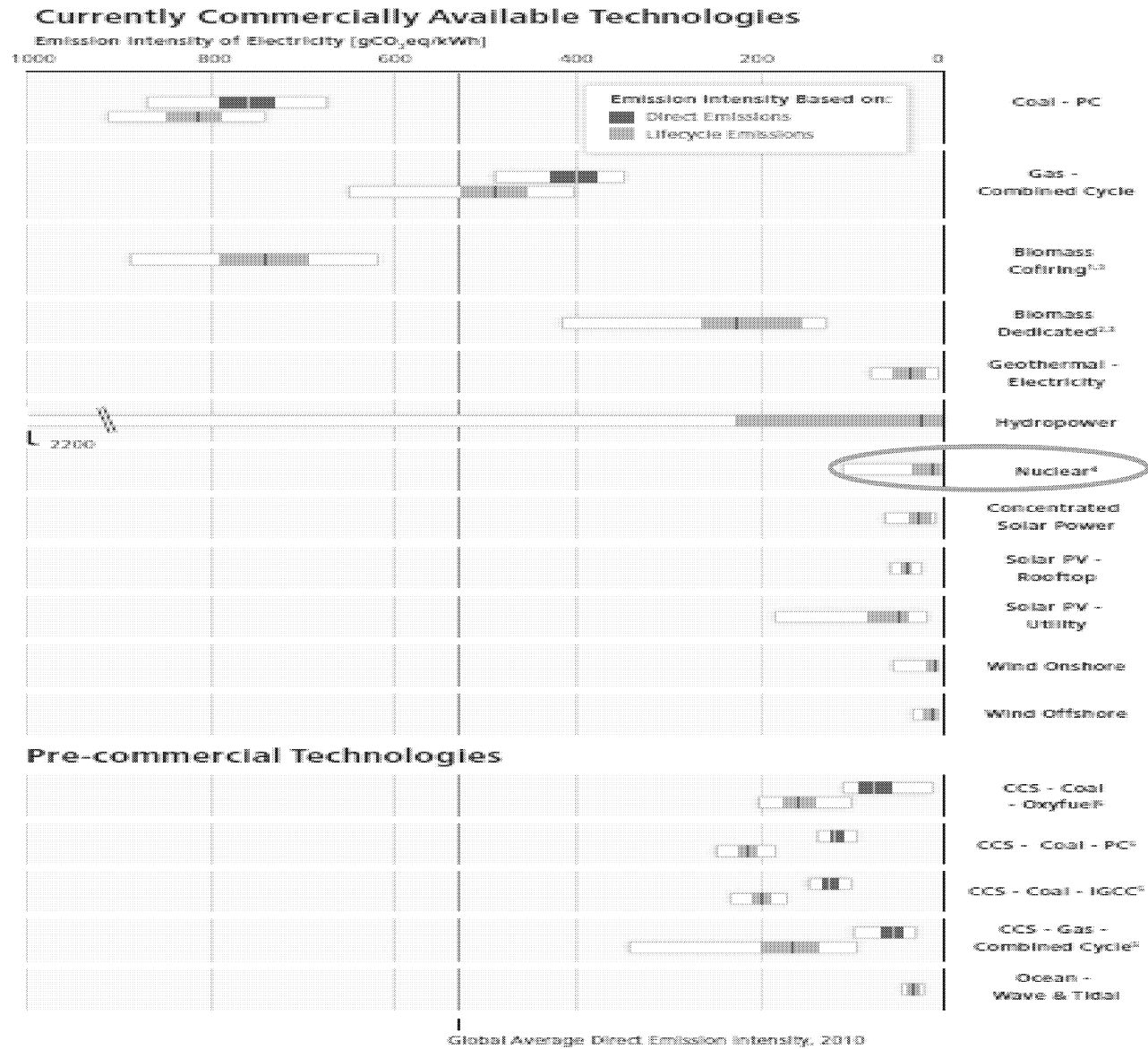
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20(1)(c), 21(1)(a), 21(1)(b)

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APPENDIX F

Figure 20: Lifecycle emissions by technology



Source: IPCC (2014). Life Cycle Greenhouse Gas Emissions from Electricity Generation Available at https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_full.pdf (P. 71)

FW: Readout of oMINA briefing on letter concerning reprocessing in Canada

April 26, 2024 3:49 PM

Subject	FW: Readout of oMINA briefing on letter concerning reprocessing in Canada
From	Prosser, Kathleen
To	Yuen, Pui Wai; Wilkinson, David
Sent	October 18, 2023 12:01 PM

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As requested, sending over all the correspondences..

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Prosser, Kathleen
Sent: Wednesday, October 18, 2023 10:18 AM
To: Tanya.Hinton@international.gc.ca
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: RE: Readout of oMINA briefing on letter concerning reprocessing in Canada

Hi Tanya –

I'll be honest in saying we don't know the specifics of the funding flows, but below is to the best of our understanding and we were only asked to provide a technical review of the R&D results to date.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Wednesday, October 18, 2023 9:44 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: RE: Readout of oMINA briefing on letter concerning reprocessing in Canada

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s.20(1)(b)

s.21(1)(b)

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Hi Kate,

[REDACTED]

Thanks for any clarifications you are able to provide.

Tanya

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 18, 2023 9:41 AM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: RE: Readout of oMINA briefing on letter concerning reprocessing in Canada

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Hi Tanya,

[REDACTED]

This is a purely technical assessment, to evaluate if they are adequately progressing under the existing arrangement. [REDACTED]

and ISED asked NRCan to provide the technical review of that work.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
 Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Tuesday, October 17, 2023 1:46 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: RE: Readout of oMINA briefing on letter concerning reprocessing in Canada

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Hi Kate,

Thanks for the heads up on this. I would be most grateful if NRCan could loop us in with the ISED leads on this, [REDACTED]

[REDACTED]

Tanya

A0072248_2-000958

s.20(1)(b)

s.21(1)(b)

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Sent: Tuesday, October 17, 2023 11:13 AM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: RE: Readout of oMINA briefing on letter concerning reprocessing in Canada

Thanks so much Tanya!

For your awareness, [REDACTED]

[REDACTED] and that prompted ISED/ACOA to reach out and ask us for a technical assessment. This work is being led by the S&T team in NED.

Happy to connect if you think that would be useful.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Tuesday, October 17, 2023 10:37 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: FW: Readout of oMINA briefing on letter concerning reprocessing in Canada

Hi Kate,

Sorry, should have sent along sooner, but below is a readout from the meeting we had with our Minister's office.

We did not prepare any materials for the briefing to be honest, although I did share our Info Memo from 2021 with our DG, noting that not so much had changed since then.

Tanya

From: Hinton, Tanya -IGN
Sent: Friday, October 13, 2023 4:15 PM
To: Liao-Moroz, Angelica -IGN <Angelica.Liao-Moroz@international.gc.ca>; Grant, Alison -IGD <Alison.Grant@international.gc.ca>; *IFM Advisors <D-IFM_Advisors@international.gc.ca>
Cc: Graham, Mark -IGD <Mark.Graham@international.gc.ca>; Thoppil, Naina -IGN <Naina.Thoppil@international.gc.ca>; Breton, Julie -IGN <Julie.Breton2@international.gc.ca>; Gollan, Noah -IGN [He,Him | Il] <Noah.Gollan@international.gc.ca>; Robertson Baklid, Aiden -IGN <Aiden.RobertsonBaklid@international.gc.ca>; Barbarie, Daniel -IGN <Daniel.Barbarie@international.gc.ca>; Stewart, Robb -IGN [He,Him | Il] <Robb.Stewart@international.gc.ca>; Wiley, Vanessa -IGN [She,Her | Elle] <Vanessa.Wiley@international.gc.ca>; Mosey, Kirsten -IGN [She,Her | Elle] <Kirsten.Mosey@international.gc.ca>; Young-Stewart, Justin -IGN <Justin.Young-Stewart@international.gc.ca>
Subject: Readout of oMINA briefing on letter concerning reprocessing in Canada


On October 13, 2023, IGN/Thoppil/Hinton met with oMINA/Jeremy Bruce and Cassandra Fiore at

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s.21(1)(a)

s.21(1)(b)

their request to answer questions related to a recent letter (from renowned US experts and former officials) to PM Trudeau concerning nuclear fuel reprocessing developments in Canada. The key questions oMINA had were around the validity of the proliferation concerns raised in the letter and if Canada is at risk of violating NPT obligations.



Drafted: IGN/Hinton

Approved: IGN/Thoppil

RE: Bad guys and bombs: The nuclear risks of small modular reactors

April 26, 2024 3:50 PM

Subject	RE: Bad guys and bombs: The nuclear risks of small modular reactors
From	Brady, Daniel
To	Tanya.Hinton@international.gc.ca; Prosser, Kathleen
Cc	Fairchild, Jamie; Yuen, Pui Wai; Wilkinson, David
Sent	November 7, 2023 8:33 AM

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Hi Tanya / Kate

I would agree that in the article, Rory does seem to note there are risks as compared to just taking spent fuel and placing it in a DGR. [REDACTED]

In my opinion, I do not think much has changed. Moltex's process has been to remove the fission products and create a concentration of actinides that can be used to fuel a reactor.

We need to understand what the process is at each step to understand the risks and can it be managed or eliminated. We are engaged on this.

Dan

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>

Sent: Monday, November 6, 2023 12:10 PM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Daniel.Barbarie@international.gc.ca

Subject: RE: Bad guys and bombs: The nuclear risks of small modular reactors

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OMG, I've done it again, mixing Dan Brady and Daniel Barbarie! Sorry to both

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Monday, November 6, 2023 11:18 AM

To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Wilkinson, David <david.wilkinson@NRCan-RNCan.gc.ca>; Barbarie, Daniel -IGN <Daniel.Barbarie@international.gc.ca>

Subject: RE: Bad guys and bombs: The nuclear risks of small modular reactors

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Thanks Tanya, looping in Dan for his perspectives as he is someone who has had conversations with

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s.19(1)

Rory more recently.

-Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>
Sent: Friday, November 3, 2023 3:59 PM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>;
Daniel.Barbarie@international.gc.ca; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Wilkinson,
David <david.wilkinson@NRCan-RNCan.gc.ca>
Cc: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Subject: FW: Bad guys and bombs: The nuclear risks of small modular reactors

Kate, Dan, Pui Wai, David,

Not sue if you've seen this article, but another Moltex related article.

I haven't spoken with him in a very long time, but it seems to me that Rory O'Sullivan has a



Tanya

From: Breton, Julie -IGN <Julie.Breton2@international.gc.ca>
Sent: Friday, November 3, 2023 2:38 PM
To: Hinton, Tanya -IGN <Tanya.Hinton@international.gc.ca>
Subject: FW: Bad guys and bombs: The nuclear risks of small modular reactors

Fyi

From: Shaddock, Mike (he/him) <Mike.Shaddock@cbsa-asfc.gc.ca>
Sent: Friday, November 3, 2023 2:35 PM
To: 'Bourassa, Pascale (CNSC/CCSN)' <pascale.bourassa@canada.ca>; Reinholz, David (CNSC/CCSN) <david.reinholz@canada.ca>; 'Petseva, Nadia (CNSC/CCSN)' <nadia.petseva@canada.ca>
Cc: Breton, Julie -IGN <Julie.Breton2@international.gc.ca>; Larose, Christian -TIE <Christian.Larose@international.gc.ca>; 'MARC.COMEAU2@forces.gc.ca' <MARC.COMEAU2@forces.gc.ca>; 'Lynn W' <lynn2765@smtp.gc.ca>; 'jean-luc.bedard@rcmp-grc.gc.ca' <jean-luc.bedard@rcmp-grc.gc.ca>
Subject: Bad guys and bombs: The nuclear risks of small modular reactors

Hot off the press – released today. The article cites concerns for N.B.-based Moltex (for various reasons).

<https://www.infomedia.gc.ca/ps-sp/en/2023/11/3/252723648>

Mike Shaddock
Senior Advisor, Counter Proliferation Operations, Intelligence Collection, Analysis & Production

A0072249_2-000962

Canada Border Services Agency / Government of Canada

Mike.Shaddock@cbsa-asfc.gc.ca / Tel: 613-948-1830 / TTY: 1-866-335-3237


Conseiller principal, division de la collecte, de l'analyse et de la production du renseignement

Agences des services frontaliers du Canada / Gouvernement du Canada

Mike.Shaddock@cbsa-asfc.gc.ca / Tel: 613-948-1830 / TTY: 1-866-335-3237

FW: Moltex

May 10, 2024 12:26

Subject	FW: Moltex
From	Poupore, Jessica
To	Brady, Daniel; Rector, Brianna (she, her elle, la)
Sent	October 27, 2023 14:42
Attachments	<div> New-Nuclear (2)</div>

PROTECTED A - PROTÉGÉ A

Thanks, Brianna. Great analysis.

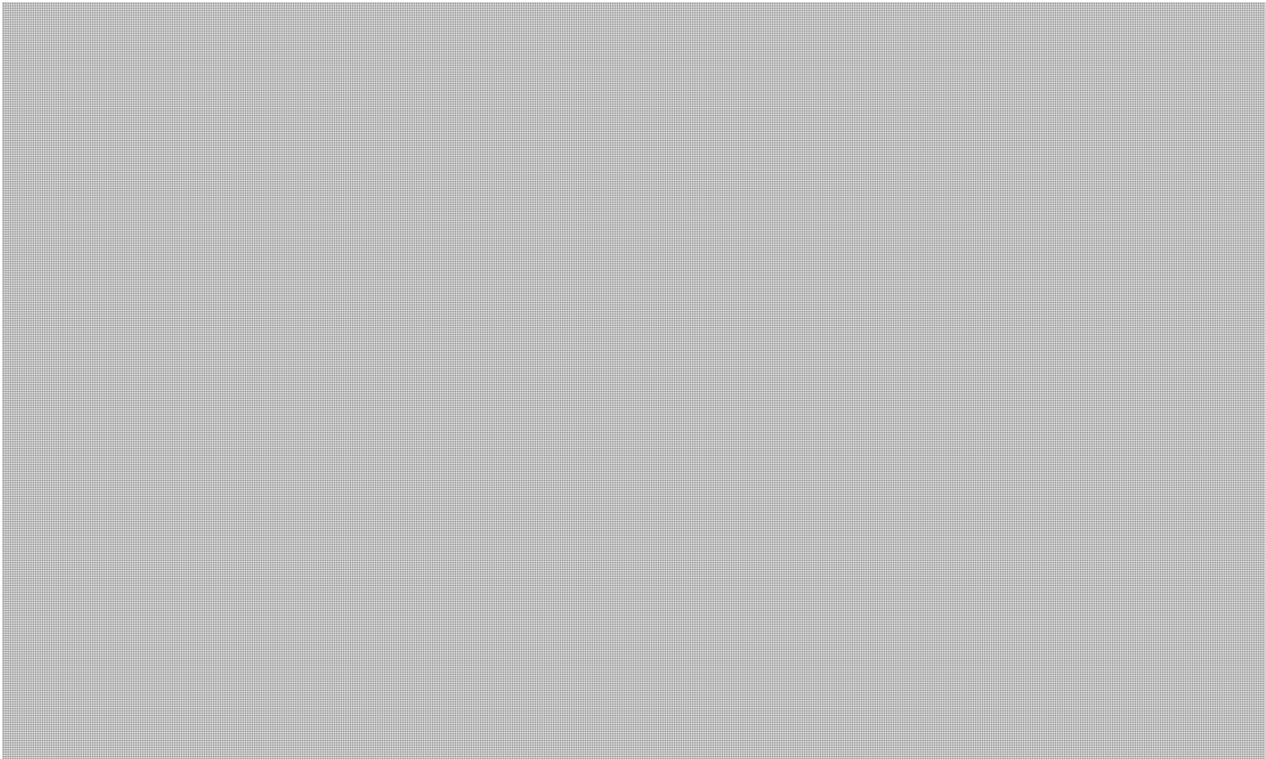
Dan, fyi.

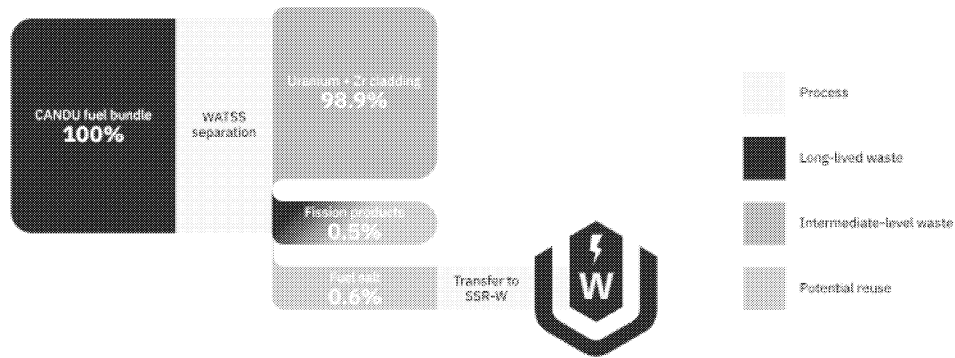
Jessica

From: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>
Sent: Friday, October 27, 2023 2:21 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Moltex

PROTECTED A - PROTÉGÉ A

Hi Jessica,





Just something I noticed!

Brianna Rector, Ph.D.
(she/her/elle)

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New Nuclear

By Ian Scott, Chairman & Chief Scientist, Moltex Energy

NUCLEAR energy is in retreat globally. The International Energy Agency reports that on current trends, even with China's ambitious programs, nuclear energy will fall from 5.8% of world generating capacity to 3.7% by 2040. Nuclear energy is becoming irrelevant, which is a tragedy as it seems very unlikely that climate change goals will be achieved without it.

Ultimately, this decline in the relevance of nuclear energy is driven by its escalating costs which, without massive subsidy, simply make it uncompetitive.

Why has nuclear energy become so expensive? In the 1970s, nuclear power was highly competitive with fossil fuels, and several countries built profitable nuclear industries. The near disaster of Three Mile Island and actual disaster at Chernobyl, along with the meltdown at Fukushima highlighted that the technology was not safe enough. The industry has since doubled down on trying to make existing reactor designs safer by adding layer after layer of engineered safety systems and administrative controls around new reactor designs. Nuclear power plants are now amongst the safest facilities on Earth. However, in doing this, the industry ignored a fundamental principle of achieving safety, which is illustrated in the hazard pyramid in *Figure 1*.

When seeking to improve safety, one should first seek to eliminate or reduce the fundamental hazard. Only then should one seek to manage or contain the remaining hazards through engineered safety systems or administrative controls. The fundamental hazards of the current generation of pressurized water reactors (PWRs) are:

- making the reactor core out of a fuel in which the most hazardous radioactive fission products are trapped as gasses in the fuel pellets at pressures of about 1 t/cm²; and
- putting the reactor core inside a pressure vessel full of water at over 300°C which will flash into steam if the vessel fails, violently driving dispersion of the radioactive materials and allowing decay heat to melt the fuel pellets and release the highly pressurized fission gasses into an already-compromised vessel.

Given these hazards, it is perhaps not surprising that the current generation of reactors requires a plethora of additional systems, containment and control in order to achieve the enviable levels of safety which are, in fact, achieved.

The Stable Salt Reactor (SSR) is a new concept in nuclear reactors, albeit one based on ideas conceived, tested but not commercialized in the 1960s and 70s. It addresses both of those fundamental hazards:

- the fuel is a molten salt in which the most hazardous fission products are not gasses but non-volatile salts; and
- the coolant is a different molten salt which operates at atmospheric pressure and cannot be made to boil by decay heat if the reactor fails in any way.

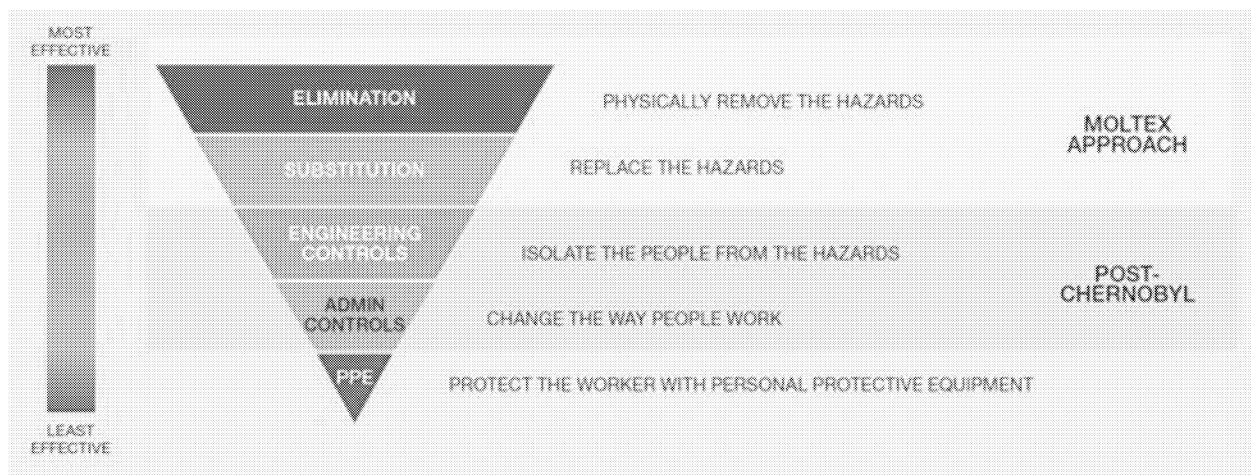


Figure 1: Hazard pyramid

SSR vs molten salt reactor

Nuclear reactors using molten salts as fuel and coolant are not in fact a new idea. Indeed, a prototype molten salt fuelled reactor was built and operated in the US in the 1960s. There is a vital difference however between that reactor, and all its successor designs, and the SSR.

Every reactor design using molten salt fuel, since that prototype in the 1960s, has followed the same paradigm. This is that the molten salt fuel is pumped between a reaction chamber where it achieves critical mass and generates heat, and a heat exchanger which transfers the heat out of the reactor to generate electricity. This has some real attractions, particularly that the fuel can be continuously chemically processed as it passes around the circulating system. But it creates a major new hazard. If the pumps, seals, valves and so on of the system leak, then highly radioactive fuel spills into the reactor space where it can be heated by decay heat to temperatures where even the salt will boil, releasing the radioactive fission products as vapours.

In the SSR, the molten salt fuel is held in conventional fuel tubes where it replaces the solid uranium oxide pellets. Those fuel tubes are cooled by a separate molten salt coolant pool which transfers the heat to turbines to generate power. The fundamental safety advantages of molten salts are still achieved but, by separating the fuel salt from the coolant salt, the reactor avoids the new leakage hazard created in pumped molten salt fuel.

Simple sealed tubes are far less likely to spring leaks than complex plumbing – indeed the integrity of nuclear fuel tubes today is such that leaks are almost unknown. Even if a fuel tube did leak, the leaked fuel will be massively diluted in the large pool of coolant salt ensuring that it can neither achieve critical mass nor heat to the point where the fission products become volatile. The reactor could continue operation despite several such leakages since the radioactivity remains securely within the containment.

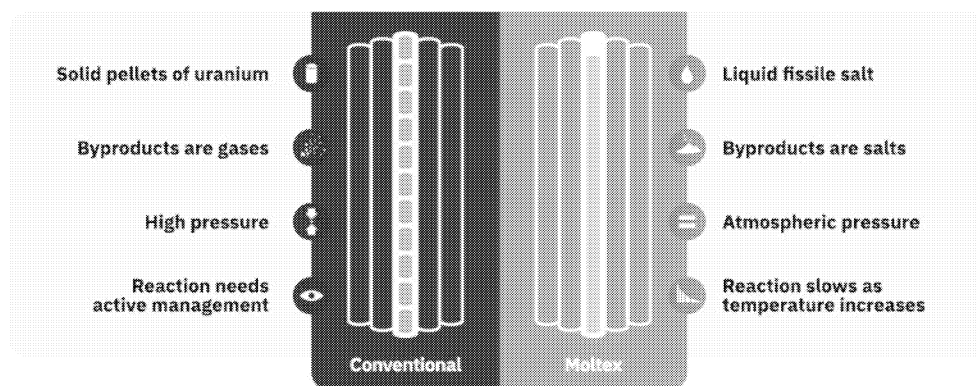


Figure 2: Conventional fuel vs Moltex fuel

The key science

The simple idea of putting molten salt fuel into conventional fuel tubes is, extraordinarily enough, novel. A broad patent covering this invention has now been granted in most major jurisdictions worldwide. The reason for the novelty is interesting – and an object lesson in the dangers of projects achieving their own momentum.

Back in the years immediately after the Manhattan Project, a team in the US sought to design a nuclear reactor to power a plane. They actually looked at exactly the idea of putting molten salt fuel into tubes – but they rejected it. Their reason was sound. Heat moves in fluids primarily by convection. Convection requires gravity. Gravity is unreliable in an aircraft since it (apparently) disappears when the aircraft goes into freefall. So rejecting fuel in tubes for an aircraft nuclear reactor was entirely rational.

But when the pipe dream (or rather nightmare) of nuclear reactors on planes was abandoned, the decision to reject fuel in tubes was never revisited. All the world remembered was that fuel in tubes did not work. That is until the author (new to the nuclear field and ignorant that experts in the field “knew” that fuel in tubes did not work) did the fluid dynamic calculations to show that, with gravity at 1g, fuel in tubes works perfectly well.

That simple discovery, coupled with the courage and vision of many investors, led to the formation of Moltex Energy.

The stable salt reactor today

Moltex found a very positive attitude to new thinking in nuclear energy in Canada. In 2016, it established Moltex Energy Canada and transferred some of its intellectual property rights to that company.

Moltex has also found, in NB Power, a hugely supportive nuclear operator with a nuclear licensed site perfectly suited to advanced reactors. New Brunswick has invested financially in Moltex and the Canadian federal government has a clear strategy to support advanced nuclear and New Brunswick. Financial support has also been given by the US Department of Energy through its ARPA-E program. Moltex launched its first ever crowdfunding campaign, which was extremely successful. In 2021, Moltex will complete the first stage of the nuclear regulatory process with the Canadian Nuclear Safety Commission.

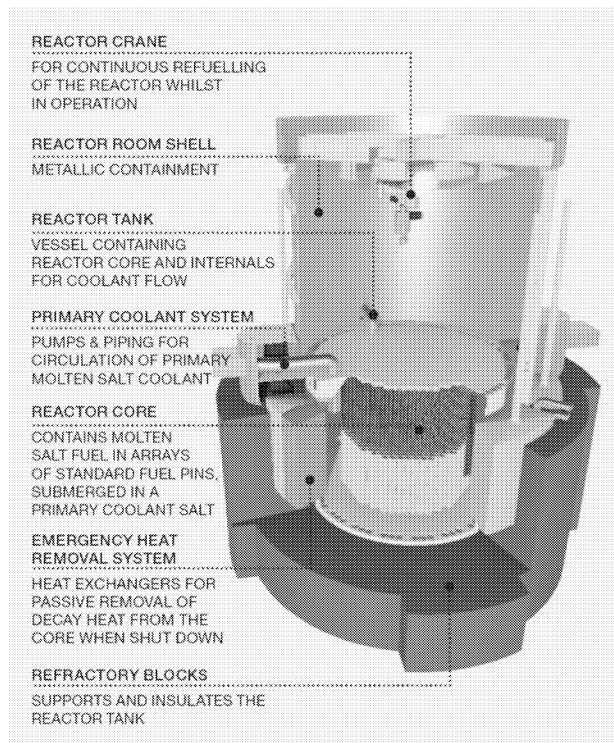


Figure 3: Core of the Stable Salt Reactor – Wasteburner

Why is the SSR a ‘wasteburner’?

There are actually many possible variants of the SSR. The Stable Salt Reactor – Wasteburner (SSR-W) is merely the first of what may become a family of reactors. It is what is known as a fast spectrum reactor. This is a reactor with no moderator to slow down the neutrons produced by fission. The lack of moderator means that more fissile material is needed to achieve critical mass but that the reactor will burn up all the higher actinides produced in conventional moderated reactors.

This is important because spent nuclear fuel contains two distinct classes of radioactive waste products. The fission products are highly radioactive but rather short lived. After 300 years they have decayed to a radioactivity similar to that of mined uranium. But not all nuclei that absorb neutrons fission. Some just absorb the neutron and become new, heavier, atoms. This is how the “higher actinides” of plutonium, americium and curium are formed. These new species are both highly radioactive and long lived. Between 300 years and one million years they dominate the radioactivity of the spent fuel and largely create the need for enormously expensive “deep geological repositories” to keep the fuel safe for millennia.

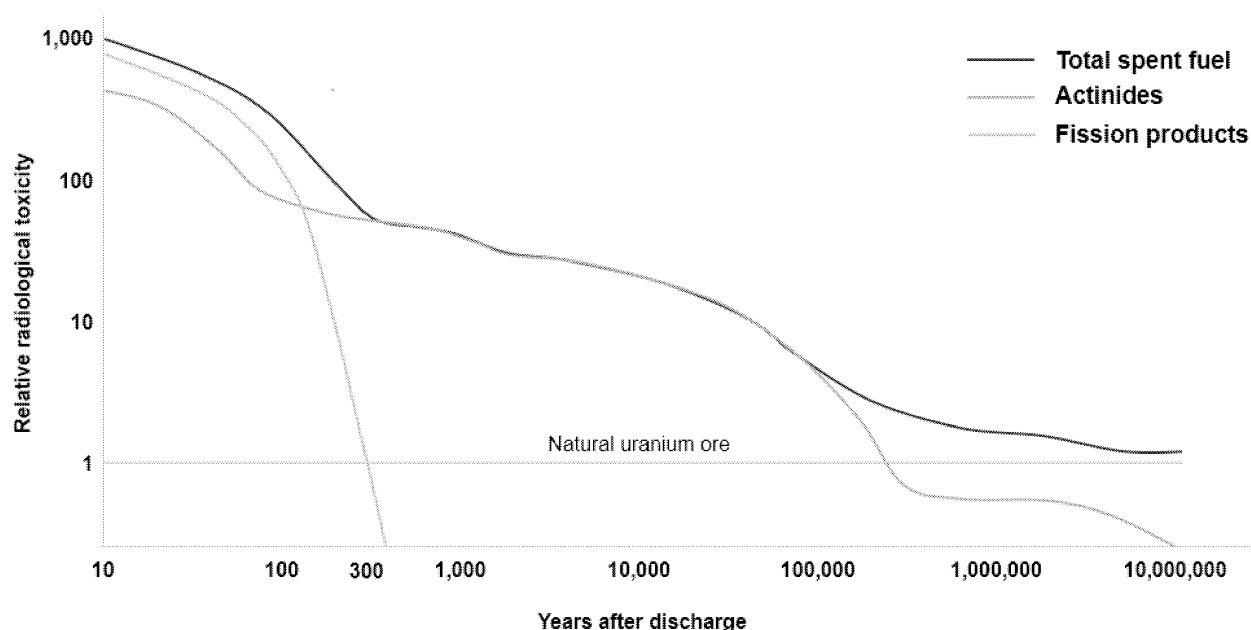


Figure 4: Decay of spent fuel waste products.

Because it burns these higher actinides, and not just plutonium, the result is that the SSR-W can radically clean up the nuclear waste left by today's generation of nuclear reactors. This is vitally important to giving nuclear energy the "social licence" to expand beyond its current limits.

But first, it is necessary to extract those higher actinides from the spent fuel. In Canada, the dominant nuclear reactor is the CANDU reactor, a Canadian-invented and developed reactor which has the unique ability to use natural, non-enriched uranium as fuel. Because it uses natural uranium, it only achieves a relatively low burnup, about 1/5 of that achieved by reactors using enriched uranium. For a given amount of energy produced, CANDU reactors therefore produce five times the mass of spent fuel, and that spent fuel contains about 1/3 of the higher actinides found in spent enriched fuel.

Extraction of higher actinides from spent fuel has, to date, been an expensive flop in the nuclear industry – though it has been very successful in producing nuclear bombs. Processing the large mass of spent CANDU fuel through the aqueous reprocessing methods conventionally used would be utterly uneconomic.

Moltex has therefore had to invent a new way to extract higher actinides from spent fuel. This is the WATSS process.

WATSS: Turning nuclear waste into fuel

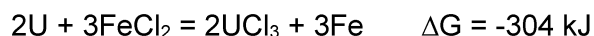
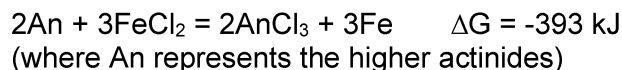
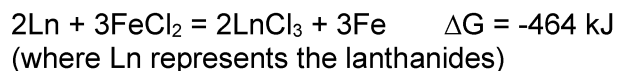
The central simplifying fact that makes the WATSS process possible is that the SSR-W does not need, nor indeed does it want, high purity of its fuel. It needs the higher actinides as the fissile material but allows them to be mixed with both unused uranium and lanthanide fission products. As any chemical engineer knows, high purity costs money.

The WATSS process first electrochemically reduces the uranium, the higher actinides and some of the lanthanides in spent CANDU fuel to a molten metal alloy. This is essentially the same



process used in aluminium smelters. While it is novel to nuclear, it has an extensive industrial pedigree.

The second stage is that this alloy is extracted with a clean molten salt mixture of sodium and iron chlorides. The extraction process is actually a series of chemical reactions:



These reactions are listed in their order of free energies which shows they take place in the same order. First the lanthanides are extracted, then the higher actinides, and finally the uranium.

Because the SSR-W loves fuel which contains both uranium and lanthanides, it is possible to extract all the higher actinides from the alloy in a single, or double step. The low need for purity leads to a simple process. It also ensures that it is utterly impossible to use this process to produce plutonium of sufficient purity to use in nuclear weapons – an important moral imperative in a non-nuclear weapons country like Canada.

The output of this process is exceptionally simple. Highly radioactive, long-lived, CANDU waste enters the process. What comes out is:

A small volume (about 1/100 the volume of the input spent fuel) of highly radioactive but relatively short-lived electrolyte from the electroreducer. That can be disposed of down 5 km deep boreholes in geologically stable rock at a fraction of the cost of a conventional deep geological repository (which is only about 500 m deep) and with a fraction of the final surface radiation exposure to our descendants.

A residual uranium alloy with very low radioactivity and negligible heat generation that can be safely and inexpensively stored until the uranium and other noble metals in the alloy have a value worth recycling it for.

Fuel for the SSR-W which can be recycled indefinitely until all the higher actinides are consumed and clean energy produced.

The problem with molten salt reactors

What keeps molten salt reactor designers awake at night, given their huge intrinsic advantages? One word. Corrosion.

The engineering world has largely solved the problem of metal corrosion in water and air, despite the fact that iron plus oxygen or water will eventually produce rust. The solution has been to find ways to form stable oxide layers on steels which massively slow down corrosion. These are stainless steels.



That approach fails in molten salts which are excellent at dissolving such oxide layers. Many molten salt reactor designers resort to advanced alloys containing very high levels of nickel which is less easily corroded. The problem with such alloys is, however, that they have no track record of use in the nuclear industry – which conservatively adds a decade to any development timeline.

Moltex has pioneered a different approach, one which is in fact enabled by our fuel-in-tube design. Addition of small amounts of metallic zirconium to each fuel tube has the effect of scavenging any oxidizing species in the salt – and since fission produces about 1/3 of the periodic table as fission products there are many such species.

In chemical terms, the zirconium locks the redox potential of the salt to that of zirconium metal. That redox potential is so strongly reducing that the thermodynamically stable form of iron and chromium is actually as the metal. There is no driving force to extract the metal into the salt as chromium or iron chlorides. This means we can use standard, well-understood Fe/Cr ferritic steels for construction and avoid use of nickel (which has the unfortunate property of producing helium when irradiated by neutrons and rendering the alloy brittle).

The downside of this approach is that the zirconium metal will migrate through the salt to deposit in the coldest part of the system. This makes it impossible to use in pumped molten salt reactors where the deposit will undoubtedly happen where it will do the most harm (an invariable law of engineering). But with the fuel salt in tubes, we really do not care where the zirconium is – it is of no importance whatsoever.

Summary

Nuclear power is absolutely required if we are to make sufficient progress in the decarbonization of our energy use and tackle climate change in any meaningful way. But it is currently too expensive. Without a new approach to nuclear, we are destined to fail.


By removing the hazards of contained pressure and radioactive gases, Moltex has found a way of making nuclear power cost-effective. In fact, not just cost-effective, but actually less expensive than the fossil fuels which it will replace.

That raises the prospect of addressing climate change while simultaneously reducing the cost of energy for the world. There is work to do to bring the technology to market – our target date for commissioning and operation of the first Moltex reactor is 2030 – but the strength of the underlying science combined with innovative engineering gives us confidence that we will succeed.

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

RE: Moltex - Due Diligence

May 10, 2024 12:36

Subject	RE: Moltex - Due Diligence
From	Edwards, Geoff
To	Poupore, Jessica
Cc	Brady, Daniel; Rector, Brianna (she, her elle, la)
Sent	October 19, 2023 11:38
Attachments	<div> Final report</div>

UNCLASSIFIED - NON CLASSIFIÉ

OK – I was confused for a bit there. But I'd like to see 'Report 3' which is referenced in this so-called 'Final Report'.

I've gone back and looked at the various reports in the Moltex folder, then talked to Kathleen.

Geoff

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Thursday, October 19, 2023 10:27 AM
To: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>
Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Geoff!

s.20(1)(b)
 s.20(1)(c)
 s.21(1)(b)

Jessica

From: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Sent: Thursday, October 19, 2023 10:25 AM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>
Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Hi Jessica:
 I was a bit puzzled about the [REDACTED]
 [REDACTED] Let me have another look.

Geoff

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Thursday, October 19, 2023 10:06 AM
To: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>
Subject: FW: Moltex - Due Diligence
Importance: High

UNCLASSIFIED - NON CLASSIFIÉ

Hi Geoff,
 Would appreciate your thoughts on how to respond to the question below from ISED. (highlighted in yellow)
 I sent our response this morning (see below). [REDACTED]
 [REDACTED]
 Many thanks,
 Jessica

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Sent: Thursday, October 19, 2023 9:59 AM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>; Mar, Amy (ISED/ISDE) <Amy.Mar@ised-isde.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Good morning Jessica,
 Thank you very much for providing this input. Much appreciated!

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

By way of a follow-up further to Item 1 below:

Thanks again very much for input on this item.

Kind regards,

James Campbell
Investment Analyst
Innovation, Science and Economic Development Canada / Government of Canada
James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

Analyste des investissements
Innovation, Sciences et Développement économique Canada/ Gouvernement du Canada
James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: October 19, 2023 9:25 AM
To: Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>; Mar, Amy (ISED/ISDE) <Amy.Mar@ised-isde.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: RE: Moltex - Due Diligence

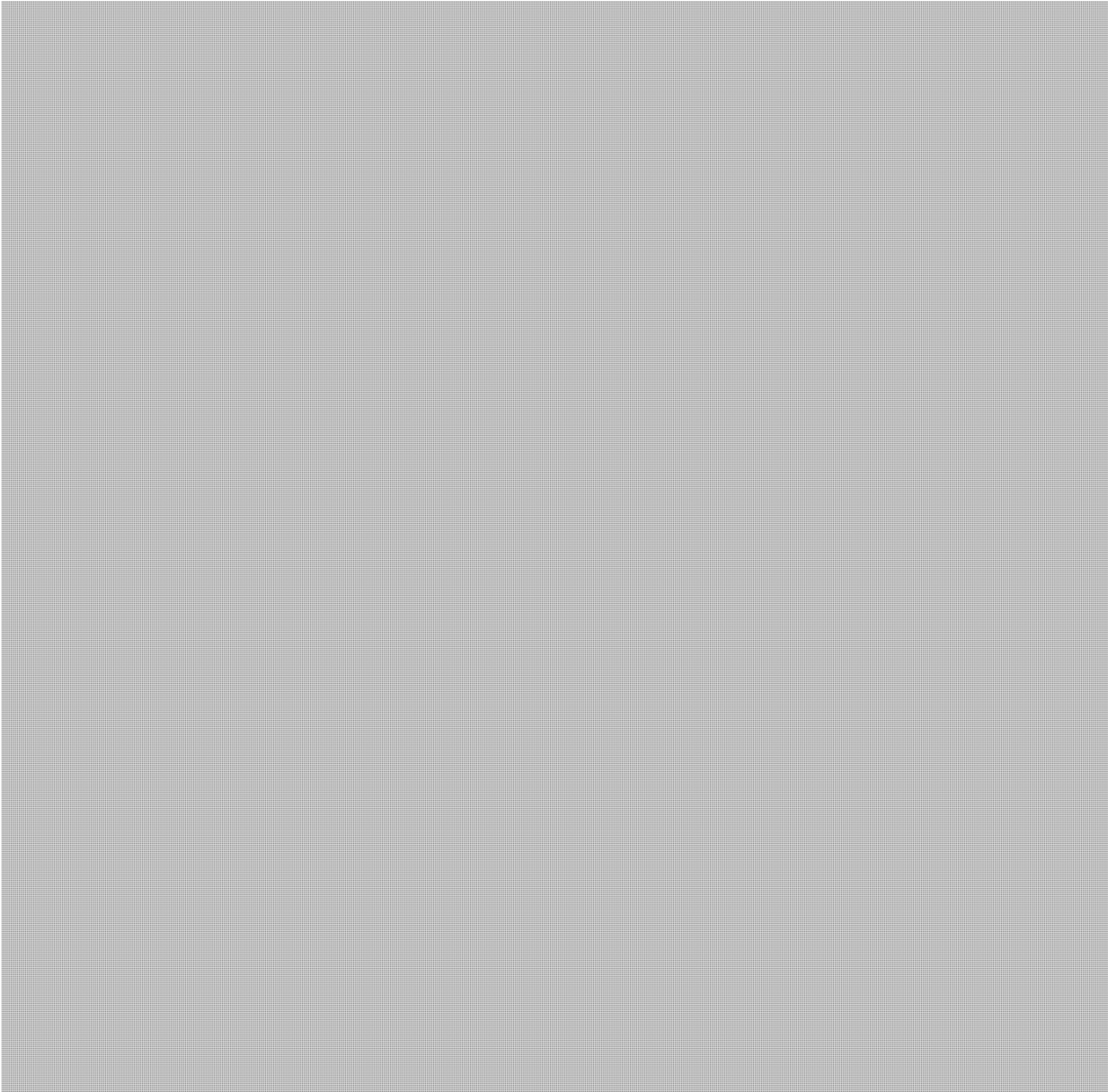
UNCLASSIFIED - NON CLASSIFIÉ

Hi Cindy,

Please see below for our responses to your questions regarding Moltex's WATSS project.

- 1.

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)



- 1.
- 1.

Happy to answer questions or provide clarification.

Best regards,
Jessica

Jessica Poupore
(she/her/elle)

A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire

Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada
jessica.poupore@nrcan-rncan.gc.ca Mobile: 613-292-8981

From: Lin2, Cindy (she, her | elle, la) (ISED/ISDE)
Sent: October 16, 2023 8:34 AM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: RE: Moltex - Due Diligence

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

Hello Jessica,

Thank you for your response.

Attached is the market and technical due diligence report that was completed by NRCan back in 2019.

Have a nice day,

Cindy Lin
(she, her | elle, la)

Sr Investment Analyst, Strategic Innovation Fund
Innovation, Science and Economic Development Canada / Government of Canada
cindy.lin2@ised-isde.gc.ca / Tel: 343-597-4537 / TTY: 1-866-694-8389

Analyste princ. d'investissements, Fonds stratégique pour l'innovation
Innovation, Sciences et Développement économique Canada / Gouvernement du Canada
cindy.lin2@ised-isde.gc.ca / Tél: 343-597-4537 / ATS : 1-866-694-8389

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: October 15, 2023 9:35 PM
To: Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: RE: Moltex - Due Diligence

UNCLASSIFIED - NON CLASSIFIÉ

Hi Cindy,

NRCan has met with Moltex a few times over the last several weeks. [REDACTED]
[REDACTED] I don't think we'll be in a position to answer your questions early this week, but we appreciate the urgency and will do our best. Thank you for the questions as this will help us focus the analysis.

I believe there was a technical review done a few years ago as part of the SIF application / funding agreement process. I wasn't able to find a copy in NRCan's records – could you please send me the original technical review? Daniel Brady was involved in the review at the time.

Many thanks,
Jessica

Jessica Poupore
(she/her/elle)

A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire

Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada
jessica.poupore@nrcan-rncan.gc.ca Mobile: 613-292-8981

A0072277_5-000977

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

From: Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>
Sent: Sunday, October 15, 2023 9:26 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: FW: Moltex - Due Diligence

Hi Jessica,

In James, absence, I wanted to follow-up on Dan's e-mail below. Dan has indicated that the report will likely not be ready till the end of next week. We would like to brief up early next week, so I was wondering if you would be able to provide your opinion on the following points prior to completing the report:

1.

2.

3.

If it's easier to chat over MS Teams, please let me know. I will be happy to set one up.

Thank you for your help,

Cindy Lin
 (she, her | elle, la)

Sr Investment Analyst, Strategic Innovation Fund
 Innovation, Science and Economic Development Canada / Government of Canada
cindy.lin2@ised-isde.gc.ca / Tel: 343-597-4537 / TTY: 1-866-694-8389

Analyste princ. d'investissements, Fonds strategique pour l'innovation
 Innovation, Sciences et Développement économique Canada / Gouvernement du Canada
cindy.lin2@ised-isde.gc.ca / Tél: 343-597-4537 / ATS : 1-866-694-8389

----- Original message -----

From: "Brady, Daniel" <daniel.brady@NRCan-RNCan.gc.ca>
Date: 2023-10-13 4:41 p.m. (GMT-05:00)
To: "Campbell2, James (ISED/ISDE)" <James.Campbell2@ised-isde.gc.ca>, "Poupore, Jessica" <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: "Clarke, Pamela (ISED/ISDE)" <Pamela.Clarke@ised-isde.gc.ca>, "Lin2, Cindy (she, her | elle, la) (ISED/ISDE)" <Cindy.Lin2@ised-isde.gc.ca>, "Di Palma, Gabriel (he, him | il, le) (ISED/ISDE)" <Gabriel.DiPalma@ISED-ISDE.GC.CA>
Subject: RE: Moltex - Due Diligence

Declassified by ATIP/
 Déclassifié par l'ATIP
 PROTECTED A / PROTÉGÉ A

A0072277_6-000978

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

Hi James

We are working to have a report done for later next week.

I am away next week, but Jessica (on this email) is leading the review. Please feel free to reach out to her.

dan

From: Campbell2, James (ISED/ISDE) <James.Campbell2@ised-isde.gc.ca>

Sent: Friday, October 13, 2023 10:30 AM

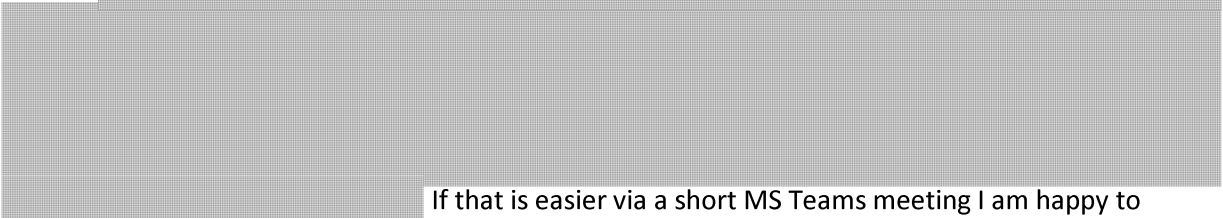
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Clarke, Pamela (ISED/ISDE) <Pamela.Clarke@ised-isde.gc.ca>; Lin2, Cindy (she, her | elle, la) (ISED/ISDE) <Cindy.Lin2@ised-isde.gc.ca>; Di Palma, Gabriel (he, him | il, le) (ISED/ISDE) <Gabriel.DiPalma@ISED-ISDE.GC.CA>

Subject: Moltex - Due Diligence

Good morning Daniel,

Hope you are doing well. It has been a while since we have been in touch on the SMR files and I understand that your work in that area is continuing, in particular with regards to due diligence on Moltex



If that is easier via a short MS Teams meeting I am happy to arrange it. I can be available any time today for a call if that works for you.

Thanks very much!

James Campbell

Investment Analyst

Innovation, Science and Economic Development Canada / Government of Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

Analyste des investissements

Innovation, Sciences et Développement économique Canada/ Gouvernement du Canada

James.Campbell2@ised-isde.gc.ca / Tel: 613-406-4196

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

RE: nrcan review

May 10, 2024 12:37

Subject	RE: nrcan review
From	Poupore, Jessica
To	Brady, Daniel
Sent	October 19, 2023 07:11

Declassified by ATIP/
Déclassifié par l'ATIP
PROTECTED A - PROTÉGÉ A

Final draft:

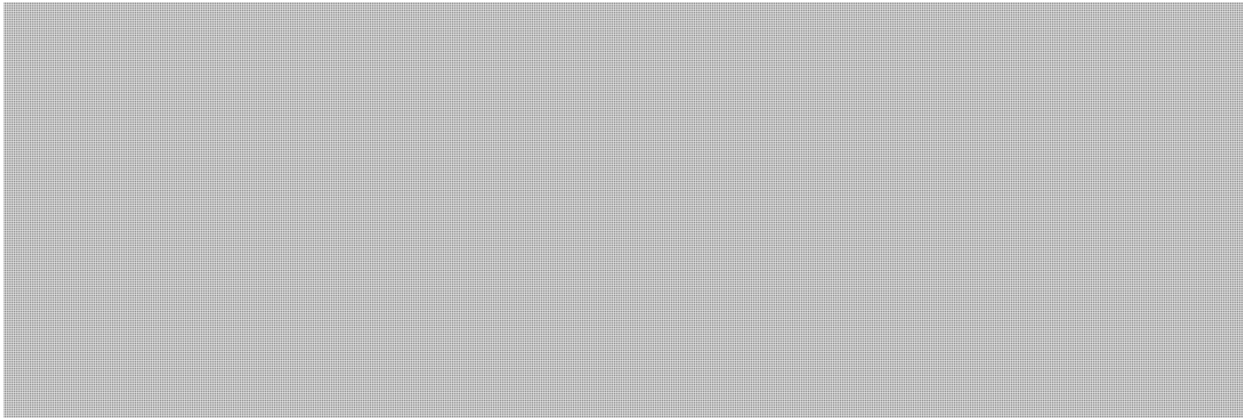
Please see below for our responses to your questions regarding Moltex’s WATSS project.

1.

1.

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

1.



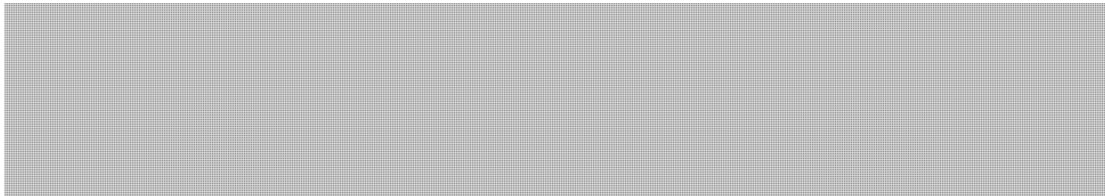
From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: Thursday, October 19, 2023 7:09 AM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Fwd: nrcan review

Sent from my iPhone

Begin forwarded message:

From: "Brady, Daniel" <daniel.brady@nrcan-rncan.gc.ca>
Date: October 18, 2023 at 9:43:01 PM GMT+2
To: "Poupore, Jessica" <Jessica.Poupore@nrcan-rncan.gc.ca>
Cc: "Edwards, Geoff" <Geoff.Edwards@nrcan-rncan.gc.ca>
Subject: Re: nrcan review

Jessica, Geoff



Dan

Sent from my iPhone

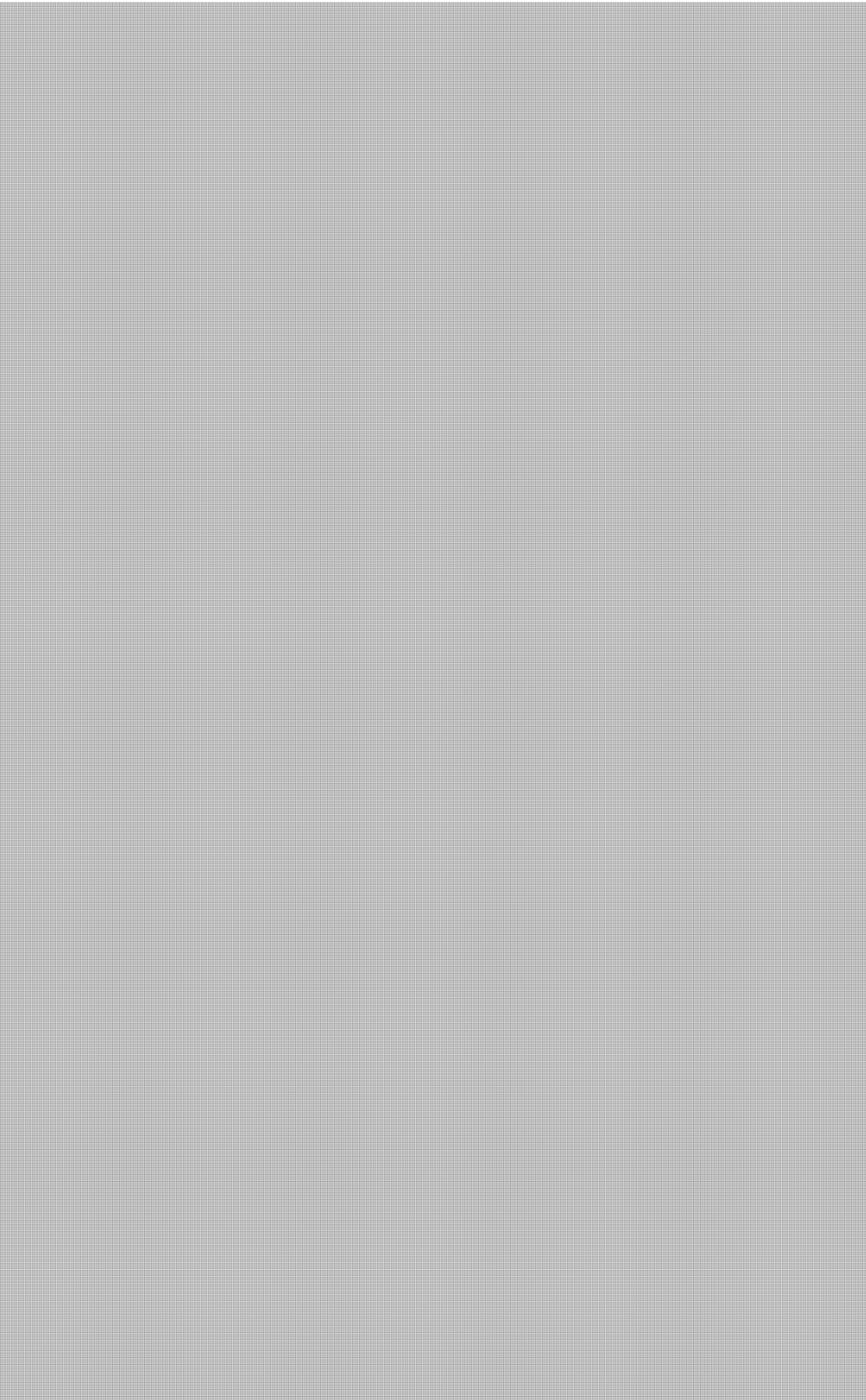
On Oct 18, 2023, at 9:06 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca>
wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Draft response to ISED, for review:

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

1.



1.

1.

From: Poupore, Jessica
Sent: Wednesday, October 18, 2023 10:02 AM
To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Edwards, Geoff
<Geoff.Edwards@nrcan-rncan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: RE: nrcan review

Agreed. I think there is a technical misunderstanding. I will note that in the response. Thanks, Kate and Geoff for the info! That will be very helpful for the response.

Jessica

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 9:58 AM

To: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: RE: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Morning,

I took a quick look through some of the SIF documents, and found only the following
[REDACTED] wondering if there's a bit of a technical confusion in the question.

1.

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>

Sent: Wednesday, October 18, 2023 9:55 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

A0072278_4-000983

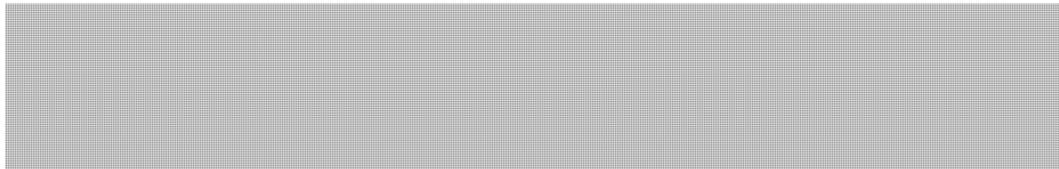
s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

Subject: RE: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ



Geoff

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 18, 2023 9:48 AM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>
Subject: RE: nrcan review


UNCLASSIFIED - NON CLASSIFIÉ

Ok, that will help to answer ISED's question 1.b).

Geoff, does that make sense to you?

Thanks,
Jessica


From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 18, 2023 9:45 AM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>
Subject: Re: nrcan review

Thanks. I will leave it to Geoff, 


Sent from my iPhone

On Oct 18, 2023, at 3:20 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Ok, strange. Here are the questions from ISED that we are responding to (
highlighted in yellow):

1. 

A0072278_5-000984

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

2.

3.

Jessica

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 9:15 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: Re: nrcan review

I know for a fact that [REDACTED] Wonder why ISED is asking.

Sent from my iPhone

On Oct 18, 2023, at 2:39 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

It was a question from ISED. We will clarify with ISED that [REDACTED]

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 4:07 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: Re: nrcan review

I did not pick that up from Geoff. I knew they are [REDACTED]

Sent from my iPhone

On Oct 18, 2023, at 3:59 AM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

A0072278_6-000985

s.19(1)

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

UNCLASSIFIED - NON CLASSIFIÉ

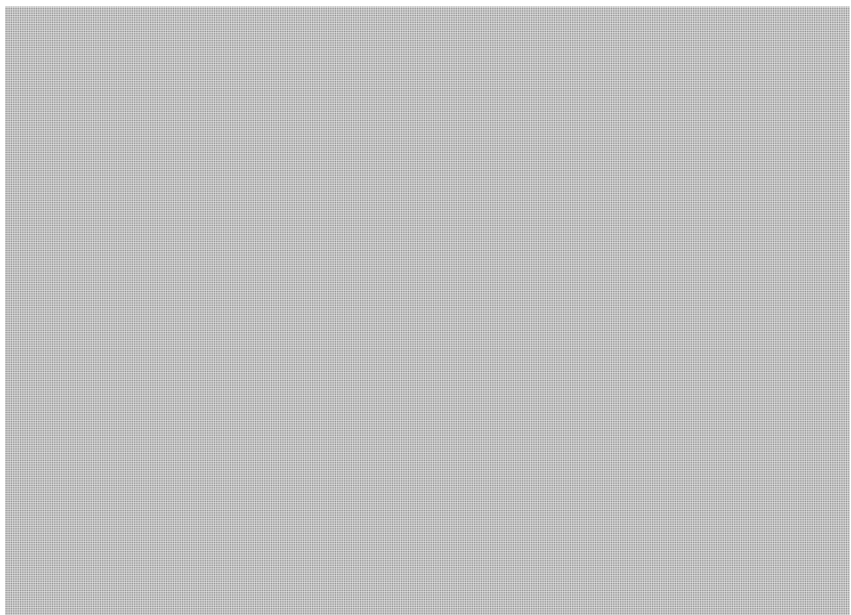
Additional info from Moltex

From: Rory O'Sullivan <[REDACTED]>
Sent: Tuesday, October 17, 2023 7:01 PM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Re: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

*****Caution** - email originated from outside of NRCan. **Read the warning below / Attention-** Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

Hi Fred,



Rory

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Sent: 17 October 2023 17:02
To: Rory O'Sullivan <[REDACTED]>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Hi Rory,

We have reviewed the test results that you provided to Dan. [REDACTED]

A0072278_7-000986

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

[REDACTED]

We plan to provide our analysis/advice to ISED and ACOA in the next couple days.

Thanks

Fred

This email originated from outside of NRCan. **Do not click links or open attachments unless you recognize the sender and believe the content is safe.** For information on how to recognize and report phishing emails, please visit the [Phishing Spot](#) on the NRCan Intranet.

Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour plus d'informations sur la façon de reconnaître et de signaler les courriels d'hameçonnage, veuillez visiter le site [hameçonnage](#) sur l'intranet de RNCan.

[REDACTED]

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

RE: nrcan review

May 10, 2024 12:37

Subject	RE: nrcan review
From	Poupore, Jessica
To	Brady, Daniel; Edwards, Geoff
Sent	October 18, 2023 17:07

Declassified by ATIP/
Déclassifié par l'AIPRB
PROTECTED A - PROTÉGÉ A

Sorry, one edit at the end, to provide a technical conclusion on the [REDACTED]

Please see below for our responses to your questions regarding Moltex’s WATSS project. [REDACTED]

1.

[REDACTED]

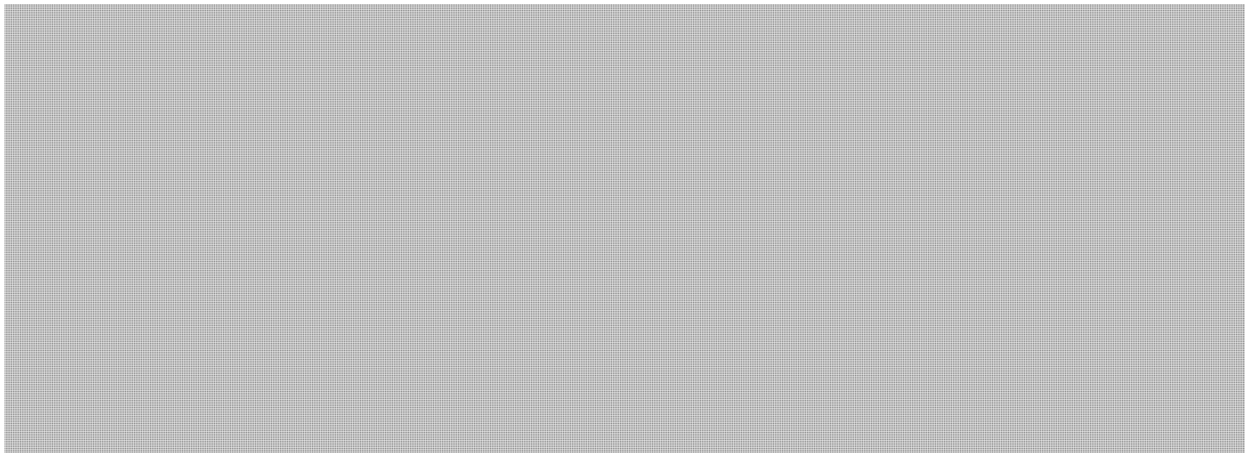
s.20(1)(b)

s.20(1)(c)

s.21(1)(a)

s.21(1)(b)

1.
1.



From: Poupore, Jessica

Sent: Wednesday, October 18, 2023 4:49 PM

To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>

Subject: RE: nrcan review

Importance: High

Hi Dan,

My draft response is attached. Let me know if you have any issues, then I will send to ISED.

Thanks,
Jessica

From: Poupore, Jessica

Sent: Wednesday, October 18, 2023 4:26 PM

To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>

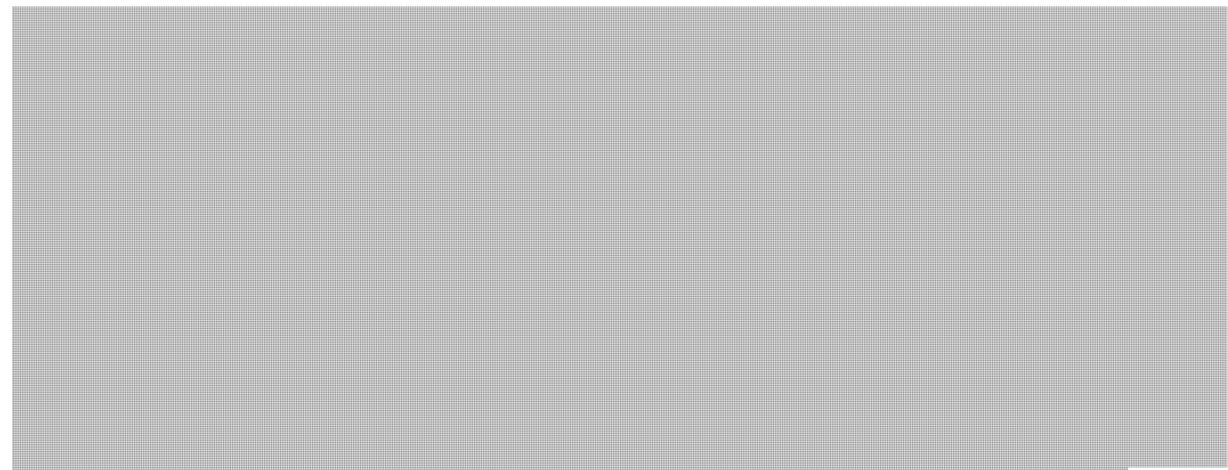
Subject: RE: nrcan review

Importance: High

Edits made. Q1 pertains to [REDACTED] Q2/3 are addressed together because they both relate to [REDACTED]

Sharepoint version is saved here if needed: [ISED Draft Response](#)

1.



A0072279_2-000989

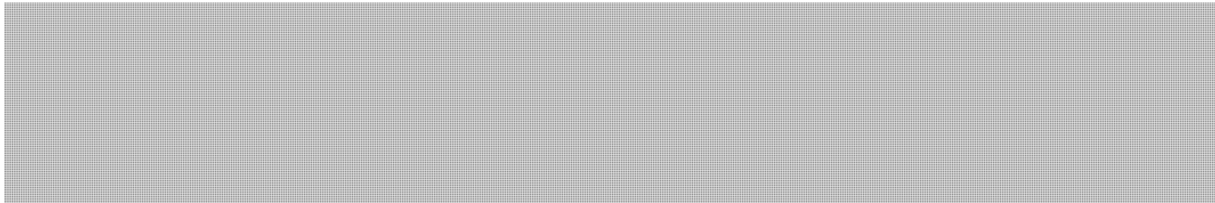
s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)



1.
1.

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 18, 2023 3:43 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Subject: Re: nrcan review

Jessica, Geoff



Dan

Sent from my iPhone

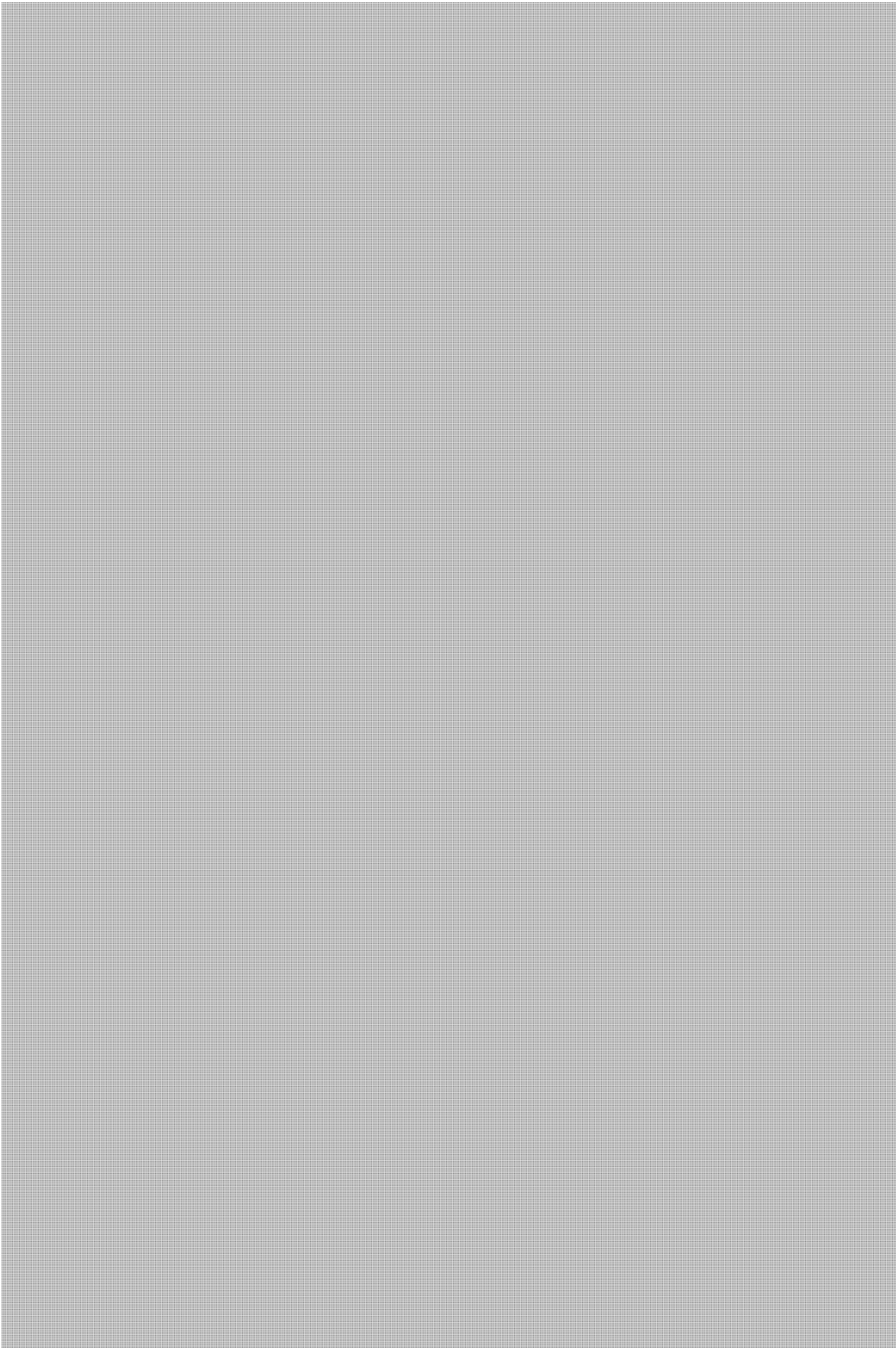
On Oct 18, 2023, at 9:06 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

UNCLASSIFIED - NON CLASSIFIÉ

Draft response to ISED, for review:

1.



1.

1.

From: Poupore, Jessica

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

Sent: Wednesday, October 18, 2023 10:02 AM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: RE: nrcan review

Agreed. I think there is a technical misunderstanding. I will note that in the response. Thanks, Kate and Geoff for the info! That will be very helpful for the response.

Jessica

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 9:58 AM

To: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: RE: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Morning,

I took a quick look through some of the SIF documents, and found only the following [REDACTED]
[REDACTED] wondering if there's a bit of a technical confusion in the question.

1.

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>

Sent: Wednesday, October 18, 2023 9:55 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

A0072279_5-000992

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

Subject: RE: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Geoff

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 9:48 AM

To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: RE: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Ok, that will help to answer ISED's question 1.b).

Geoff, does that make sense to you?

Thanks,
Jessica

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 9:45 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: Re: nrcan review

Thanks. I will leave it to Geoff,

Sent from my iPhone

On Oct 18, 2023, at 3:20 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Ok, strange. Here are the questions from ISED that we are responding to *highlighted in yellow*):

1.

A0072279_6-000993

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

2.

3.

Jessica

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 9:15 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: Re: nrcan review

I know for a fact that [REDACTED] Wonder why ISED is asking.

Sent from my iPhone

On Oct 18, 2023, at 2:39 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

It was a question from ISED. We will clarify with ISED that [REDACTED]

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 4:07 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: Re: nrcan review

I did not pick that up from Geoff. I knew they are [REDACTED]

Sent from my iPhone

On Oct 18, 2023, at 3:59 AM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

A0072279_7-000994

s.19(1)
s.20(1)(b)
s.20(1)(c)
s.21(1)(b)

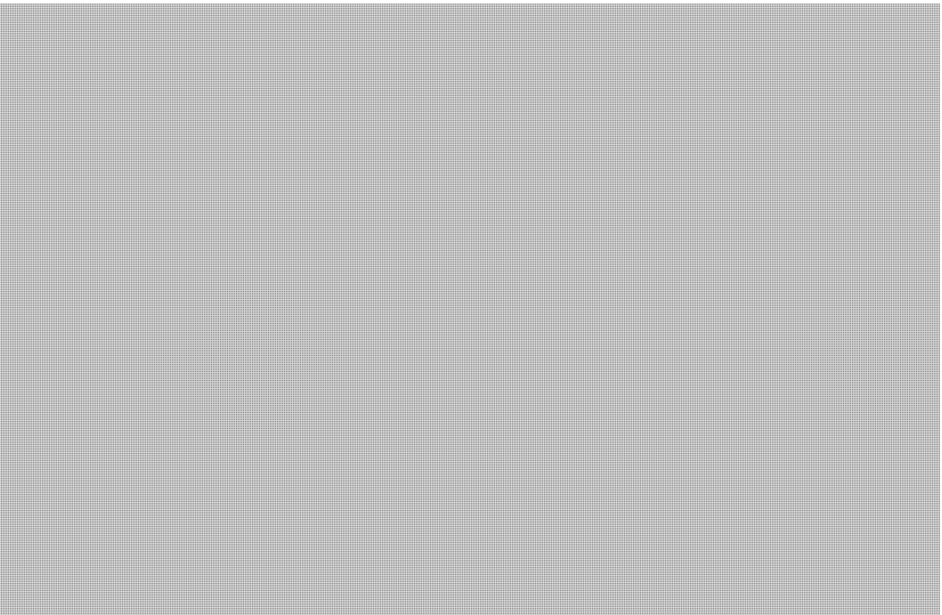
Additional info from Moltex

From: Rory O'Sullivan <[REDACTED]>
Sent: Tuesday, October 17, 2023 7:01 PM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Poupore, Jessica <jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Re: nrcan review

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Hi Fred,



Rory

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Sent: 17 October 2023 17:02
To: Rory O'Sullivan <[REDACTED]>
Cc: Poupore, Jessica <jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Hi Rory,

We have reviewed the test results that you provided to Dan.

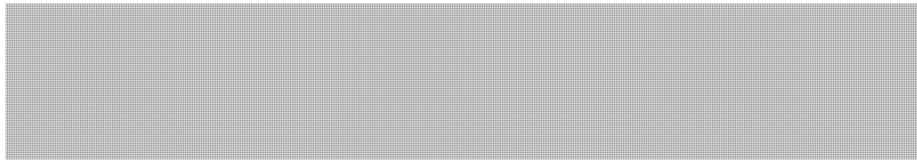


A0072279_8-000995

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)



We plan to provide our analysis/advice to ISED and ACOA in the next couple days.

Thanks

Fred

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s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

RE: nrcan review

May 10, 2024 12:38

Subject	RE: nrcan review
From	Poupore, Jessica
To	Brady, Daniel; Edwards, Geoff
Sent	October 18, 2023 16:48
Attachments	<div> RE Moltex - Due Dilige...</div>

Declassified by ATIP/
Révisé par l'ATIP
PROTECTED A / PROTÉGÉ A

Hi Dan,

My draft response is attached. Let me know if you have any issues, then I will send to ISED.

Thanks,
Jessica

From: Poupore, Jessica
Sent: Wednesday, October 18, 2023 4:26 PM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Subject: RE: nrcan review
Importance: High

Edits made. Q1 pertains to [REDACTED] Q2/3 are addressed together because they both relate to [REDACTED]

Sharepoint version is saved here if needed: [ISED Draft Response](#)

1.



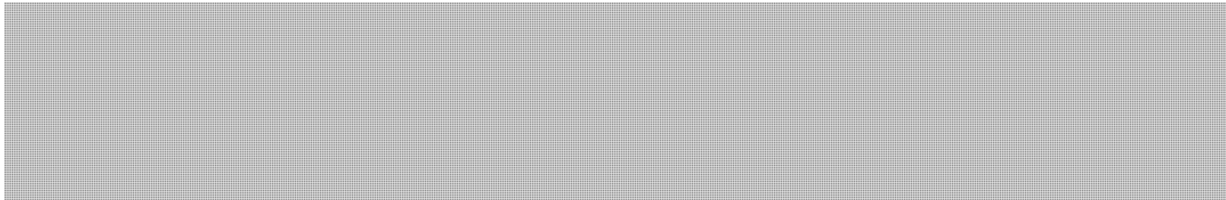
s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)



1.
1.

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 18, 2023 3:43 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Edwards, Geoff <Geoff.Edwards@nrca-nrcan.gc.ca>
Subject: Re: nrca review

Jessica, Geoff



Dan

Sent from my iPhone

On Oct 18, 2023, at 9:06 PM, Poupore, Jessica <Jessica.Poupore@nrca-nrcan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Draft response to ISED, for review:

s.20(1)(b)

s.20(1)(c)

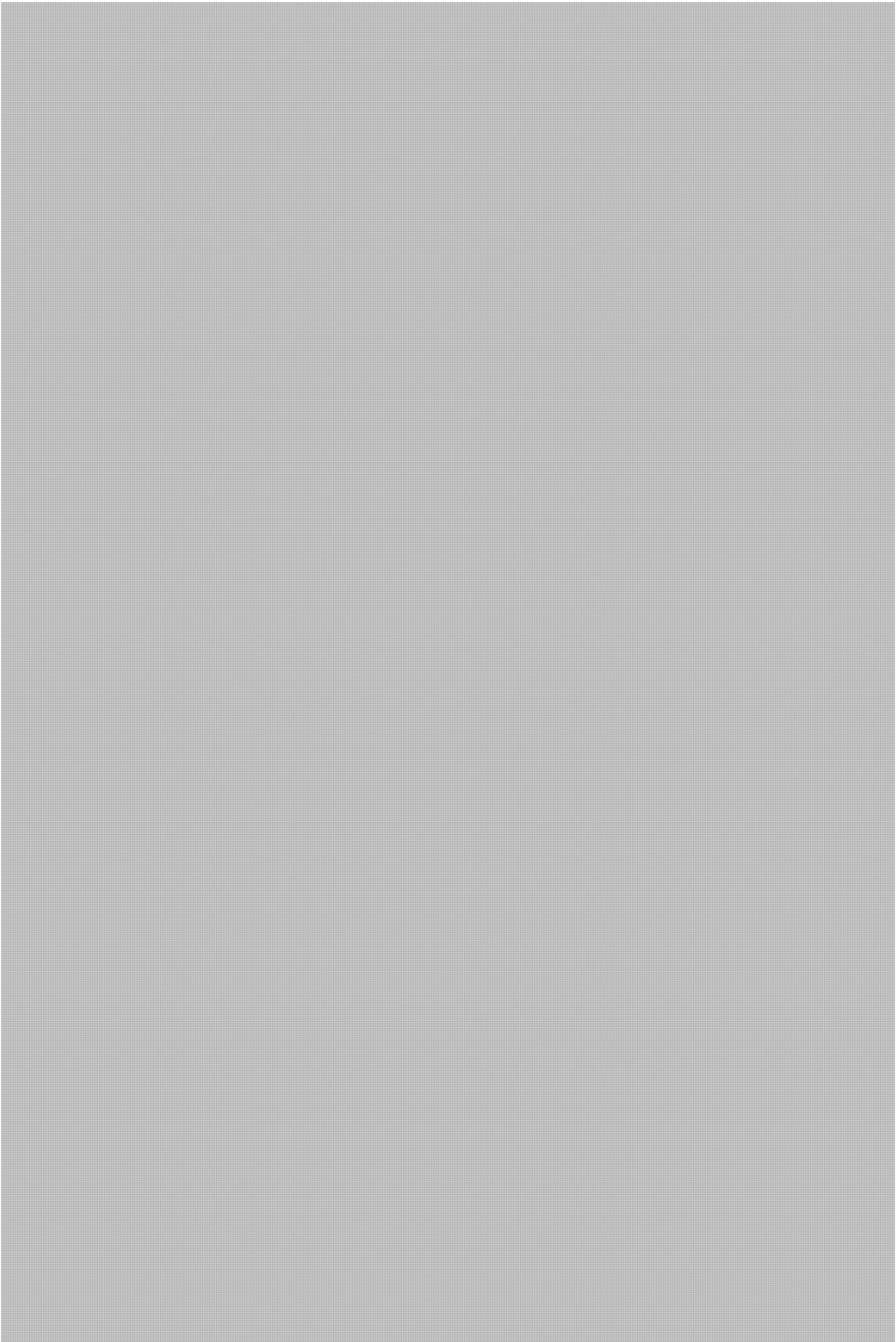
s.21(1)(a)

s.21(1)(b)

1.

1.

1.



From: Poupore, Jessica

Sent: Wednesday, October 18, 2023 10:02 AM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Edwards, Geoff
<Geoff.Edwards@nrcan-rncan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Hawkins, Griffith

A0072280_3-000999

s.20(1)(b)
s.20(1)(c)
s.21(1)(b)

<Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: RE: nrcan review

Agreed. I think there is a technical misunderstanding. I will note that in the response. Thanks, Kate and Geoff for the info! That will be very helpful for the response.

Jessica

From: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 9:58 AM

To: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: RE: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Morning,

I took a quick look through some of the SIF documents, and found only the following [REDACTED]
[REDACTED] wondering if there's a bit of a technical confusion in the question.

1.

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada
Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada

From: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>

Sent: Wednesday, October 18, 2023 9:55 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: RE: nrcan review

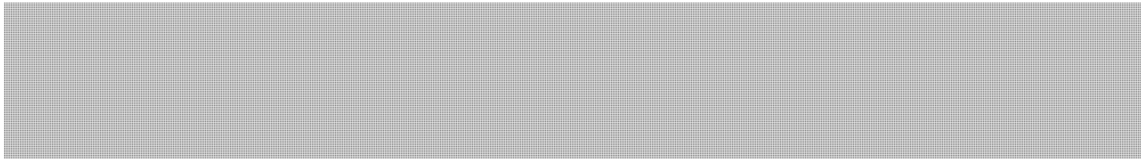
UNCLASSIFIED - NON CLASSIFIÉ

A0072280_4-001000

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)



Geoff

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 18, 2023 9:48 AM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>
Cc: Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>
Subject: RE: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Ok, that will help to answer ISED's question 1.b).

Geoff, does that make sense to you?

Thanks,
Jessica


From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 18, 2023 9:45 AM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>
Subject: Re: nrcan review

Thanks. I will leave it to Geoff, 

Sent from my iPhone

On Oct 18, 2023, at 3:20 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Ok, strange. Here are the questions from ISED that we are responding to 
highlighted in yellow):

1. 

A0072280_5-001001

s.19(1)

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

2.

3.

Jessica

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 9:15 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: Re: nrcan review

I know for a fact that [REDACTED] Wonder why ISED is asking.

Sent from my iPhone

On Oct 18, 2023, at 2:39 PM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

It was a question from ISED. We will clarify with ISED that [REDACTED]

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 18, 2023 4:07 AM

To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Cc: Edwards, Geoff <Geoff.Edwards@nrcan-rncan.gc.ca>; Rector, Brianna (she, her | elle, la) <brianna.rector@nrcan-rncan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>

Subject: Re: nrcan review

I did not pick that up from Geoff. I knew they are [REDACTED]

Sent from my iPhone

On Oct 18, 2023, at 3:59 AM, Poupore, Jessica <Jessica.Poupore@nrcan-rncan.gc.ca> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Additional info from Moltex

From: Rory O'Sullivan <[roryosullivan@\[REDACTED\]](mailto:roryosullivan@[REDACTED])>

A0072280_6-001002

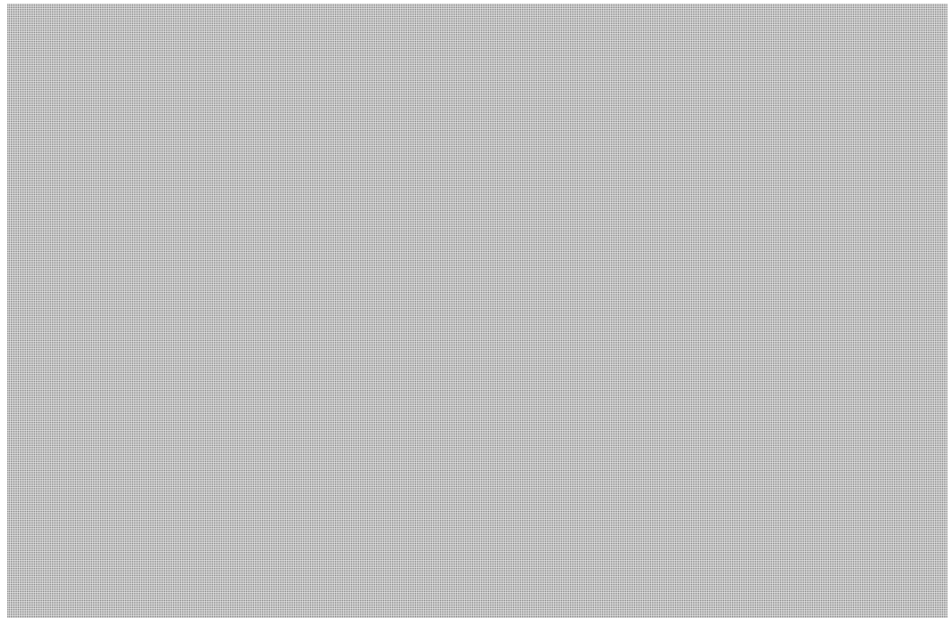
s.19(1)
s.20(1)(b)
s.20(1)(c)
s.21(1)(b)

Sent: Tuesday, October 17, 2023 7:01 PM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Re: nrcan review

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Hi Fred,



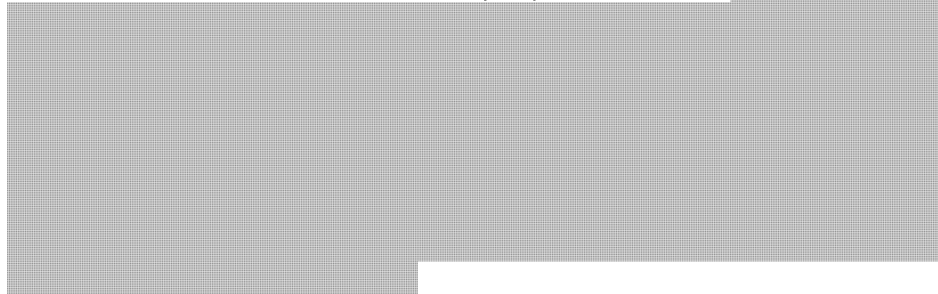
Rory

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Sent: 17 October 2023 17:02
To: Rory O'Sullivan <roryosullivan@>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Hi Rory,

We have reviewed the test results that you provided to Dan.



A0072280_7-001003

We plan to provide our analysis/advice to ISED and ACOA in the next couple days.

Thanks

Fred

This email originated from outside of NRCan. **Do not click links or open attachments unless you recognize the sender and believe the content is safe.** For information on how to recognize and report phishing emails, please visit the [Phishing Spot](#) on the NRCan Intranet.

Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour plus d'informations sur la façon de reconnaître et de signaler les courriels d'hameçonnage, veuillez visiter le site [hameçonnage](#) sur l'intranet de RNCan.

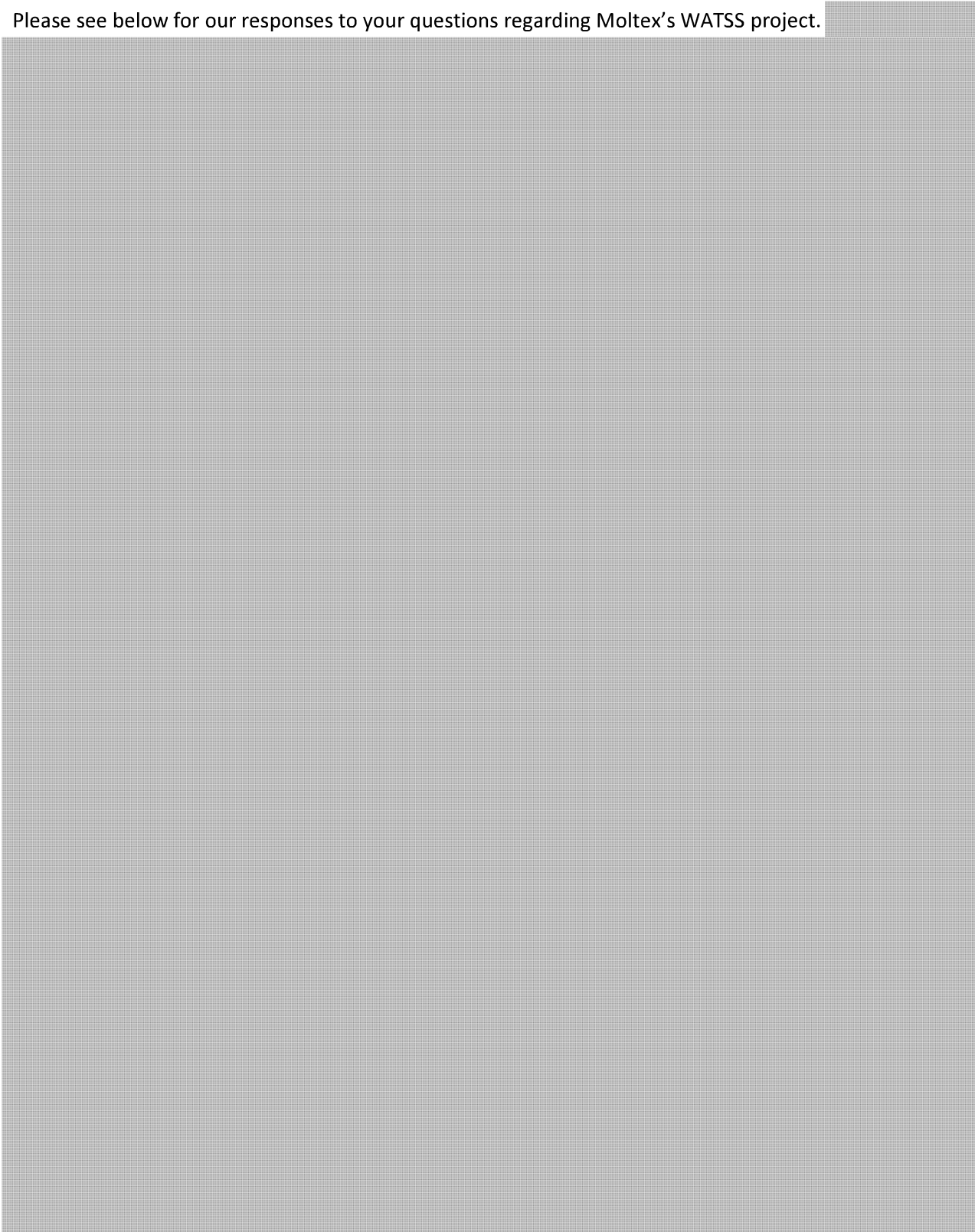
←

s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

October 2023

Response to ISED:

Please see below for our responses to your questions regarding Moltex’s WATSS project.



Declassified by ATIP /
Déclassifié par l'APPA
PROTECTED B - PROTÉGÉ B

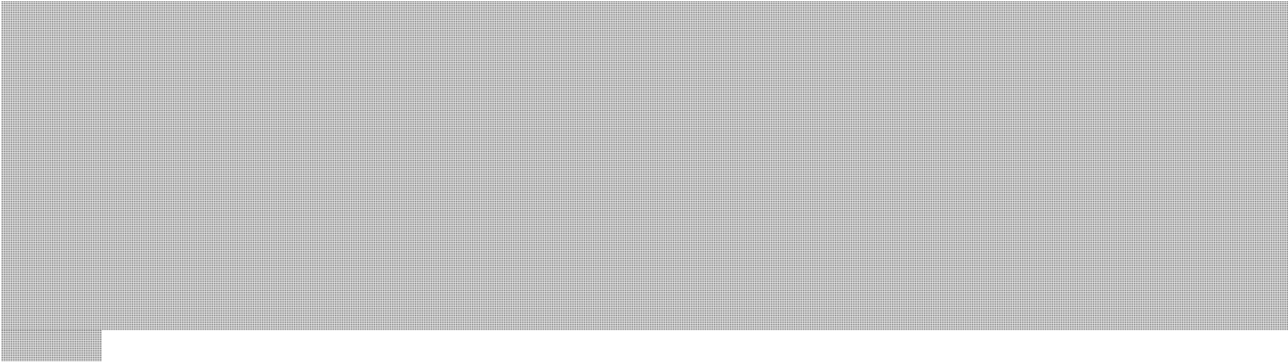
s.20(1)(b)

s.20(1)(c)

s.21(1)(a)

s.21(1)(b)

October 2023

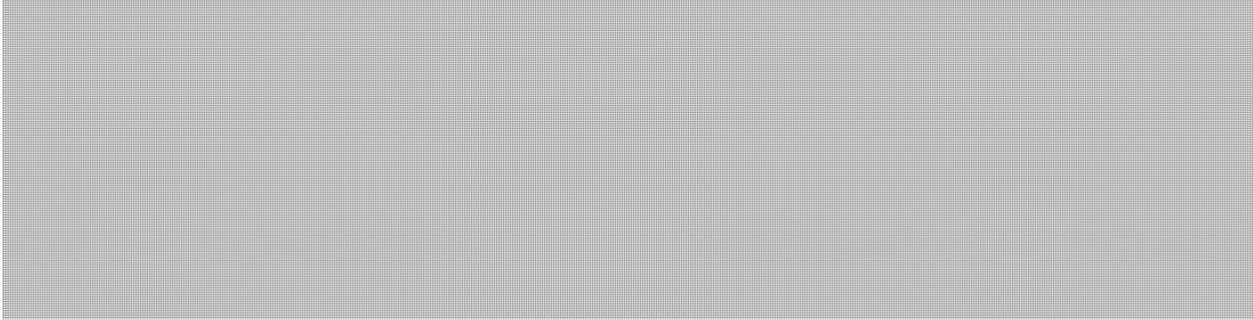


s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

October 2023

Background

NRCan received a request from Innovation, Science and Economic Development Canada (ISED) to provide technical input on the current state of the Moltex Energy Canada Inc. SMR-W/ WATSS project,

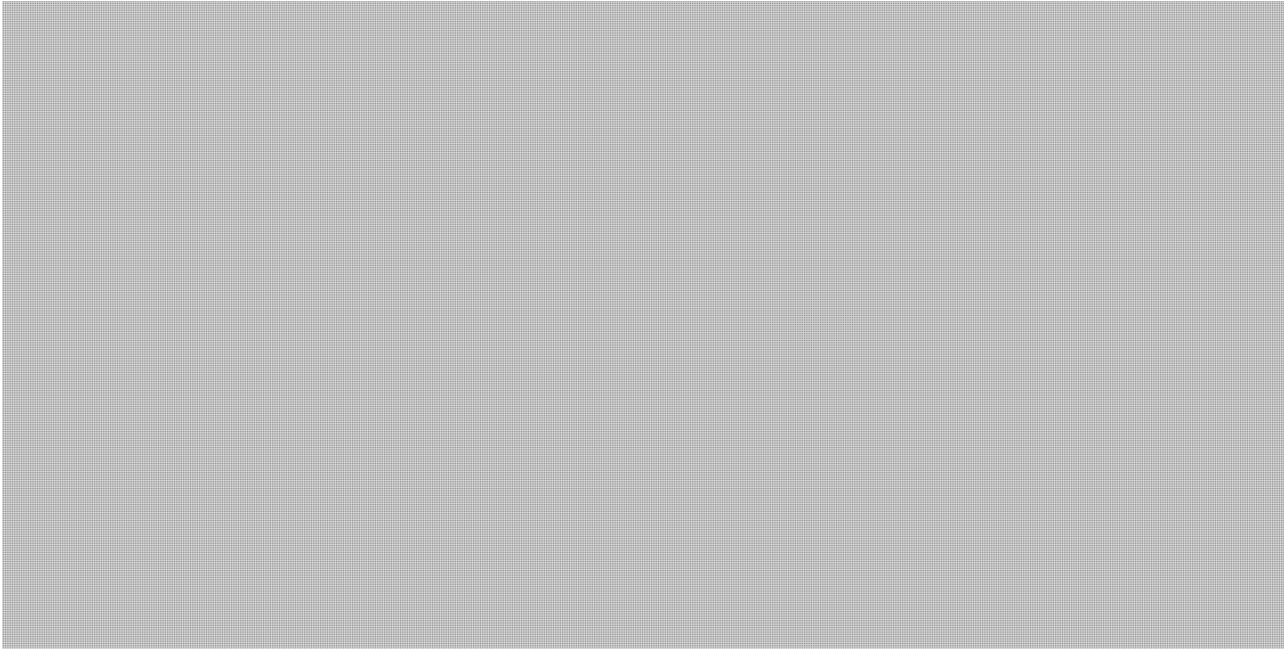


We have also provided responses to specific questions received from ISED:



s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

October 2023

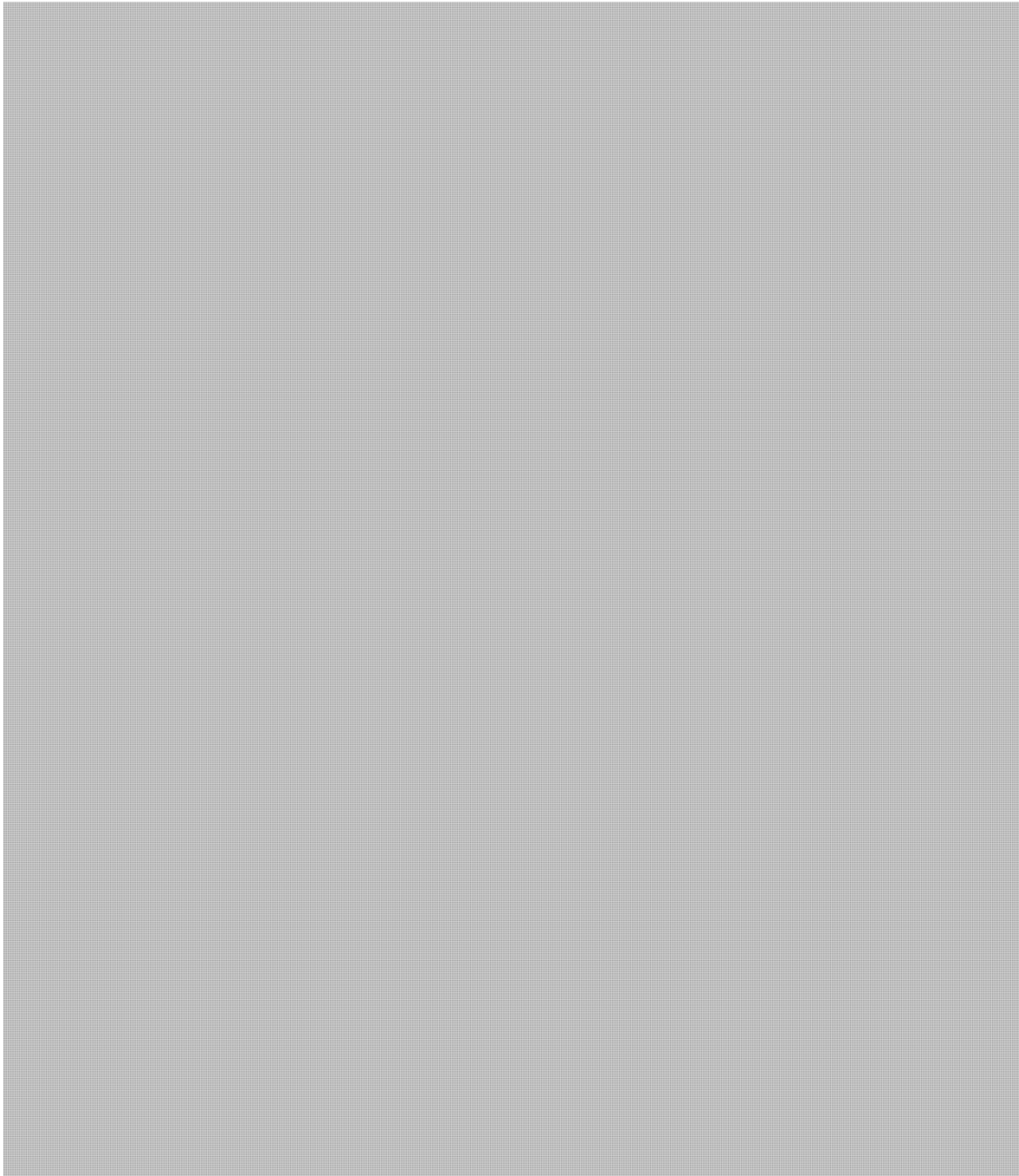


s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

October 2023

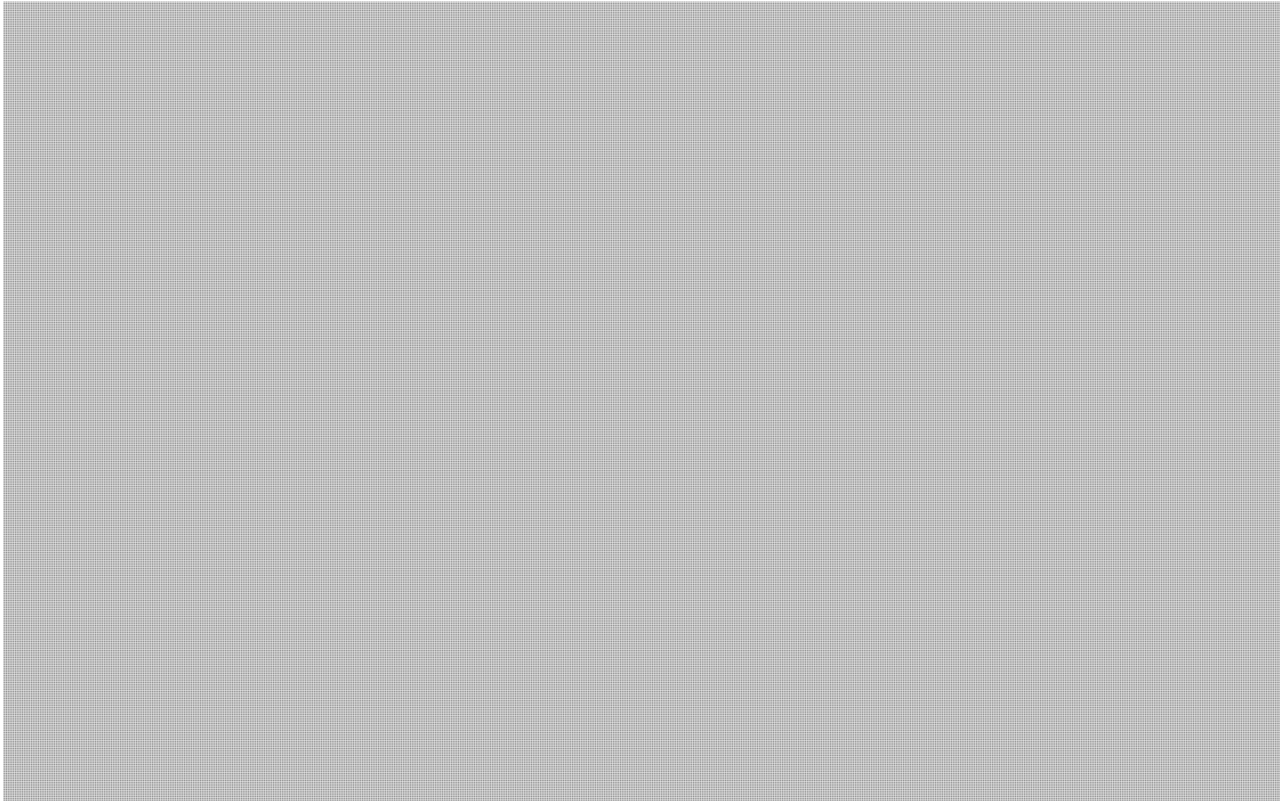
Technical review:

I have reviewed the interesting results of the Moltex experiments at Chalk River. In regards to the ISED questions:



s.20(1)(b)
s.20(1)(c)
s.21(1)(a)
s.21(1)(b)

October 2023




I'll be interested to hear from Kathleen if I have misunderstood any of the chemistry 😊

Geoff

s.19(1)
s.20(1)(b)
s.21(1)(b)

RE: nrcan review

May 10, 2024 12:44

Subject	RE: nrcan review
From	Poupore, Jessica
To	Rory O'Sullivan
Cc	Brady, Daniel
Sent	October 19, 2023 13:49
Attachments	 Final report

UNCLASSIFIED - NON CLASSIFIÉ

Hi Rory,

We are in the process of answering some questions with ISED. While we have reviewed the Final Report (attached), it would be helpful to review 'Report 3'. Would you be able to share a copy of that report?

We have limited circulation of your reports to Dan, our technical expert, and myself.

Many thanks,
Jessica

Jessica Poupore
(she/her/elle)

A/Deputy Director, S&T / Directrice adjointe p.i., science et technologie
Nuclear Energy Division / Division de l'énergie nucléaire

Natural Resources Canada - Government of Canada
Ressources naturelles Canada - Gouvernement du Canada
jessica.poupore@nrcan-rncan.gc.ca Mobile: 613-292-8981

From: Rory O'Sullivan <[REDACTED]>
Sent: Tuesday, October 17, 2023 7:01 PM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Subject: Re: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

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Attention- Ce courriel provient de l'extérieur des RNCan. **Voir la mise en garde ci-dessous*****

Hi Fred,

[REDACTED]

s.19(1)

s.20(1)(b)

s.20(1)(c)

s.21(1)(b)

Rory

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>

Sent: 17 October 2023 17:02

To: Rory O'Sullivan <[REDACTED]>

Cc: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>

Subject: nrcan review

UNCLASSIFIED - NON CLASSIFIÉ

Hi Rory,

We have reviewed the test results that you provided to Dan. [REDACTED]

We plan to provide our analysis/advice to ISED and ACOA in the next couple days.

Thanks

Fred

This email originated from outside of NRCan. **Do not click links or open attachments unless you recognize the sender and believe the content is safe.** For information on how to recognize and report phishing emails, please visit the [Phishing Spot](#) on the NRCan Intranet.

Ce courriel provient de l'extérieur des RNCan. **Ne cliquez pas sur les liens et n'ouvrez pas les pièces jointes, à moins de connaître l'expéditeur et croire que le contenu est sécuritaire.** Pour plus d'informations sur la façon de reconnaître et de signaler les courriels d'hameçonnage, veuillez visiter le site [hameçonnage](#) sur l'intranet de RNCan.

FW: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

May 10, 2024 13:22

Subject	FW: ADM DIRECT REPLY RÉPONSE DIRECTE SMA - DOCKET DOSSIER 203929 - Writes regarding CANDU reactors
From	Cecchi, Abby
To	Brady, Daniel
Cc	Robibero, Erica
Sent	October 4, 2023 16:52

UNCLASSIFIED - NON CLASSIFIÉ

Hi Dan,

Do you want to review again?

Thanks,
Abby

From: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Sent: Wednesday, October 4, 2023 4:48 PM
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Cc: Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Cecchi, Abby <abby.cecchi@nrcan-rncan.gc.ca>
Subject: RE: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

I added a line on Moltex. Griffith reviewed and is ok with it.

It's a fact that SIF funded Moltex, so I think it's ok to include that.

Let me know if you would like further edits.

Jessica

From: Cecchi, Abby <abby.cecchi@nrcan-rncan.gc.ca>
Sent: Wednesday, October 4, 2023 3:51 PM
To: Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>
Cc: Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Subject: FW: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

A0072344_1-001013

Hi Jessica,

As discussed 203929

Thanks,
Abby

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Sent: Wednesday, October 4, 2023 12:04 PM

To: Blair, Maxwell (he, him | il, lui) <maxwell.blair@nrcan-rncan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Cecchi, Abby <abby.cecchi@nrcan-rncan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Newman, Meghan (she, her | elle, la) <meghan.newman@nrcan-rncan.gc.ca>

Subject: RE: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

Hi Maxwell,

Thanks for pulling together the response! I've provided minor edits based on feedback received from GAC recently on another docket, moved one of the paragraphs to the reprocessing section, and also suggested deleting one of the detailed paragraph on reprocessing. Let me know if you have any concerns.

Over to you Dan!

Thanks,
Pui Wai

From: Blair, Maxwell (he, him | il, lui) <maxwell.blair@nrcan-rncan.gc.ca>

Sent: 3 octobre 2023 15:32

To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Cecchi, Abby <abby.cecchi@nrcan-rncan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Newman, Meghan (she, her | elle, la) <meghan.newman@nrcan-rncan.gc.ca>

Subject: FW: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

Hi Dan and Pui Wai,

This correspondence is ready for both of your reviews and approvals. The incoming was asking about FNRs and CANDU reprocessing as well as some including complaints about the emissions cap. Our response currently states [REDACTED] as well as some language about non-proliferation, reprocessing, and the investment into Moltex. It then refers the letter to the Minister of Environment and Climate Change due to the emissions cap comments. The author of the incoming wrote to us in 2015 about the same topic and we refer to it in our response. The highlighted lines were drafted for this response,

s.19(1)

s.21(1)(b)

everything else comes from other already approved materials.

Big shout out to Kate for providing input on the reprocessing language based on the media call for [REDACTED] from September 13th.

Thanks!

Max Blair

(he/him/il/lui)

maxwell.blair@nrcan-rncan.gc.ca

From: Blair, Maxwell (he, him | il, lui)

Sent: Tuesday, September 26, 2023 2:46 PM

To: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>

Cc: Newman, Meghan (she, her | elle, la) <meghan.newman@NRCan-RNCan.gc.ca>

Subject: FW: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

Hi Kate,

This correspondence came in asking FNRs and CANDU reprocessing as well as some complaints about the emissions cap. Our response currently states [REDACTED] as well as some language about non-proliferation, reprocessing, and the investment into Moltex.

If you could review our response and provide input that would be greatly appreciated! It is due Oct 2nd.

Thanks!

Max Blair

(he/him/il/lui)

maxwell.blair@nrcan-rncan.gc.ca

From: Newman, Meghan (she, her | elle, la) <meghan.newman@nrcan-rncan.gc.ca>

Sent: Friday, September 22, 2023 10:26 AM

To: Blair, Maxwell (he, him | il, lui) <maxwell.blair@nrcan-rncan.gc.ca>

Subject: FW: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

Max,

Officially tasking you to get started on this. Thanks!

Searching for my HVH,

Meghan Newman

(she/her/elle)

meghan.newman@nrcan-rncan.gc.ca / 343-573-6685

From: Cecchi, Abby <abby.cecchi@nrcan-rncan.gc.ca>

Sent: Thursday, September 21, 2023 1:32 PM

To: Newman, Meghan (she, her | elle, la) <meghan.newman@nrcan-rncan.gc.ca>

Cc: Blair, Maxwell (he, him | il, lui) <maxwell.blair@nrcan-rncan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>

A0072344_3-001015

Subject: FW: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

Hi Meghan,

Please see below for surge team action. Sue Oct 2nd for Director approval.

Thanks,
Abby

From: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Sent: Thursday, September 21, 2023 1:16 PM

To: Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Cecchi, Abby <abby.cecchi@nrcan-rncan.gc.ca>

Cc: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>; Ottaway, Chelsea

<chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: FW: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

For action please

GCDOCS folder [203929](#)

Due Oct 3rd

From: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Sent: Thursday, September 21, 2023 1:09 PM

To: NEISB DGO Correspondence / Correspondance BDG DENSI (NRCan/RNCan)

<neisbcorrespondence-correspondancedensi@nrcan-rncan.gc.ca>

Cc: ESS Correspondence / SSE Correspondance (NRCan/RNCan) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>; Stirrett-Wood, Bruce

<bruce.stirrettwood@nrcan-rncan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>

Subject: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

Hi NEISB,

Please create a response in the GCDOCS folder. The docket # should be the first part of its name.

Template: [ADM Direct Reply](#)

Please email the DG-approved response to ECIO with the completed [Routing Slip](#) attached.

ECIO due date: October 3, 2023.

Thank you,

Eric

From: EDU / UDHD (NRCan/RNCAN) <edu-udhd@nrcan-rncan.gc.ca>

Sent: Thursday, September 21, 2023 12:54 PM

To: ESS Correspondence / SSE Correspondance (NRCan/RNCAN) <esscorrespondence-ssecorrespondance@nrcan-rncan.gc.ca>

Subject: ADM DIRECT REPLY | RÉPONSE DIRECTE SMA - DOCKET | DOSSIER 203929 - Writes regarding CANDU reactors

UNCLASSIFIED - NON CLASSIFIÉ

(Le français suit.)

Lead Sector: ESS

MINO has requested an ADM direct reply to this request. Please provide us with a copy of your response once sent.

Action: Please use the [ADM Direct Reply](#) template and save your draft response in the GCDOCS folder [203929](#).

Notes:

- The lead sector must advise EDU where a Standard Reply applies.
- For rerouting a docket, please use the instructions found here: [Reroutes of ministerial correspondence](#).
- Extensions must be requested at least 3 days in advance of the due date (send an email to EDU using the [Extension Request Form](#) (<https://gcdocs.gc.ca/nrcan-rncan/llisapi.dll/Overview/6020496>)).
- If you wish to share additional information with the Minister's Office on this docket, please create a Note to File.

Due Date: To EDU by October 5, 2023

Thank you.

Secteur responsable : SE

Le Cabinet du ministre a demandé une réponse directe d'SMA à cette demande. Veuillez nous fournir une copie de la réponse que vous aurez envoyée.

Action : Veuillez utiliser le modèle [SMA réponse directe](#) et sauvegarder votre ébauche de réponse dans le fichier GCDOCS [203929](#).

Nota :

- Le secteur responsable doit informer l'UDHD lorsqu'il est nécessaire d'utiliser une réponse type.
- Pour réacheminer un dossier, veuillez utiliser les instructions qui se trouvent ici : [Réacheminement de la correspondance ministérielle](#).
- Les prolongations de délais doivent être demandées au moins 3 jours avant la date d'échéance (envoyez un courriel à l'UDHD en utilisant le Formulaire de demande de prolongation (<https://gcdocs.gc.ca/nrcan-rncan/llisapi.dll/Overview/6020496>)).

A0072344_5-001017

- Si vous souhaitez communiquer des renseignements complémentaires au sujet de ce dossier au Cabinet du ministre, veuillez rédiger une Note au dossier.

Date d'échéance : À l'UDHD d'ici le 5 octobre 2023

Merci.

The EDU Team | L'Équipe UDHD

edu-udhd@nrcan-rncan.gc.ca



Concerns or issues with processing executive documents? Suggestions for improving the current tools and/or procedures? Send an email to the EDMP Project Manager (Nathalie.Hurtubise@nrcan-rncan.gc.ca) today!

Préoccupations ou problèmes liés au traitement des documents de la haute direction? Suggestions pour améliorer les outils et/ou procédures? Envoyez un courriel au chef de projet (Nathalie.Hurtubise@nrcan-rncan.gc.ca) du PMDHD aujourd'hui!



Natural Resources
Canada

Ressources naturelles
Canada

Dear [REDACTED]

Thank you for your correspondence of September 21, 2023, addressed to the Minister of Natural Resources, the Honourable Jonathan Wilkinson, about CANDU reactors and government nuclear policy. I am responding on behalf of Minister Wilkinson.

We recognize that we cannot lose focus or lose ground on the growing threat that climate change presents to the planet and to the health and livelihoods of all Canadians. That is why the Government of Canada has been working on a number of federal plans to achieve our ambitious climate targets and strengthen our economy. These include the 2020 climate plan *A Healthy Environment and a Healthy Economy* contain a wide array of measures and investments in renewable and next-generation technologies, including those that will bring more non-emitting power onto our grids.

In 2021, the *Canadian Net-Zero Emissions Accountability Act* enshrined in legislation the Government's commitment to achieve net-zero greenhouse gas emissions by 2050. Building on this commitment, the Prime Minister outlined our ambition to achieve a 100% net-zero electricity system by 2035 in the Minister of Natural Resources' 2021 mandate letter. This legislation is supported by the March 2022 *2030 Emissions Reduction Plan: Canada's Next Steps to Clean Air and a Strong Economy*. The plan includes commitments to advance Canada's SMR future and explore opportunities to expand the development and deployment of SMRs at home and abroad.

The pathway to net zero by 2050 is the challenge of our time. To be successful, we must consider all potential options and solutions emerging from across the different energy sectors and we appreciate hearing the perspectives of all Canadians on this important issue.

As you mentioned in your most recent letter, recycling used CANDU fuel has the potential to power existing and future nuclear reactors. Canada's nuclear industry at large has not deemed it necessary or cost-effective to reprocess and recycle used nuclear fuel from Canada's reactors given the domestic abundance of economical high-grade uranium. There

Canada

- 2 -

are currently no commercial facilities carrying out used fuel reprocessing activities in Canada as part of our nuclear fuel or waste management cycle, and it is not part of the existing CANDU fuel cycle. Some technology developers are now considering reprocessing activities in Canada, as some small modular reactor (SMR) technologies are being researched to operate on reprocessed used nuclear fuel. These technologies have the potential to reduce storage needs for existing used nuclear fuel.

The Government of Canada is monitoring the research and development of technologies related to the reprocessing of used CANDU fuel, and remains receptive to exploring the science, benefits, and risks associated with potential technologies that could recycle used nuclear fuel in a safe, secure, and environmentally sustainable way while meeting Canada's non proliferation obligations. For example, the Government of Canada, through the Strategic Innovation Fund (Innovation, Science and Economic Development Canada) invested in Moltex Energy Canada Inc. to study a process that recycles existing nuclear fuel waste to fuel the production of clean energy. Reprocessing in Canada would require consideration of all relevant factors by the federal government – including safety, security, sustainability, and non-proliferation – prior to its deployment.

To further address your specific questions in relation to the emissions cap, I have forwarded a copy of your correspondence to the Honourable Steven Guilbeault, Minister of Environment and Climate Change.

I remain very encouraged by the strong interest and collaboration that I have seen among governments and stakeholders in advancing new nuclear technologies, and I believe that the Government of Canada's efforts are helping to position Canada as a global leader in the safe and responsible development of nuclear energy.

Yours sincerely,

Debbie Scharf
She/her
Assistant Deputy Minister
Energy Systems Sector
Natural Resources Canada

c.c.: Steven Guilbeault, Minister of Environment and Climate Change,
Steven.Guilbeault@parl.gc.ca

Docket 203929 - Note to File

The incoming email is from [REDACTED] sent on September 21, 2023. The incoming expresses the writer's dissatisfaction with government decisions regarding a cap on CO2 emissions, as well as the Trans Mountain pipeline expansion project, and Nuclear Waste Management Organization (NWMO). [REDACTED]

[REDACTED] it would not be appropriate for either the ADM, DM, or Minister to respond. As such, no response was deemed necessary, and we have closed this file.


Approved by: Debbie Scharf

Approval Date: November 6, 2023

FW: Pre-Meeting for Nuclear Waste Watch Roundtable (November 17th)

May 10, 2024 13:18

FW: Pre-Meeting for Nuclear Waste Watch Roundtable (November 17th)




Prosser, Kathleen on behalf of Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>

Required
● Brady, Daniel; ● Yuen, Pui Wai; ○ McAllister, Andrew; ○ Bourassa, Pascale; ○ Petseva, Nadia; ○ Kanasewich, Elaine; ○ Boudrias, Geneviève; ○ Tanya.Hinton@international.gc.ca; ○ Prosser, Kathleen


Optional
○ Naina.Thoppil@international.gc.ca

No Response Required


Mon 2023-10-30 12:09




Follow up. Start by May 9, 2024. Due by May 9, 2024. Reminder: October 31, 2023 09:30.
The meeting request has been sent to your delegate(s).
We couldn't find this meeting in the calendar. It may have been moved or deleted.



Invitation_Roundtable-on-Reprocessing_17November2023.pdf
.pdf File



October 31, 2023 09:30-10:00



Microsoft Teams Meeting

FYI in case you're free and interested

-----Original Appointment-----
From: Brunarski, Lee <Lee.Brunarski@cnscccsn.gc.ca>
Sent: Friday, October 27, 2023 5:04 PM
To: Brunarski, Lee; Yuen, Pui Wai; McAllister, Andrew; Bourassa, Pascale; Petseva, Nadia; Kanasewich, Elaine; Boudrias, Geneviève; Tanya.Hinton@international.gc.ca; Prosser, Kathleen
Cc: Naina.Thoppil@international.gc.ca
Subject: Pre-Meeting for Nuclear Waste Watch Roundtable (November 17th)
When: October 31, 2023 09:30-10:00 (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Good afternoon.

This is the first opportunity that works for as many invitees as possible, and there isn't a time before the roundtable that works for everyone.

Tanya, apologies as I can't see your Outlook details, so hoping this time works for you. If not, please let me know at your earliest possible convenience.

Thank you,

Lee


Microsoft Teams meeting

Join on your computer, mobile app or room device
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Meeting ID: [REDACTED]
Passcode: [REDACTED]
[Download Teams](#) | [Join on the web](#)

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[+1 647-749-9265](#), [REDACTED] # Canada, Toronto
[\(844\) 632-5179](#), [REDACTED] # Canada (Toll-free)
Phone Conference ID: [REDACTED] #
[Find a local number](#) | [Reset PIN](#)
[Learn More](#) | [Meeting options](#)

Molten Salts

May 10, 2024 14:39

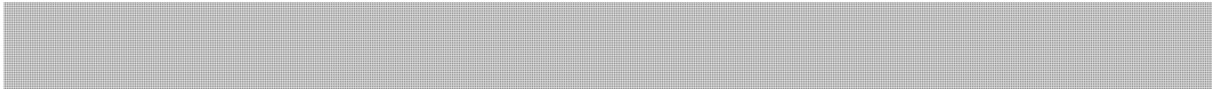
Subject	Molten Salts
From	Edwards, Geoff
To	Brady, Daniel
Cc	Poupore, Jessica
Sent	October 11, 2023 12:18
Attachments	<div> MoltenSalts</div>

Declassified by ATIP /
Déclassifié par l'ATIP
PROTECTED A / PROTÉGÉ A

Dan,

You asked me a couple of weeks ago about thermal vs. fast MSR reactors and I think the focus of the question on which was better at minor actinide burning. I started to think about how this question might be answered, then went googling and found a very nice recent paper on the issue (but only for thorium fueled reactors) and then put together this short point-form document with some of my thoughts.

The executive summary is that molten salt reactors are better than solid fuel, fast reactors are better than thermal, and thorium reactors are better than uranium if the only purpose is to get rid of minor actinides. The optimal reactor for this purpose would be a fast-spectrum MSR running on thorium/U-233.



Geoff

Molten Salt Reactors – Minor Actinide Burning

- 1) Molten salt reactors offer some theoretical advantages in terms of fuel management/burnup:
 - a. The homogeneity of the fuel increases the burnup. In a conventional reactor, flux will be highest in the center of the reactor due to leakage of neutrons from the edges. Thus fissile material will burn out in the center faster. This varying burnup makes the fuel usage inefficient (e.g. you replace a fuel rod which still has lots of fissile material at each end). CANDU reactors compensate for axial burnup differences to some extent by using 8-bundle fuel shuffles in a 12-bundle channel, having the effect of leaving edge bundles in the core longer. LWRs can compensate by moving fuel rods from radially distant positions closer to the reactor center. Neither is necessary with molten salts, which will continually bring new fuel into the center.
 - b. Higher burnups are possible by small replacements of spent fuel. When a core reaches a neutron multiplication of 1, fresh fuel must be introduced. By replacing only part of a core, the remaining fuel which is not replaced can be left in the flux for a longer period and this gives higher burnup. The equation relating the number of “batches” (N) of fuel in a core to the burnup is:

$$BU_N = BU_1 \frac{2N}{N + 1}$$

An online fueled reactor, like a CANDU or a continuously fueled MSR, has N effectively equal to ∞ and approaches double the burnup of a one-batch core.

- c. A reprocessing scheme which removes fission products and returns the fuel to the core potentially can fission every fissile nuclide in the initial load. Conventional reactors are limited to approximately the energy available in the initial fissile loading (~1 GWd/t fissile). While the fissile material cannot for these reactors go to zero, the unburnt fissile material is compensated for by the creation of new fissile on fertile material (e.g. the creation of Pu-239 from U-238) and the fissioning of this new material. A MSR could potentially burn all the fissile in its initial load and also convert all the fertile material too (increasing energy production by 20-100 over conventional reactors). In practice this may be limited by the throughput required for reprocessing out the fission products, which are produced throughout the core.

In summary, MSRs should be able to get higher burnup than fixed geometry reactors no matter how they are used.

- 2) MSRs are not tied to any particular spectrum type:
 - a. Moderation using heavier salts (such as KCl) is poor and therefore the reactor can be run either a in fast-spectrum mode or a thermal spectrum mode (if moderation is supplied, usually via carbon blocks through which salt runs in fuel channels).
 - b. Fluorine would also be a poor moderator, but the usual F based salt is “FLiBe”, containing Be and Li, which are light enough to produce some moderation and spoil a fast spectrum. Thus one would expect a FLiBe reactor to be thermal.

- c. Terrestrial Energy's IMSR is a thermal spectrum/fluorine salt MSR, while Moltex's SSR-W is a fast spectrum reactor.
- 3) Neither fast nor thermal spectrum MSRs are tied to any particular fuel type:
- a. For thermal reactors, enrichments can be low (e.g. in the LWR range) but fast spectrum reactors will require quite high enrichments (up to the 19.9% likely to be allowed by proliferation concerns). Both types of reactors will breed Pu-239 from the U-238 present. This bred-in plutonium increases the burnup of the fuel, but also (through further captures) serves as a source of minor actinides in the spent fuel.
 - b. The thorium fuel cycle (U-233 breeding) is available to both fast and thermal reactors. In this reactor, some minor actinides may be produced if the initial fissile is LEU (which contains U-238) or Pu. If the fuel cycle is based on U-233 (i.e. thorium breeding to U-233, followed by recycling to extract U-233 and re-insertion into the reactor) then almost no minor actinides will be created because they require capture from Th-232 all the way up to plutonium (it is about five neutron captures to U-237, which decays to the MA Np-237, which then can absorb a neutron to become Pu-238). However, U-233 breeding by itself is not sufficient to sustain a fuel cycle. At least a top-up of external fissile material is required.
- 4) MSRs may be particularly suited to minor actinide burning:
- a. The long irradiation times to which fuel can be subjected in an MSR make this sort of reactor good for the burning of minor actinides via fissions.
 - b. Minor actinides can be burned in either a thermal or fast fuel cycle. In a thermal fuel cycle, minor actinides are burned by successive captures to heavier isotopes until a highly fissile isotope is reached (Am-242m, Cm-243 ...) at which point the chain is terminated with a fission. In a fast fuel cycle, minor actinides are fissioned directly as captures are less likely.
 - c. Since parasitic captures compete with fission for every isotope, destruction of minor actinides by the previously described process is not complete in either a fast or thermal spectrum as some MAs will evade fission by capturing to the next higher isotope. However fast spectrum burning can approach 95% destruction of an initial MA load, while thermal spectrum burning maxes out around 80% (but see below).
 - d. In uranium fueled reactors, minor actinide burning must compete with minor actinide creation (started by neutron captures on uranium). Both spectra will create MAs on fertile material present, but the rate of production is lower in fast spectra.
 - e. The absorption of neutrons on fertile material (Th-232, U-238) creates new fissile (U-233, Pu-239) which allows extra burnup (i.e. extra power). Thus the goal of increasing the destruction of minor actinides (by reducing the fertile material present so that few MAs are created) is in tension with sustainability.
 - f. Uranium-fueled SMRs will, all other things being equal, produce more MAs than thorium-fueled SMRs because the latter will produce little plutonium (and therefore even less of the americiums and curiums which lie beyond plutonium).
 - g. Every reactor (thermal or fast, uranium or thorium) will have a physics-based level for each MA at which it will come into equilibrium in the core, independent of the initial core load. Thus core loads high in MAs will initially burn them and core loads with no MAs will create them. Whether or not the reactor is a net burner of any specific MA

s.20(1)(b)

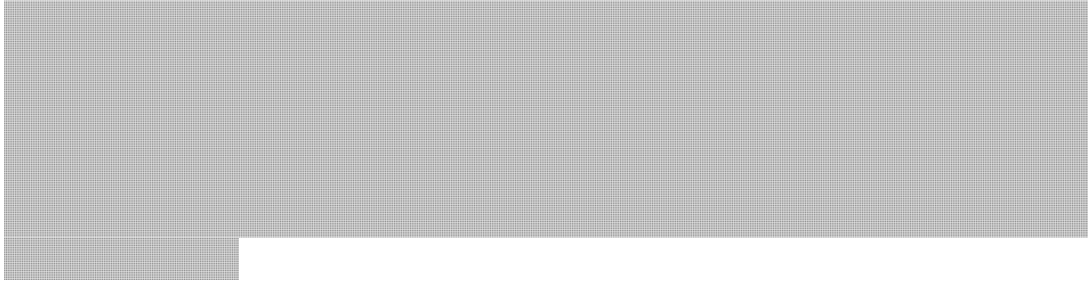
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s.20(1)(c)

s.21(1)(b)

depends on its prevalence in the initial core load and also on its introduction rate into the reactor (from reprocessed spent fuel).

h.



October 2023

GLOBAL NUCLEAR FUEL SECURITY

HIGHLIGHTS / KEY CONSIDERATIONS

- Global uranium requirements will continue to increase as nuclear technologies are developed and deployed to meet global carbon emission reduction targets. Continued nuclear energy development will increase long-term uranium requirements as additional capacity comes online. The NEA/IAEA high case global estimate for annual reactor-related uranium requirements in 2040 is 108 272 tU per year, nearly double that of 60 100 tU in 2021.¹
- Canada has roughly 10% of the world's recoverable uranium, and as of 2021 Canada's total identified conventional uranium resources recoverable at a cost of <USD 80/kgU amounted to 292 400 tU, and <USD 130/kgU were 588 500 tU. In 2019, of all countries with nuclear power plants, only Canada produced enough uranium to meet its domestic requirements.²
- [REDACTED]
- To address their current uranium requirements, spent nuclear fuel is reprocessed by France, India, China, and Russia, and historically has also been reprocessed by Belgium, Germany, UK, USA, and Japan, with Japan set to open a new light water reactor (LWR) fuel reprocessing and metal oxide fuel (MOX) fabrication facility in 2024 (Rokkasho).³ Reprocessing refers to a range of chemical methods that recover fissile and fertile materials from spent nuclear fuel. For countries that produce MOX fuel from reprocessed spent fuel, reprocessing typically focuses on extracting uranium and plutonium.
- Some nuclear fuel reprocessing methods can be used to separate high-purity plutonium from uranium (e.g., PUREX), while other methods may extract or separate uranium and plutonium together from other transuranics, actinides, or lanthanides (e.g., UREX, pyroprocessing). Plutonium recovered from reprocessing is recycled in LWRs as MOX fuel, such as in France.
- In Canada, mined uranium is milled, refined, and converted to either UO₂-based CANDU fuel or UF₆ to be used in the production of fuel for LWRs. **There are currently no commercial facilities carrying out used fuel reprocessing activities in Canada, and it is not part of the existing CANDU fuel cycle.** Some early fuel reprocessing experiments were undertaken by AECL (between 1949 and 1956).⁴
- As provinces continue to invest in both existing and advanced reactor technologies (e.g., small modular reactors, SMRs), Canada's future nuclear fuel and waste types may become more diversified. Some SMR designs in the research and development phase by technology vendors are considering the use of recycled CANDU fuel with the intention to reduce the storage needs for existing CANDU fuel. Any future SMR technologies or nuclear fuel production facilities would not negate the need for radioactive waste disposal pathways.

KEY BACKGROUND

¹ NEA (2023), Uranium 2022: Resources, Production and Demand, OECD Publishing, Paris.

² NEA (2023), Uranium 2022: Resources, Production and Demand, OECD Publishing, Paris.

³ <https://www.jnfl.co.jp/en/business/reprocessing/>

⁴ <http://nuclearsafety.gc.ca/eng/waste/high-level-waste/index.cfm>

- PUREX is a liquid extraction method that separates plutonium and uranium from each other, and from other fission products. UREX+ is an adapted PUREX process that was altered to prevent the independent separation of plutonium and keeps transuranic elements (neptunium, plutonium, americium, and curium) making it more proliferation resistant than PUREX. Other adaptations to liquid extraction processes exist to separate select transuranics, actinides, lanthanides, or radioisotopes, depending on the process. Pyroprocessing technologies use high temperature electro-refining processes to dissolve uranium, transuranic elements (including plutonium), and fission products from spent nuclear fuel into a salt. The uranium and transuranic elements can be later recovered through electrowinning (extraction) processes.⁵
- France derives about 70% of its electricity from nuclear energy, a larger share than any other country in the world. France has 56 LWR reactors and produces nearly 1150 tonnes of spent fuel each year. France reprocesses up to 1100 tonnes/yr of spent fuel via PUREX methods to recover plutonium (11 tonnes/yr, immediately recycled in MOX fuel) and mixed with depleted uranium to form MOX fuel. France generates 1045 tonnes/year of reprocessed uranium, stored for up to 250 years as a strategic reserve. France reported in its 6th National Report under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste management that due to reprocessing, it requires 17% less natural uranium to operate its reactors than without recycling. The French Safety Authority (ASN) regularly assesses the safety of this approach.⁶
- Japan has 6 currently operating nuclear reactors, but as Japan has no uranium reserves, it must be imported. For domestic energy security purposes, Japanese policy has been to maximize the energy yield from imported uranium by reprocessing spent fuel to form MOX fuel. Japan is the only country without nuclear weapons that reprocesses its spent nuclear fuel. JNFL's MOX fuel fabrication facility began construction in 2010 but is yet to commence operations.⁷ The Rokkasho plant is expected to treat 800 tU/yr, producing 4 t/yr of plutonium for recycling to MOX fuel (enough to produce 80 t/yr MOX fuel).⁸
- In Canada, one CANDU spent fuel recycling technology is in an R&D phase by Moltex Energy Canada Inc. The **W**Aste **T**o **S**table **S**alt (WATSS) pyroprocessing-based technology would aim to separate uranium and zirconium cladding from used CANDU fuel, from fission products, and fuel salt. The fuel salt and some fission products are proposed for use in the Moltex Stable Salt Reactor – Wasteburner (SSR-W), an SMR technology in development that aims to produce up to 300 MW_e using fuel produced by WATSS. Moltex Energy Canada Inc. has received \$47.5 M from the Strategic Innovation Fund (March 2021), \$3.0 M from the Atlantic Canada Opportunities Agency, \$10 M from the Government of New Brunswick, and \$800 K from Ontario Power Generation to support research into the risks, benefits, and science of this technology.
- Nuclear Waste Management Organization (NWMO) expressed their support of the research of the WATSS technology from a waste management perspective, in a letter to Innovation, Science and Economic Development Canada (September 2023)

⁵ <https://doi.org/10.1016/j.pnsc.2015.11.001>

⁶ <https://www.iaea.org/newscenter/news/frances-efficiency-in-the-nuclear-fuel-cycle-what-can-oui-learn>

⁷ <https://www.world-nuclear-news.org/Articles/Rokkasho-reprocessing-plant-completion-delayed-aga>

⁸ <https://world-nuclear.org/focus/fukushima-daichi-accident/japan-nuclear-fuel-cycle.aspx>

RE: Meet?

May 10, 2024 14:45

Subject	RE: Meet?
From	Beauregard-Tellier, Frédéric
To	Brady, Daniel; Yuen, Pui Wai
Cc	Ottaway, Chelsea
Sent	October 13, 2023 08:22

UNCLASSIFIED - NON CLASSIFIÉ

I was just curious, thanks Dan.

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: Friday, October 13, 2023 8:04 AM
To: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>
Subject: RE: Meet?

UNCLASSIFIED - NON CLASSIFIÉ

I am not aware of NED having a subscription.

I can arrange, via the library, to get a subscription.

dan

From: Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Sent: Friday, October 13, 2023 7:57 AM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>
Subject: Re: Meet?

Ok thanks, noted.

We don't have a subscription. Possible that NED does. Dan?

Sent from my iPhone

On Oct 13, 2023, at 7:28 AM, Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca> wrote:

Thanks Pui Wai, appreciate it. But the window is closed. He was publishing today. (Do we have a subscription to nuclear intelligence weekly?)

Sent from my iPhone

On Oct 13, 2023, at 6:30 AM, Yuen, Pui Wai <puiwai.yuen@nrcan-rncan.gc.ca> wrote:

A0072383_1-001030

s.19(1)
s.21(1)(a)
s.21(1)(b)

UNCLASSIFIED - NON CLASSIFIÉ

Hi Fred,

Not sure if it's too late. You asked us to take a look at your reprocessing answer for any redline, here's a proposed suggestion since we are undertaking analysis and have communicated externally that we are open to exploring/understanding the science, risks and benefits associated with reprocessing:

===

Q: I thought there was an anti-reprocessing policy from [former Prime Minister] Pierre Trudeau?

A: Well we are very committed to nonproliferation. We've signed onto all of the treaties. That's at the top of the agenda. There can be concerns associated with reprocessing, so we would definitely look at any reprocessing through that lens first and foremost. We are open to seeing the results of that research, and then we will see where that goes, and we will potentially make policy adjustments as necessary.

That's a long-winded way of saying that we are open to the possibility of reprocessing, but we will have to look at it through every angle, beginning with safety, security, and nonproliferation, and that work is not currently underway.

====



Also, on the Pierre Elliot Trudeau reference, if you want to answer that more directly, to our knowledge, there was no statement against reprocessing by the Trudeau Sr. government. There were a number of discussion in parliament related to issues of the day, including uranium enrichment, but these discussions did not result in any anti-reprocessing policies on the part of the government.

Thanks and happy to discuss,
PW

From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Sent: 11 octobre 2023 17:41
To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: Ottaway, Chelsea <chelsea.ottaway@NRCan-RNCan.gc.ca>
Subject: FW: Meet?

UNCLASSIFIED - NON CLASSIFIÉ

I did this interview (approved) while at the GC. Abridged transcript below fyi

From: Philip Chaffee < >

A0072383_2-001031

Sent: Wednesday, October 11, 2023 5:34 PM
To: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Cc: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Hi Fred,

Thanks again for meeting with me two weeks ago in Vienna. I've finally gotten around to transcribing the interview, and we're hoping to run it on Friday.

Please let me know tomorrow if you have any tweaks to make to your answers -- not my questions (though obviously if I'm getting something wrong in the intro or questions please let me know). If you do have tweaks, if you can highlight them or bold them it would be much appreciated.

Cheers,

Phil

Interview: Canada's Beauregard Tellier Talks Newbuilds and Reprocessing

When Frederic Beauregard-Tellier took over as the director general for nuclear energy at Natural Resources Canada (NRCan) in January, he became the government point person for one of the world's most ambitious—and most coordinated—new nuclear programs. While the momentum behind Canada's expansive nuclear plans is largely driven by provincial utilities, and in particular Ontario's Bruce Power and Ontario Power Generation (OPG), Ottawa and Natural Resources Canada have played key supportive roles in terms of planning and financing. Beauregard-Tellier sat down with Energy Intelligence's Phil Chaffee on the sidelines of the recent International Atomic Energy Agency's General Conference in Vienna to discuss the Canadian program. A shortened and edited version of their Sep. 26 conversation is below.

Q: Canada is at the center of new nuclear energy right now, particularly around small modular reactors (SMRs), but also this last year with Bruce Power coming out with the possibility of large-scale newbuilds. What role did the federal government play in this broad newbuild program, and to what extent might this role be a model for other countries contemplating new nuclear?

A: I would say we have created a policy space where it makes a lot of sense for utilities — and in our case provinces, because it's the provinces that manage their own electricity regimes in Canada— where it makes sense for those folks to pursue nuclear.

For example, we published in draft form new electricity regulations, roughly a month ago, that will effectively ban the use of fossil fuel-powered electricity starting in 2035. So no coal power, no gas power. There'll be probably some small exceptions for emergencies and things like that. 2035 is not that far away. This is of course, driven by our climate change commitments, our objective to decarbonize our economy, and decarbonize our electricity grid. For jurisdictions like Ontario, and some of our prairie provinces that that don't have a ton of

hydro capacity, they need to meet baseload. A lot of them. like Saskatchewan and Alberta, they're meeting baseload through coal-fired generation and gas generation. If they can't use that going forward, there are not a ton of options.

Ontario is our biggest province, 50 million people, it's very much the economic driver of the country. And its electricity needs are projected to increase significantly as we look to 2050, as we try to kind of electrify more parts of our economy. They're well aware of that and they're trying to figure out 'How do we scale up?' Nuclear just makes a lot of sense. Ontario's had nuclear plants, Candu plants, since the 70s. They know Candu, they know nuclear. Hence that announcement from the Government of Ontario saying 'Hey, we know we need more power. Bruce is a great site. Let's start that pre-development work looking for up to 4,800 megawatts [of new nuclear capacity].'" And of course, they're also doing the SMRs at Darlington.

We're happy to see Ontario doing that. We will work alongside them. They are driving this, but we have tools that we can bring to bear. Canada Infrastructure Bank, which is the federal funding arm, invested in the first SMR project at Darlington. I'm not saying they would necessarily invest in Bruce, but it's an example of things that we can do at the federal level to help those projects move along.

Q: Then there's also this 2018 SMR Roadmap, which I think was organized by NRCan.

A: And the [December 2020 SMR] Action Plan coming out of that.

Q: Was this modeled on another country? Or was it entirely a Canadian-inspired project?

A: I wasn't there at the time. My predecessor Diane Cameron [now heading the nuclear technology and economics division at the Paris-based Nuclear Energy Agency] was a big driver of this. It was Canada showing leadership. Canadians - we tend to not necessarily be out there first, but I think on SMRs we are very much in the leadership position, and that action plan puts us in the forefront of SMR development.

Q: You mentioned this Canada Infrastructure Bank investment in the Darlington SMRs — I think it was CA\$978 million (US\$720 million). As far as I understand, that funding is basically to get the project up through a final investment decision or through pouring the concrete. It's not going that's not going to fund the actual construction of the project. Is there potential for further federal money to the project?

A: I'm not sure. The Canada Infrastructure Bank is arm's length. They have a mandate from the government to invest in clean energy projects. They're very interested in nuclear, they've made investments in nuclear, I'm quite certain that they will make more investments in nuclear. Whether or not they intend to potentially invest more at Darlington, I don't know.

But I'll say we're very supportive of Darlington. We can't overemphasize how important that first BWRX-300 facility will be. Everybody's watching. We've had

we've had the Polish prime minister there in the last couple of months. It's the first project of that kind, and there's a lot of interest in the technology. And if we're successful, I'm quite certain that we will see more of those projects deployed in Canada and elsewhere. In Canada, OPG has already announced that they intend to build three more at Darlington, and Saskatchewan in the last six weeks or so expressed a desire to do some feasibility work, looking to potentially site some BWRX-300 facilities in that province.

Q: The other big supportive thing that has come out of the federal government in this past year is sort of the Canadian response to the IRA [the 2022 Inflation Reduction Act, the US legislation that includes multiple support mechanisms for nuclear and new nuclear]. I'm thinking of the Investment Tax Credits [ITCs] — I guess there are two different kinds? The cleantech ITCs and the ITCs for clean energy?

A: There are a lot of ITCs.

Q: My understanding is that on the nuclear front, the cleantech ITCs will just go to SMRs, not to large reactors, but then the ITCs for clean energy could go to large or small reactors, or even refurbishments of existing Candu plants. How big a game-changer is that?

A: We like to think it's a pretty big step. It's an aggressive policy. I don't think we've ever seen a tax measure like that that's available to our utilities. Now most of our utilities are provincial Crown corporations. That means they're owned by the provincial governments. And here we have the federal government extending a fiscal benefit to a provincial entity. That's pretty unheard of in our system.

So it's an aggressive measure. There will be uptake. There's a lot of interest. I know there are consultations underway right now. The Department of Finance, they're engaging with provinces and stakeholders just trying to work out the finer details. But I think it will definitely drive investment again.

Q: There should be a Pickering announcement [on a refurbishment and life-extension of OPG's 3.1 gigawatt Pickering plant] any day, and we've also recently seen Hydro Quebec talking about potentially restarting its mothballed Gentilly-2 Candu reactor. I imagine a lot of the incentives behind these considerations come from these ITCs...

A: I should be careful not to speak for Quebec, for all kinds of reasons. But I'll say that Quebec, like Ontario, is moving in a very big way to electrify its economy. Quebec, as you no doubt know, is a hydroelectricity superpower — it has almost 30,000 megawatts of hydro capacity — but they're looking at their projections, and they need new capacity. They've got a mothballed nuclear plant at Gentilly, and so they're looking at that. I would say they're looking at all options right now to meet that expected demand.

Q: One of the third legs of the Canadian SMR program is microreactors, and one of the use cases for these is powering remote communities. When we're thinking about Yukon or remote communities in the middle of nowhere, is there a federal role in helping the deployment of microreactors?

A: Quite possibly. These are jurisdictions with 30,000 or 40,000 citizens over huge amounts of space. Even a microreactor is a pretty significant capital investment, so it's kind of hard to see—and I'm not making promises here, I'm just speaking very pragmatically—it's hard to see how an investment like that goes ahead without federal support in some capacity. But we're not at that stage of the discussions right now.

When you talk about microreactors, we're still in the demonstration phase. There's work underway at Chalk River with that USNC project [the Micro Modular Reactor project being developed by Global First Power, a joint venture of Ultra Safe Nuclear Corp. and OPG] and lots of interest, and we'll see where that goes.

But we have a lot of remote communities that are not grid-connected, that rely on diesel, so the microreactors are interesting. But there are security considerations that we're gonna have to work through, and there are a lot of issues. It's not a slam dunk. But it's an interesting prospect.

Q: Another interesting potential Canadian use case for SMRs — this time likely not microreactors — is the Alberta Oil Sands. Is decarbonization of the Oil Sands entirely a matter of how the individual operators want to proceed? Or is there any federal government role in decarbonizing the Oil Sands?

A: There are lots of conversations underway with Alberta. Our minister is very engaged, working with his Alberta colleagues. We're engaged in working with Alberta colleagues.

Alberta, and the companies active in Alberta, are keen to become less emitting producers of oil. That's what my minister has been hearing. It's true in oil. It's true in mining. We want to be responsible producers. So the companies are exploring options. And we've talked a lot about CCUS, and there's active work in that space. We have some projects underway now in Alberta.

But nuclear can be an alternative to CCUS, and I think the companies — like the Pathways Alliance of players in the Oil Sands — they are doing their due diligence, looking at the options and what makes the most sense. We're active in some of those conversations alongside Alberta. At the end of the day, the private sector has an important role in terms of deciding what investments make the most sense. We have set pretty clear policy signals that drive them towards making those kinds of decisions, but we will remain technology agnostic. The objective is not to adopt technology X or Y, the objective is to reduce emissions.

Q: Moving onto large reactors, which you already mentioned. Bruce Power is doing a feasibility study, and I think OPG is thinking about large newbuilds in the longer term at some brownfield coal plants. I wonder from the federal perspective, as these large reactor plans pick up, is there a federal interest in pushing Candu technology - in pushing an indigenous Canadian solution?

A: The short answer is yes. It's our technology. It's a federal crown asset. It's licensed to Candu Energy [a subsidiary of AtkinsRealis, formerly SNC-Lavalin], which is a private player, but the technology is owned by the government of Canada. The IP is owned by the government of Canada. There's a lot of

experience in Canada with Candu in Ontario, but also in New Brunswick and Quebec, as you mentioned earlier. So we think it can play a role. It's been helpful in terms of contributing to our energy security in Canada and I think we see we see a role for can do going forward in Canada and internationally.

At the end of the day, it is the provinces who make their own investment decision. In Ontario, which is our biggest province and the biggest nuclear player by far in Canada, it will be a government of Ontario decision, working with its utilities, in terms of which path they take when they look at potential nuclear newbuilds. We like to think that they will look favorably at Candu, but I'm sure they will explore other technologies. And we'll have those conversations and we'll see where that goes.

Q: Your positive words about Candus are a good segue to Romania, where you just announced that potentially CA\$3 billion of Export Development Canada funding will go to finance the Canadian supply chain for the completion of twin Candu 6 reactors at Romania's Cernavoda plant. Obviously, this is a unique project, as there aren't comparable Candu projects around the world. Do you foresee further Canadian nuclear exports, or do you see this as a one-off?

A: First of all, we were very happy to get to that place where we could make that announcement last week. We have a long history of collaboration with Romania on CAandus specifically, and we're proud of that. This is an important project for Romania for energy security and geostrategic reasons. And of course, there's an emissions reduction benefit which is important as well.

We think we think there can be opportunities for Candu technology in either existing markets or new markets around the world, and that will be up to Candu Energy, as the licensee, to explore. My understanding is they're having conversations in different markets and we'll see how that shakes out.

Q: As these Darlington SMRs progress, and potentially we'll get more of these BWRX-300s in Saskatchewan and beyond, there will be a fair amount of Canadian supply chain built out for these reactors. Do you see a future in which the BWRX-300 will be considered a Canadian-American reactor that the government would have an interest in promoting abroad as well?

A: Well it's US technology, but we're one of the first adopters. There inevitably will be some benefits for the Canadian suppliers. I think we will learn a lot around project management — that's an area where OPG has a lot of experience already and is active in foreign markets through Laurentis providing those kinds of services. So there will be opportunities for Canada to support the deployment of that particular reactor in other markets. I mean, I have not seen any sort of solid economic analysis. I can't tell you Canada will get 20% of the benefit right by this point and 30% by that point. I simply don't know. But in broad strokes, I don't think we will be the primary recipient of benefits, but there will be things we can contribute, things we can offer, and that's good for Canada.

Q: As Canada expands beyond pressurized heavy water reactors (Candus) you're talking about different fuel cycles. With GE-Hitachi's BWRX-300 SMRs, it's fairly simple - just some enriched fuel, easy to get across the border. With advanced reactor vendors like USNC or Moltex you're talking about much more

complex fuels, some of which need high-assay low-enriched uranium (Haleu) or even reprocessed fuel that is not available today. Is this something you see a Canadian solution to? Or are you thinking of a broader North American solution — relying on the US for some of this stuff?

A: I think addressing these challenges will require partnerships with the US and potentially other allies, and we're having those conversations. But we're eyes wide open that we cannot rely on untrustworthy sources like Russia going forward. That is very clear, and I think all of our allies are on the same page on that.

So we are actively exploring how we can reduce and ultimately eliminate our reliance on Russia. And just to be clear, we don't rely on Russia because Candu is homegrown technology and we basically have an end-to-end fuel cycle. But Russia is a big player in the LEU market, so we are working towards coming up with an allied approach to ensuring the security of fuel supply to address our needs as we start developing these SMRs. It's a priority area for us, working with the US and other partners.

Q: Are you open to the development of domestic reprocessing capabilities?

A: Obviously Moltex is active in Canada. They're doing some R&D. We don't currently have a reprocessing policy in Canada.

Q: I thought there was an anti-reprocessing policy from [former Prime Minister] Pierre Trudeau?

A: Well we are very committed to nonproliferation. We've signed onto all of the treaties. That's at the top of the agenda. There can be concerns associated with reprocessing, so we would definitely look at any reprocessing through that lens first and foremost. We are open to seeing the results of that research, and then we will see where that goes, and we will potentially make policy adjustments as necessary.

That's a long-winded way of saying that we are open to the possibility of reprocessing, but we will have to look at it through every angle, beginning with safety, security, and nonproliferation, and that work is not currently underway.

Q: I don't know how much you can answer this as a civil servant, but it seems like there has been a seismic shift in Canada on perceptions around nuclear energy. Think of Ontario 10 years ago killing a newbuild program versus now. And even just in the government itself, I think at first it opposed nuclear's inclusion in the green taxonomy and then supported it. What is behind this? We've seen it a bit in the rest of the world but Canada's is very dramatic.

A: I think there are a number of factors.

At the federal level, there's a very strong commitment to reducing our greenhouse gas emissions as we contribute to the fight against climate change. My government very much sees things through that lens. You've seen my minister, Minister [Jonathan] Wilkinson, and the prime minister [Justin Trudeau] speak very positively about nuclear as a contributor to our net zero objectives. I

think there aren't a ton of ways to generate massive amounts of non-emitting electricity; there's hydro and there's nuclear, but there aren't a lot of alternatives.

Going back to Ontario canceling new nuclear in the early 2010s — there was sticker shock then. Nuclear is expensive. The capital costs are significant. We all know that. But we're seeing with other projects, like hydro projects in Canada, so are hydro projects. Building these big projects, whether it's nuclear or other energy sources, it's expensive. And I think people recognize that. The days of cheap power are kind of gone.

It's climate, it's economics, and then globally it's energy security.

Phil Chaffee

New York Bureau Chief

Editor, Nuclear Intelligence Weekly

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From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>

Sent: Tuesday, September 19, 2023 17:48

To: Philip Chaffee <[REDACTED]>

Cc: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>

Subject: Re: Meet?

Sounds good thanks Phil

Sent from my iPhone

On Sep 19, 2023, at 5:29 PM, Philip Chaffee <[REDACTED]> wrote:

UNCLASSIFIED - NON CLASSIFIÉ

Hi Fred - let's connect on Monday and play it by ear. It's always such a crazy week. I just sent you a message on WhatsApp, which might be the easiest way to coordinate next week.

Phil

Phil Chaffee

New York Bureau Chief

Editor, Nuclear Intelligence Weekly

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<Outlook-4iaqmn1e.png>

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From: Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>

Sent: Monday, September 18, 2023 13:18

To: Philip Chaffee <[REDACTED]>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>

Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>

Subject: RE: Meet?

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Phil. I think I have open blocks of time Mon-Wed (I leave Wed evening). We can schedule now if you prefer, or we can connect on Monday and play it by ear based on our respective availability. Up to you. Look forward to chatting,

A0072383_10-001039

Fred
613-769-3208

Frédéric Beauregard Tellier

Director General, Nuclear Energy and Infrastructure Security Branch
Energy Systems Sector
Natural Resources Canada / Government of Canada
frederic.beauregardtellier@nrcan-rncan.gc.ca / Tel: 613-769-3208

Directeur général, direction de l'énergie nucléaire et de la sécurité des
infrastructures
Secteur des systèmes énergétiques
Ressources naturelles Canada / Gouvernement du Canada
Frederic.beauregardtellier@nrcan-rncan.gc.ca / Tél: 613-769-3208

From: Philip Chaffee <[REDACTED]>
Sent: Friday, September 15, 2023 5:58 PM
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>; Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Subject: Re: Meet?

UNCLASSIFIED - NON CLASSIFIÉ

Thanks so much, Bruce!

Fred - Nice to be in touch. Is there any particular day/time that you'll be free to meet during the GC? I'll be there the entire week, and can generally meet wherever in the VIC.

I've also attached our latest so you can get a sense of what Nuclear Intelligence Weekly is.

Cheers,

Phil

Phil Chaffee
New York Bureau Chief
Editor, Nuclear Intelligence Weekly

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From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Friday, September 15, 2023 10:47
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>; Philip Chaffee <[\[REDACTED\]](#)>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>; Beauregard-Tellier, Frédéric <frederic.beauregardtellier@nrcan-rncan.gc.ca>
Subject: RE: Meet?

UNCLASSIFIED - NON CLASSIFIÉ

Hi Phil.

Justin is leaving NRCan and will be unable to speak for the department and the Government of Canada.

However, Frédéric Beauregard-Tellier, Director General in our Energy Systems Sector, is available to be interviewed and answer questions related to the themes that you identified.

Fred will be at the conference in Vienna and will be able to meet there.

Feel free to reach out directly to Fred to make arrangements. He is cc'd on this message.

We kindly ask that you cc NRCan Media Relations on any messages concerning the meeting/interview.

Please let us know if you have any questions.

Thanks!

bruce

From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Wednesday, September 6, 2023 1:44 PM
To: Philip Chaffee <[\[REDACTED\]](#)>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: RE: Meet?

UNCLASSIFIED - NON CLASSIFIÉ

Hi Phil.

Thanks for contacting NRCan Media Relations with this request.

We are looking into it for you and will get back in touch after consulting colleagues internally.

Cheers

bruce

Bruce Blackie

Media Relations / Relations avec les médias
Natural Resources Canada / Ressources naturelles Canada
media@nrcan-rncan.gc.ca
(343) 598-7019

From: Philip Chaffee <[REDACTED]>
Sent: Wednesday, September 6, 2023 12:01 PM
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Hi I'm following up on this interview request for Justin Hannah to see if it might be possible at the IAEA GC in Vienna at the end of the month? I'll be there for the entire week (Sep. 25-29), and I'm guessing Justin will be there for at least the first half of the week.

Cheers,

Phil Chaffee

Phil Chaffee

New York Bureau Chief
Editor, Nuclear Intelligence Weekly

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From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Monday, February 27, 2023 09:46
To: Philip Chaffee <[REDACTED]>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: RE: Meet?

A0072383_13-001042

Thanks Phil, media relations at NRCan be in touch.

-Anthony

From: Philip Chaffee <[REDACTED]>
Sent: February 24, 2023 09:44
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Hi Anthony,

Understood. Though it's not as ideal as an on-the-record conversation here, is there any possibility of a remote video interview at some point? If so please consider this a request. If not, Justin is often on the nuclear conference circuit -- as am I -- and I can see when we'll next overlap at an in-person conference.

Cheers,

Phil

Phil Chaffee
Editor, Nuclear Intelligence Weekly

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From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Friday, February 24, 2023 09:34
To: Philip Chaffee <[REDACTED]>; Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Subject: RE: Meet?

Hi Phil,

A0072383_14-001043

Thanks for following up. I appreciate the themes provided but at this point our media relations team would need more time to discuss with the program area and therefore cannot give the go-ahead for an interview to take place in person at the conference.

If you have additional time for this request, we could consider an interview in the future, or alternatively, written responses to questions that you provide.

Thank you and best regards.

Anthony Ertl

Media Relations / Relations avec les médias
Natural Resources Canada / Ressources naturelles Canada
media@nrcan-rncan.gc.ca
(342) 292-6100

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From: Philip Chaffee <[REDACTED]>
Sent: February 23, 2023 11:41
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Hi Anthony - I'm just checking in on this request, given the timeframe. Let me know if you have any further questions about the request.

Phil

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From: Philip Chaffee <[REDACTED]>
Sent: Wednesday, February 22, 2023 4:06:13 PM
To: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Hi Anthony,

This would be for tomorrow or Friday during the CNA annual meeting in Ottawa.

I don't give questions beforehand -- that's not great journalism -- but the topics would include a big focus on the SMR Roadmap, what's next in terms of federal support, at Darlington and elsewhere, and lessons learned from this coordinated Roadmap approach. Would also ask about Canadian energy policy more largely - how refurbishments and SMRs fit in -- and potentially about exports, such as federal support for prospective nuclear exports in Romania, Argentina and potentially elsewhere.

Cheers,

Phil

Phil Chaffee
Editor, Nuclear Intelligence Weekly

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From: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Sent: Wednesday, February 22, 2023 15:51
To: Philip Chaffee <[REDACTED]>
Cc: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Subject: RE: Meet?

Hello Phil,

Thank you for your request.

I'm contacting you from media relations at NRCan. Could you please let us know the timeline for your request/publication date, and the questions you're looking at asking?

Best regards.

Anthony Ertl
Media Relations / Relations avec les médias
Natural Resources Canada / Ressources naturelles Canada
media@nrcan-rncan.gc.ca
(342) 292-6100

<image007.png>

From: Philip Chaffee <[REDACTED]>
Sent: February 22, 2023 15:30
Cc: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>

A0072383_16-001045

s.19(1)

Subject: Re: Meet?

Hi I'm just checking in if there's any chance of arranging an on-the-record interview with Justin?

I'd be happy to chat to discuss details.

Phil

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From: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Sent: Tuesday, February 21, 2023 12:16:21 PM
To: Philip Chaffee <[REDACTED]>
Cc: Media (NRCan/RNCan) <media@nrcan-rncan.gc.ca>
Subject: RE: Meet?

Phil, connecting you with Media Relations to explore a discussion.

Justin Hannah
Natural Resources Canada
437-329-1459

----- Original message -----

From: Philip Chaffee <[REDACTED]>
Date: 2023-02-21 9:54 a.m. (GMT-05:00)
To: Justin Hannah <[REDACTED]>
Cc: "Hannah, Justin" <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Hi Justin,

Just checking in on this request. Either way looking forward to seeing you this week.

Cheers,

Phil

Phil Chaffee
Editor, Nuclear Intelligence Weekly

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From: Philip Chaffee <[REDACTED]>
Sent: Thursday, February 16, 2023 21:51
To: Justin Hannah <[REDACTED]>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Sounds good!

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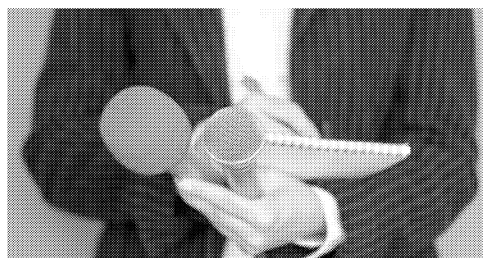
From: Justin Hannah <[REDACTED]>
Sent: Thursday, February 16, 2023 8:51:06 PM
To: Philip Chaffee <[REDACTED]>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Will get back to you asap on this. I will be there. Need to touchbase with comms.

On Thu, Feb 16, 2023, 5:56 p.m. Philip Chaffee <[REDACTED]> wrote:
Hi Justin,

Will you be at the CNA next week? I'm going (for the first time) and am setting up some interviews. I was wondering if you might be willing to sit down for an on-the-record Q&A along the lines of this?

<https://www.energyintel.com/00000185-e0cb-d8e0-ab97-fefb676b0000>



Interview: DOE's Jigar Shah on Lending to Nuclear Projects

The head of the US government's energy loan program spoke with Energy Intelligence about debt financing prospects for nuclear energy.
www.energyintel.com

Obviously about Canadian nukes rather than US loan guarantees, but that kind of format...

Cheers,

Phil
Phil Chaffee
Editor, Nuclear Intelligence Weekly

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From: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Sent: Tuesday, September 27, 2022 09:07
To: Philip Chaffee <[REDACTED]>; Justin Hannah
<[REDACTED]>
Subject: RE: Meet?

I am going to the US Industry Reception today. I can also meet at the Canada booth now.

Justin Hannah
Director, Nuclear Energy Division
Natural Resources Canada
M:4373291459

----- Original message -----
From: Philip Chaffee <[REDACTED]>
Date: 2022-09-27 3:05 p.m. (GMT+01:00)
To: Justin Hannah <[REDACTED]>
Cc: "Hannah, Justin" <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

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A0072383_19-001048

Fantastic. Any chance you're free at all this afternoon or evening? If not I'm here all week.

Phil

Phil Chaffee

London Bureau Chief

Deputy Editor, Nuclear Intelligence Weekly

ENGAGING INSIGHT | LEADING DECISIONS

2nd Floor, Berkeley Square House, Berkeley Square, London, W1J 6BD

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From: Justin Hannah <[REDACTED]>
Sent: Monday, September 26, 2022 15:07
To: Philip Chaffee <[REDACTED]>
Cc: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

Hi Phil, happy to connect. Justin

On Mon., Sep. 26, 2022, 10:04 a.m. Philip Chaffee, <[REDACTED]> wrote:
Hi Justin,

Just saw that you're in Vienna this week. I imagine you're crazy busy, but if you're around for a coffee or a beer at the VIC sometime let me know. Would be good to catch up again.

Cheers,

Phil

Phil Chaffee

London Bureau Chief

Deputy Editor, Nuclear Intelligence Weekly

A0072383_20-001049

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From: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Sent: Wednesday, December 1, 2021 16:12
To: Philip Chaffee <[REDACTED]>; Justin Hannah
<[REDACTED]>
Subject: RE: Meet?

I'm here

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: Philip Chaffee <[REDACTED]>
Date: 2021-12-01 5:05 p.m. (GMT+01:00)
To: Justin Hannah <[REDACTED]> "Hannah, Justin"
<Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

If you're still around I'm free now.

Get Outlook for iOS

From: Justin Hannah <[REDACTED]>
Sent: Wednesday, December 1, 2021 4:33:07 PM
To: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Cc: Philip Chaffee <[REDACTED]>
Subject: Re: Meet?

I can meet now at the moltex booth

On Wed., Dec. 1, 2021, 2:56 p.m. Hannah, Justin, <Justin.Hannah@nrcan-rncan.gc.ca> wrote:

I now have to go to a meeting. Will send you a note when I am done.

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: Justin Hannah <[REDACTED]>
Date: 2021-12-01 2:42 p.m. (GMT+01:00)
To: Philip Chaffee <[REDACTED]>
Cc: "Hannah, Justin" <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Re: Meet?

315 at Canada booth?

On Wed., Dec. 1, 2021, 2:41 p.m. Philip Chaffee, <[REDACTED]> wrote:

Cool I have an interview with EDF at 4, but could meet before then or circa 5. Let me know when works best!

Phil

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From: Hannah, Justin <Justin.Hannah@nrcan-rncan.gc.ca>
Sent: Wednesday, December 1, 2021 2:38:46 PM
To: Philip Chaffee <[REDACTED]>; Justin Hannah
 <[REDACTED]>
Subject: RE: Meet?

Hi Phil, happy to chat today

Sent from my Bell Samsung device over Canada's largest network.

----- Original message -----

From: Philip Chaffee <[REDACTED]>
Date: 2021-12-01 2:11 p.m. (GMT+01:00)
To: Justin Hannah <[REDACTED]> "Hannah, Justin"
 <Justin.Hannah@nrcan-rncan.gc.ca>
Subject: Meet?

Hi Justin - I just saw your presentation but then lost you in the cluster after. Any chance you'd be free later today or tomorrow to meet for a coffee or beer?

And congrats on the job!

Phil

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RE: Reconnecting on SMRs

May 10, 2024 14:46

Subject	RE: Reconnecting on SMRs
From	Brady, Daniel
To	Hawkins, Griffith
Cc	Poupore, Jessica
Sent	October 26, 2023 11:36

Griffith – I wish you would have given me a heads up.

[REDACTED]

Jessica – let’s setup a call with SIF ASAP

From: Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>
Sent: Thursday, October 26, 2023 11:20 AM
To: Tanya.Hinton@international.gc.ca
Cc: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>; Poupore, Jessica <Jessica.Poupore@NRCan-RNCan.gc.ca>; Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>
Subject: RE: Reconnecting on SMRs

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Déclassifié par l'AIPRP
PROTECTED B - PROTÉGÉ B

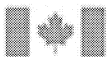
Hi Tanya,

As an introduction, I work with NRCan’s Nuclear Energy and Infrastructure Branch. While non-proliferation and reprocessing aren’t my areas of expertise, my colleagues copied have been actively engaged [REDACTED] and I think would be good contacts for you to connect with.

I can also give you the contact for the analyst at SIF who works on the Moltex file with respect to funding: James Campbell, James.Campbell2@ised-isde.gc.ca.

Griffith

Griffith Hawkins
Program Officer – Strategic Policy | Agent de Programme – Politique Stratégique
Nuclear Energy Division | Direction de l’énergie nucléaire
griffith.hawkins@nrcan-rncan.gc.ca | telephone: (343) 572-4224



Government of Canada
Gouvernement du Canada

From: Ching, Michael <michael.ching@nrcan-rncan.gc.ca>
Sent: Monday, October 23, 2023 11:03 AM
To: Tanya.Hinton@international.gc.ca; virginia.Asante@ised-isde.gc.ca; Janice.Pillon@ised-isde-isde.gc.ca

s.20(1)(b)

s.21(1)(b)

isde.gc.ca; Rod.Lever@ised-isde.gc.ca

Cc: Hawkins, Griffith <Griffith.Hawkins@NRCan-RNCan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Subject: RE: Reconnecting on SMRs

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Hi Tanya,

I am no longer working on the SMR file nor am I with ISED. I believe Virginia is no longer with ISED as well? I've cc'd my colleagues from NRCan who are responsible for the SMR file who may be able to provide the information you are seeking.

Best,
M.

From: Tanya.Hinton@international.gc.ca <Tanya.Hinton@international.gc.ca>

Sent: Monday, October 23, 2023 10:58 AM

To: virginia.Asante@ised-isde.gc.ca; Janice.Pillon@ised-isde.gc.ca; Rod.Lever@ised-isde.gc.ca

Cc: Ching, Michael <michael.ching@nrcan-rncan.gc.ca>

Subject: Reconnecting on SMRs

Hi Janice, Virginia, and Rod,

You may recall that we spoke a couple of years ago about SMRs and ISED investment in Motlex. Michael, you were also involved, but it appears you have moved over to NRCan now, so please do let me know if there are others that I should be looping in.

I just wanted to reach out to see where things are at, [REDACTED]

[REDACTED] I'm not sure if you are aware, but there have now been four letters sent to PM Trudeau by a group of US experts and former government officials from the nuclear non-proliferation sphere related to reprocessing, [REDACTED]

Happy to connect via a Teams meeting to get the latest and to update you on anything from our side or to receive any updates you may have via email.

Thanks,
Tanya

Tanya Hinton

Senior Advisor and Specialist (Nuclear) | Conseillère Principale et Spécialiste (Nucléaire)

Non-Proliferation and Disarmament Division | Direction de la non-prolifération et du désarmement

Mobile: +1 (646) 684-5018

tanya.hinton@international.gc.ca

RE: Reprocessing / GIF

May 10, 2024 14:52

Subject	RE: Reprocessing / GIF
From	Naina.Thoppil@international.gc.ca
To	Brady, Daniel
Sent	October 26, 2023 12:48

Yes, absolutely. I have broad availability this afternoon but also tomorrow.

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: October 26, 2023 11:58 AM
To: Thoppil, Naina -IGN <Naina.Thoppil@international.gc.ca>
Subject: Reprocessing / GIF

UNCLASSIFIED - NON CLASSIFIÉ

Hi Naina

When would you have time for a call to discuss reprocessing and GIF.

dan

Daniel Brady P.Eng
Deputy Director, Nuclear Science & Technology / Directeur adjoint sciences & technologie nucléaire
Energy System Sector / Secteur des systèmes énergétiques
Natural Resources Canada/Ressources naturelles Canada
580 Booth Street/580, rue Booth, Ottawa, Ontario, K1A 0E4
Telephone/Téléphone: 613-240-6357
daniel.brady@nrcan-rncan.gc.ca

RE: Reprocessing

May 10, 2024 14:53

Subject	RE: Reprocessing
From	Brady, Daniel
To	
Sent	November 17, 2023 08:12

Hi

Great to hear from you and I appreciate anything you can do to help inform us on reprocessing considerations.

Thanks

dan

ps – CANDU tech being back in the picture these days,

From:

Sent: Thursday, November 16, 2023 11:48 PM

To: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>

Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>

Subject: RE: Reprocessing

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Hi Daniel!

Great to hear from you – and thanks for the kind words re:

However I would be happy to discuss sometime the various aspects of this issue – incl. the specifics of safeguarding a reprocessing facility in general, the specific aspects of pyroprocessing, the safeguards implications of adding a reprocessing step to a State's capabilities, and our safeguards-by-design Member State support programme (MSSP) task with Moltex in particular (we have had SBD-related meetings, but to date these have not included the pyro front end as this is not within the scope of Moltex's VDR with the CNSC).

This could be something discussed over a video call at any time. However, I would also be happy to connect Kate to some colleagues at the VIC that she could meet while over there – in fact in may be efficient to arrange some sort of group meeting. If you and Kate agree then I can help get that ball rolling.

A0072387_1-001057

Cheers,

P.S. Kate – I will also be sure to include you the invitation to the 'Canadian Corner' in the VIC bar on Thursday afternoon. Although travelling I still have that important task. 😊

Division of Concepts and Planning | Department of Safeguards |
International Atomic Energy Agency | Vienna International Centre, PO Box 100, 1400 Vienna, Austria |
Email: [REDACTED] | Tel: (+43-1) 2600-[REDACTED] | Mobile : [REDACTED] | Fax: (+43-1) 2600-[REDACTED]

ATOMS FOR PEACE AND DEVELOPMENT

From: Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Sent: Thursday, 16 November 2023 19:39
To: [REDACTED]
Cc: Prosser, Kathleen <Kathleen.Prosser@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Subject: Reprocessing

You don't often get email from daniel.brady@nrcan-mcan.gc.ca. [Learn why this is important](#)

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Afternoon [REDACTED]

I hope all is well has it been a while. Unfortunately, I was not able to attend you Canadian Corner when I was at the IAEA last summer as I was leaving on Thursday.

I have colleague, Kate (cc'd), that will be attending the IAEA reprocessing workshop next week at the IAEA.

As you may or may not be aware, Moltex in Canada is currently undertaking research to develop reprocessing technology to extract actinides from spent CANDU fuel. As such, our branch is involved into looking at what this means from a variety of perspectives from non-proliferation, links associated safeguards, waste streams, international commitments etc. Kate is leading on reprocessing for NRCan,

I believe there would be some value in Kate meeting with you given your focus is on safeguards, safeguards by design etc. Hence, any insights or knowledge you may have when a country is considering reprocessing would be appreciated.

In addition, if you have recommendations on other individuals she should meet with while she is at the IAEA next week, it would be appreciated.

Best regards

Daniel

Ps – [REDACTED]

Daniel Brady P.Eng
Acting Senior Director, Nuclear Energy Division
Energy System Sector

A0072387_2-001058

Natural Resources Canada
Telephone: 613-240-6357
daniel.brady@nrcan-rncan.gc.ca



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Reprocessing

May 10, 2024 14:47

Subject	Reprocessing
From	Boudrias, Geneviève
To	Brady, Daniel
Cc	Brunarski, Lee; Jackson, Candice; de la Chevrotière, Antoine
Sent	October 13, 2023 13:59
Attachments	<div> 1.1 DECK - QNES - CL...  REPORT - Meeting -...</div>

Good afternoon Dan,
I hope that all is well with you.

They indicated that during your recent QNES meeting (see attached) it was noted that you are working on a framework for reprocessing (deck slide 12). I know that this meeting took place on September 14th and due to a CNSC all-staff we were not able to attend.
Just wondering if you can provide more details on NRCan’s plan, next steps, timelines on this framework.
Tx, Gen

Geneviève Boudrias M.Ed, PMP
(she, her, elle)
Director | Directrice
International and Government Affairs | Affaires internationales et gouvernementales
Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire
280 rue Slater Street
Ottawa, ON K1P 5S9
(613) 277-4803



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Quarterly Nuclear Energy Session

NRCan Update – September 14th, 2023

Canada

Agenda

1

New Deputy
Minister &
Associate
Deputy
Minister

2

Canada-UK
Nuclear
Dialogue

3

Enabling
Small
Modular
Reactor
Program

4

Nuclear
Energy
Leadership
Table

5

Team
Canada Fuel
Supply
Working
Group

6

Saskatchewan
SMR
Announcement



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New Deputy Minister and Associate Deputy Minister



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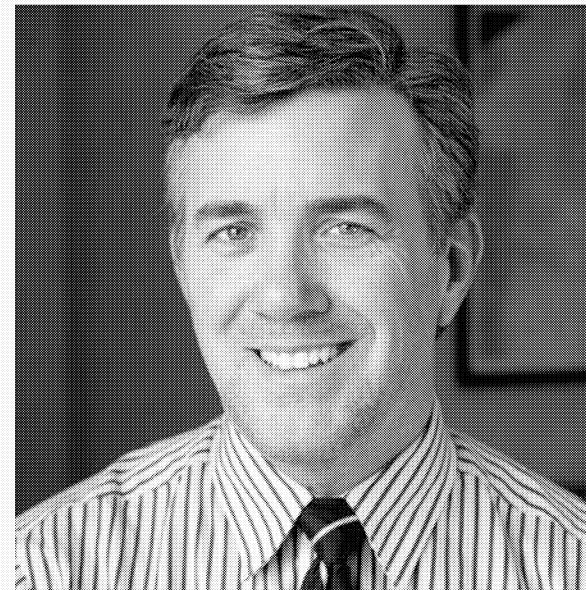
Canada

New DM and DMA



Deputy Minister
 Michael Vandergrift

Former Deputy Secretary to the Cabinet (Plans and Consultations), became Deputy Minister of Natural Resources in July 2023.



Associate Deputy Minister
 Jeffrey Labonté

Former Assistant Deputy Minister, Lands and Minerals Sector, Natural Resources Canada, became Associate Deputy Minister of Natural Resources in July 2023



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Canada-U.K. Nuclear Dialogue



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Canada-U.K Nuclear Dialogue

- In June 2023 NRCAN hosted a delegation from the UK's Department of Energy Security and Net Zero (DESNZ) for the 2023 Canada-UK Nuclear Dialogue.
- NRCAN, DESNZ and both country's regulators have new deliverables coming from the Dialogue which will inform work over the next year.
- The U.K. will host the next dialogue in 2024.

Workstreams

WS1: Nuclear
Decommissioning,
Radioactive Waste
Management, and
Waste
Minimisation
Techniques

WS2: Nuclear
Fuel Supply
Chain

WS3: Advanced
Manufacturing
and Technologies

WS4:
Regulatory
Collaboration

WS5: Nuclear
Financing and
Business
Models

WS6: Advancing
the Role of
Nuclear Energy
in Combatting
Climate Change

WS7: Increasing
Nuclear Sector
Capacity and
Diversity

WS8:
Nuclear
Fusion



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Enabling SMR Program



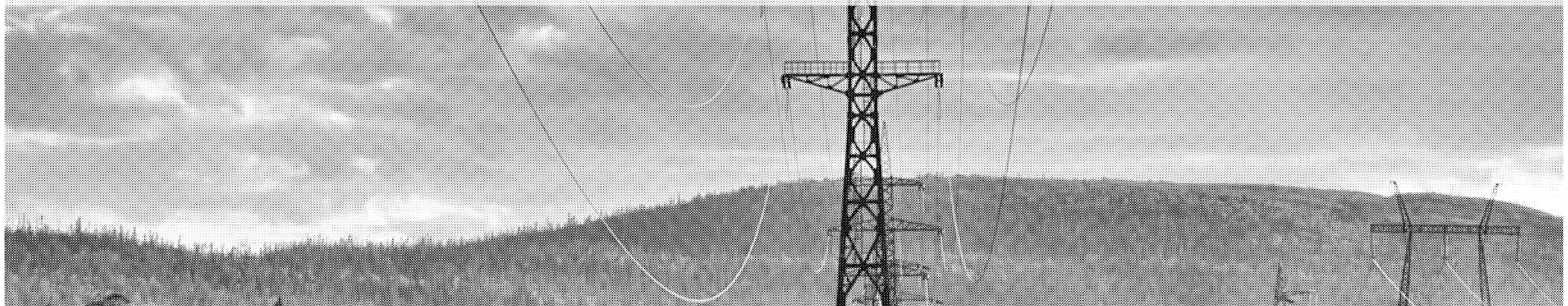
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The Enabling Small Modular Reactors Program

- The Enabling Small Modular Reactors Program (the “Program”) seeks to support applicants in their efforts to:
 - Address waste generated from SMRs
 - Develop supply chains for SMR manufacturing and SMR fuel supply
- NRCan’s Enabling SMRs program launched in February 2023 with the objective of supporting the conditions and enabling frameworks for SMR deployment in Canada
- Call for applications is closed and the Program is currently reviewing proposals.
- Results expected to be publicly released in Winter 2024.



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Nuclear Energy Leadership Table



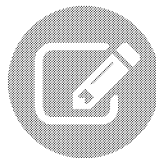
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Nuclear Energy Leadership Table

- The Leadership Table is composed of multidisciplinary representatives from the federal government, interested provincial and territorial governments, industry and utilities, and Indigenous organizations.
- On May 9, 2023, NRCan co-chaired the third meeting of the Leadership Table in Gatineau, alongside the Indigenous Advisory Council. Key themes included:
 - Regulatory Efficiency and Effectiveness,
 - Path Forward for Nuclear Energy in Canada
 - Collaboration
 - Building a Nuclear Workforce.



Progress Update

NRCan will be issuing a second edition of the Progress Update in Fall 2023 to reflect the strides made in the development and deployment of nuclear energy in Canada.

The second edition will provide an update from NRCan, capture the voice of the Leadership Table, and highlight discussions and action items from the meetings.



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Team Canada Fuel Supply Working Group



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Team Canada Fuel Supply WG

- Representatives of the federal government and industry met on May 8, 2023 to advance discussions with respect to fuel supply for advanced reactor technologies. Security of supply, enrichment, reprocessing, waste, and international collaboration were all discussed.
- The federal government continues to priorities working with like-minded countries to leverage existing capacity where constraints are envisioned (e.g. conversion and enrichment).
- There are currently no plans to deploy enrichment technology in Canada, however there is a consensus within the global nuclear energy and technology community that additional capacity will be required by the mid 2030's, should moderate reactor buildout scenarios be realized.
- There was further acknowledgement of the significant impact Russian sanctions may have on the availability of materials globally in both the short and medium term.
- Federal work on developing a framework in which to advise on how, and under what conditions, spent fuel reprocessing and closing the fuel cycle should be considered, is under development.



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Saskatchewan SMR Announcement



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Saskatchewan SMR Announcement

- In August 2023 the federal government approved 74 million of federal funding for SMR development in Saskatchewan, led by SaskPower.
- This funding will support pre-engineering work and technical studies, environmental assessments, regulatory studies and community and Indigenous engagement to help advance this important project.
- SaskPower has selected the GE-Hitachi BWRX-300 for potential deployment in Saskatchewan in the mid-2030s, subject to a decision to build that is expected in 2029.

“With today’s announcement, we are investing in the future of nuclear technology, building on Canada’s decades-long legacy as a responsible global leader in nuclear power, and leveraging Saskatchewan’s world-leading production of uranium to position the province to thrive in a rapidly decarbonizing global economy.”

*The Honourable Jonathan Wilkinson
Minister of Energy and Natural Resources*



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Next QNES

We are seeking suggestions on the following for future QNES meetings:

- Themes
- Topics
- Presentations
- Speakers
- Attendees



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Questions?

Justin Hannah
Senior Director, Nuclear Energy Division
Natural Resources Canada

Justin.Hannah@nrcan-rncan.gc.ca



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Fall Events



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Upcoming

- International Atomic Energy Agency (IAEA) General Conference | Sept 25-29
- GIF SCWR Meeting in Canada | Sep 25-29
- FNST Fall Workshop (Shaw Centre) | Sept 27-28, Oct 4-6
- Nuclear Energy Agency (NEA) Roadmaps to New Nuclear | Sept 28-29

September 2023



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Upcoming

- IAEA Climate Conference | October 8-13
- Women in Nuclear Canada Conference (WIN) | Oct 15-18
- GIF VHTR Materials PMB Meeting in Canada | Oct 24-25
- NEA Steering Committee | Oct 25-26

October 2023



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Upcoming

- World Nuclear Exhibition | Nov 28–30
- COP 28 | Nov 30– Dec 12

November / December 2023



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**Report of the
Quarterly Nuclear Energy Session
September 14, 2023
Natural Resources Canada, via MS Teams**

I. SUMMARY

- Justin Hannah, Senior Director of the Nuclear Energy Division (NED) at Natural Resources Canada (NRCan), chaired the Quarterly Nuclear Energy Session (QNES) on September 14th, 2023, via videoconference. The theme of this session was the fall events schedule.

Agenda item included:

- NRCan Updates
- Roundtable Discussion on Fall Events
- Questions and Comments
- Closing Remarks

II. BACKGROUND

The purpose of QNES, convened by NED at NRCan, is to bring together **stakeholders from across Canada's nuclear energy sector** – *including, but not limited to, industry associations, companies, laboratories, academia, and utilities* – as well as **federal departments and agencies, and provincial and territorial counterparts** for updates and discussions on current initiatives and upcoming events and to foster collaboration and information sharing to support policy coherence on nuclear matters.

The previous QNES was held on May 31st, 2023, and focused on International Cooperation & Export Markets.

III. REPORT BY AGENDA ITEM

1. Opening Remarks and NRCan Update

- **NRCan Updates:** Introductions of new DM and DMA. Deputy Minister Michael Vandergrift will be taking over for DM John Hannaford, supporting him will be Associate Deputy Minister, Jeff Labonté.
- **Canada-UK Nuclear Dialogue:** The Canada-UK Nuclear Dialogue was hosted in Ottawa June 20-21. The Dialogue provides a venue for the ongoing work under the Canada-UK Action Plan, led by NRCan and the Department of Energy Security and Net Zero (DESNZ). In addition to the existing 7 workstreams a new workstream has been created on nuclear fusion due to growing mutual interest in the topic. Both Canada and the U.K. have several new action items following the Dialogue.
- **Enabling SMR Program:** NRCan is leading on a \$29.6 million dollar program over a 4-year span addressing key areas such as supply chain and manufacturing for SMR fuel funding and research for safe SMR waste. The application deadline was April 21st. Applicants from private companies, academia, other levels of Government and Indigenous organizations expressed interest. Full project proposals were solicited and applications closed on August 31st. These proposals are currently being reviewed.
- **Nuclear Energy Leadership Table:** Formerly the "SMR Action Plan Leadership Table," the Nuclear Energy Leadership Table has rebranded in response to the increase in recent discussions of the ongoing role of large scale nuclear in Canada and abroad. It has been expanded to include all nuclear energy options moving forward. The last leadership table was May 9th and was co-chaired by the Indigenous Advisory Council. NRCan is currently in the process of identifying a co-chair for a future session. The second edition of the Progress update will be issued this fall.

- **Team Canada Fuel Supply Working Group:** There has been working level dialogue between NRCan and the US Department of Energy. NRCan/Hannah and NRCan/Fairchild have been key interlocutors with DOE colleagues. We are working on finalizing and moving forward the work plan while also finalizing and moving forward on forecasts from the Canadian nuclear sector on needs for enriched uranium. NRCan is receiving information from the utilities and are looking at options and scenarios in which Canada could participate in many initiatives that would ensure both the expansion and supply security for enriched uranium.
- **Saskatchewan SMR Announcement:** Saskatchewan has been seeking federal support on their SMR program. In total, federal support equals \$74 million with \$50 million coming from NRCan, and \$24 million coming from ECCC. This support is a good sign for deployment of new nuclear across Canada, not just within Ontario or New Brunswick but non-traditional nuclear provinces as well. Work will continue with stakeholders in Saskatchewan to demonstrate federal support both on funding as well as regulatory and fuel to support that program.

2. Roundtable Discussion on Fall Events

- **International Atomic Energy Agency (IAEA) General Conference**
 - **NRCan/Hannah** introduced Frederic Beauregard-Tellier and noted that he will be representing NRCan at the IAEA General Conference at the end of September (25-29). NRCan senior representatives are looking forward to the GC where they will be able to meet with domestic and international stakeholders. The focus is the Government to Government and industry focused engagement which promotes the opportunity to build relationships and valuable dialogues. These bilateral dialogues will take place with key countries such as the UK, France, Korea, and Romania although they are still being finalized, as well as side events from AECL, CNSC and CNA.
 - **AECL/Cameron** noted that CNSC President Velshi will be attending as well as AECL President Fred Demarker and Vice-President Grant Gardner.
 - **GAC/Gollan** who works on the GAC team leading on GC participation noted they are hard at work finalizing the delegation. Main priorities for GAC are on the political side and some of the more political resolutions are showing a dedicated support for Ukraine as well as an annual resolution on safeguards in the Democratic People's Republic of Korea.
- **Nuclear Energy Agency (NEA) Roadmaps to New Nuclear (Sept 28-29)**
 - This event will be co-hosted by the Ministry of Energy Transition in France. The roadmaps event is being positioned as an equivalent to the IAEA Ministerial, where OECD countries will come together and discuss roadmaps to new nuclear. In addition to ministerial attendees, a number of CEOs from key utilities, R&D organizations and various other stakeholders will be in attendance. **NEA/** noted that this will be a ministerial level event where Minister Wilkinson and eighteen other ministers are planning to attend.
- **IAEA Climate Conference (Oct 8-13)**
 - UNENE is planning to participate.
- **Women in Nuclear Canada Conference (WiN) (Oct 15-18)**
 - NRCan plans to send representatives to this annual conference taking place in Niagara Falls, ON. **WiN/** noted that there has been an overwhelming response to the program and they as an organization are looking forward to announcements with NRCan on current work.

Women in Nuclear has stated that despite the name, the conference is open to people of all genders and that they are aiming to have at least 20% participation from men in the workforce.

- **World Nuclear Exhibition (Nov 28-30)**
 - **CNA/Christidis** has been working hard to ensure that a good industry delegation is in attendance as well as a political representation from provinces. There is an opportunity being finalized with the Canadian Embassy in Paris to host.
- **COP 28 (Nov 30-Dec 12)**
 - Led by ECCC, NRCan will provide support at this event.
 - Host country UAE is looking to increase nuclear visibility.

Stakeholder Updates

- **NAYGN/** noted that they have started seventeen new chapters in 2023 with interest from the University of Calgary, Trent University, CANDU, Westinghouse, Calian, NWMO and TRIUMF. NAYGN is currently working on York University as efforts in Canada have grown. They hosted their first standalone conference this year.
- **CNS/** updated everyone on current efforts taking place including a series of lunch and learns that have been very effective. CNS is having from Bruce Power talking about their role in the new build program on September 27th with an introduction from the energy minister.
- **Kinetrics/** shared that Kinetrics has been visiting colleges and setting up MOUs. They have been in collaboration on innovative research such as SMR lifecycle inspections, advanced manufacturing materials and robotics. Kinetrics has also been awarded an ISO Hydrogen Innovation Fund grant to advance hydrogen technology at a location in Ontario.

3. Questions and Comments

Questions and comments were incorporated into the roundtable discussions and updates during this session.

4. Closing Remarks

- **NRCan/Hannah** noted that he will be concluding his interchange with NRCan on September 22nd. He highlighted being proud of the work that has been accomplished by the team and sector. There are ongoing discussions for a transitioning Acting Director in October while seeking to fill the Director role in the fall.

Drafted: NED/Marrison

Consulted: NED/Newman

Approved: NED/

Date: September 21st, 2023

CHAIR

-Justin Hannah, Senior Director, Nuclear Energy
Division, Natural Resources Canada

INDUSTRY***AECL***

-Jonathan Fitzpatrick, Project Engineer
-Maude Emilie-Page, Director of Communications

AECOM

[REDACTED]

Automation Tooling Systems (ATS)

[REDACTED]

ARC Nuclear Canada Inc.

[REDACTED]

Atlantica Centre for Energy

[REDACTED]

Arcadis

[REDACTED]

CAMECO

[REDACTED]

Canadian Nuclear Association (CNA)

[REDACTED]

Canadian Nuclear Society

[REDACTED]

Canadian Nuclear Labs (CNL)

[REDACTED]

Candu Owners Group (COG)

[REDACTED]

Cenovus Energy

[REDACTED]

CSA Group

[REDACTED]

Fluor Canada

[REDACTED]

General Fusion

[REDACTED]

Hatch

[REDACTED]

Kinetrics

[REDACTED]

Moltex Energy

[REDACTED]

McMaster University

[REDACTED]

Organization of Canadian Nuclear Industries (OCNI)

[REDACTED]

Ontario Public Service

[REDACTED]

Royal Military College of Canada

[REDACTED]

Saskatchewan Mining Association

[REDACTED]

SNC-Lavalin

[REDACTED]

Suncor Energy

[REDACTED]

Terrestrial Energy

U-Battery**X-Energy****Westinghouse****FEDERAL GOVERNMENT*****Atlantic Canada Opportunities Agency (ACOA)***

-Luke Bulmer, Economic Development Officer
-Laura Delong, Policy Analyst

Canadian Commercial Corporation

-Wilson Pearce, Senior Director

Environment and Climate Change Canada

-Samantha Longo, Expert Support - Nuclear Program Coordinator
-Duck Kim, Senior Nuclear Coordinator

Global Affairs Canada (GAC)

-Noah Gollan, Senior Policy Officer, IGN
-David LeBlanc, Trade Commissioner – Infrastructure, Atlantic Regional Office
-Tanya Hinton, Senior Advisor
-Chantel Blanchette, Trade Commissioner
-Lisa Pogue, Trade Commissioner
-Stephanie Berlet, Trade Commissioner

Indigenous Advisory Council (IAC)***Innovation Canada***

-Joel Adams, Senior Innovation Advisor

Natural Resources Canada (NRCan)

-Frederic Beauregard-Tellier, Director General, Nuclear Energy and Infrastructure Security Branch
-Jamie Fairchild, Senior Advisor, URWD
-Kathleen Prosser, Policy Analyst, URWD
-Antoine de la Chevrotière, Senior Advisor, NED
-Griffith Hawkins, Program Officer, NED
-Meghan Newman, Policy Analyst, NED

-Tyler Koebel, Senior Advisor, NED
-Amitabh Dutt, Senior Policy Advisor, NED
-Danielle Williams, Policy Advisor, NED
-Candice Jackson, Deputy Director, NED
-Ronny Giurgius, Senior Policy Advisor, NED
-Laura Higgins, Policy Analyst, NED
-Leah Ronayne, Policy Analyst, NED
-Jody Keiller, Policy Analyst, NED
-Philippe Tremblay, Policy Analyst, NED
-Jessica Poupore, Senior S&T Advisor, NED
-Sarah Zugehoer, Junior Policy Analyst, NED
-Michelle Dich, Junior Policy Analyst, NED
-Pui Wai Yuen, Director, URWD
-Xin Pang, Corrosion Scientist, CANMET
-Katherina Jia, S&T Advisor
-Sara Arab, Science and Technology Advisor, NED
-Madeline Belanger Trottier, Economic Analyst, NED
-Stefan Cotosman, Junior Engineer, NED
-Jenny Cox, Senior Scientific Advisor, NED
-Brianna Rector, S&T Analyst, NED
-Shaun Yee, Senior Advisor, NED
-Paola Sunye, Policy Analyst, NED
-Eduard Blanquet Arago, Senior Technical Advisor, NED
-Erica Robibero, Policy Analyst, NED
-Itoje Harrison John, S&T Analyst, NED
-Curtis Marrison, Junior Policy Analyst, NED
-Nadine Sallam, Research Analyst, NED

Nuclear Waste Management Organization (NWMO)***Nuclear Insurance Association of Canada******PrairiesCan***

-Matthew Dalzell, Communications Officer
-Anne Ballantyne, Manager, Programs
-Canute Rosaasen

Innovation, Science, and Economic Development Canada (ISED)

-Tenzing Kuyee, Policy Analyst
-Anik Laferrier, Manager, Energy Team, Advanced Manufacturing and Industrial Strategy

PROVINCIAL AND TERRITORIAL GOVERNMENTS***District of Pinawa Council***

-Blair Skinner, Mayor

Government of Ontario

-Adrian Bradford, Senior Business Development Specialist, Production Industries Unit

Government of Alberta

-Jason Kenney
 -Vinson Banh, Technology Lead, Electricity and Sustainable Energy Division
 -Shoshi Soni, Manager, Emerging Resources
 -Jacklyn Victor, Policy Analyst
 -Jill Weiss, Policy Analyst, Emerging Resources
 -Michelle Dyck, Policy Analyst
 -Jaclyn Victor, Energy Policy

Government of New Brunswick

-David Sollows, Electricity Policy Advisor, Department of Energy and Mines

New Brunswick Power

-Paul Thompson, Senior Strategic Advisor
 -Andy Hayward, Director Advanced Reactor Development
 -Ryan Vienneau, Policy Advisor, Energy Branch, SMRs

Ontario Power Generation

-Alexandria Anderson, Senior Advisor, Federal Relations
 -Matthew Mairinger, Technical Engineer/Officer
 -Fred Kuntz, Communications & Engagement

Crown Investments Corporation of Saskatchewan

-Steve Livingston

SaskPower

-Iain Harry, Senior Business Advisor, Generation Asset Planning
 -David Hanly, Strategic Corporate Development

Wild Matriarch

[REDACTED]

University Network for Excellence in Nuclear Engineering (UNENE)

[REDACTED]

University of Ontario, Institute of Technology

[REDACTED]

Canadian Nuclear Isotopes Council

[REDACTED]

INDEPENDENT/CONSULTANT**e4 Strategies Inc**

[REDACTED]

Magnetic Media NYC

[REDACTED]

Strategic Policy Economics

[REDACTED]

Burns and McDonnell

[REDACTED]

POWER Magazine

[REDACTED]

Paradymshyft Nuclear Advisory

[REDACTED]

INTERNATIONAL ORGANIZATIONS**Nuclear Energy Agency (NEA)**

[REDACTED]

International Union of Operating Engineers

[REDACTED]

MZ Consulting

[REDACTED]

Subject	RE: EBRD Mining Sector Strategy [RES]
From	Edwards, Zachary
To	Fairchild, Jamie; Atallah, Yassen; Christopher.Evans@ec.gc.ca; Deroukakis, Eleni; Akomah, Jeffrey (he, him, his il, le, lui); Dutt, Amitabh; Gauthier, Tim; Robibero, Erica; Jackson, Candice; Hilborn, Jade (she, her elle, elle); Cleary, Kaitlyn; Brady, Daniel
Cc	Temnikov, Dimitri; Kenney, Jason; Yuen, Pui Wai; [REDACTED] El-Batrik, Stephanie
Sent	October 24, 2023 08:56

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Jamie for this and taking a look on such short timelines. We will loop back if there are any follow ups.

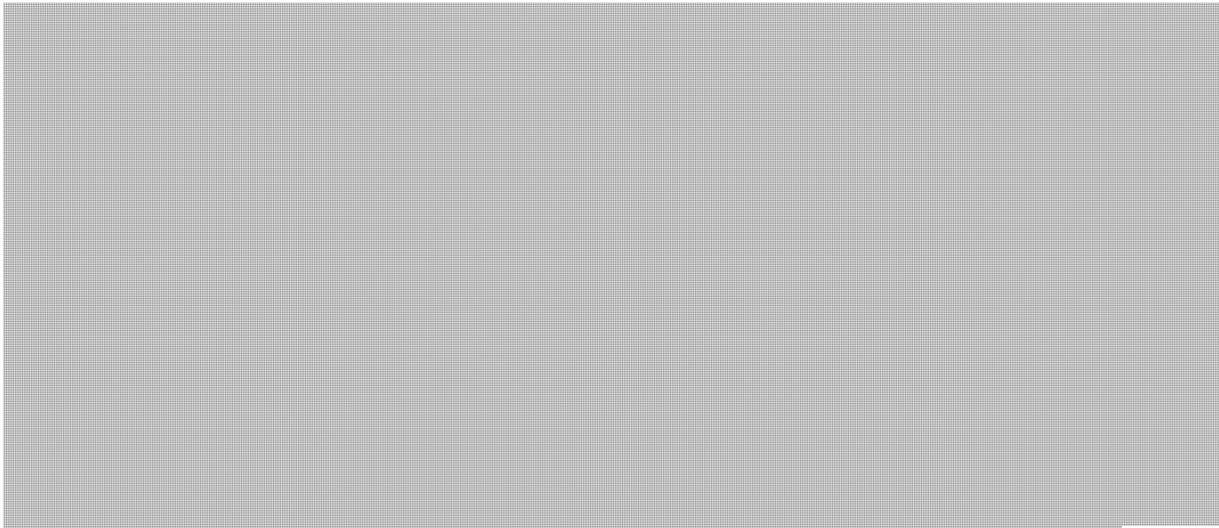
Best,

-Zach Edwards
[REDACTED]

From: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Sent: Tuesday, October 24, 2023 8:53 AM
To: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>; Atallah, Yassen <Yassen.Atallah@nr-can-rncan.gc.ca>; Christopher.Evans@ec.gc.ca; Deroukakis, Eleni <eleni.deroukakis@NRCan-RNCan.gc.ca>; Akomah, Jeffrey (he, him, his | il, le, lui) <jeffrey.akomah@NRCan-RNCan.gc.ca>; Dutt, Amitabh <amitabh.dutt@nr-can-rncan.gc.ca>; Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Jackson, Candice <Candice.Jackson@nr-can-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nr-can-rncan.gc.ca>; Cleary, Kaitlyn <kaitlyn.cleary@nr-can-rncan.gc.ca>; Brady, Daniel <daniel.brady@NRCan-RNCan.gc.ca>
Cc: Temnikov, Dimitri <dimitri.temnikov@NRCan-RNCan.gc.ca>; Kenney, Jason <Jason.Kenney@NRCan-RNCan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>; [REDACTED] El-Batrik, Stephanie <stephanie.elbatrik@nr-can-rncan.gc.ca>
Subject: RE: EBRD Mining Sector Strategy [RES]

Good morning Zach,

Apologies for the delay.



s.15(1) I.A.
s.16(2)
s.19(1)
s.21(1)(a)
s.21(1)(b)

have a project at the R&D stage (i.e. Moltex). The other “recycling” path relates to the prospective re-enrichment of depleted uranium tails to natural isotopic ratios. The U.S. DOE has funded the GLE-SILEX project that aims to validate this technology in the coming years. As usual, we’ll include our caveat that applying the term “recycling” to uranium/nuclear fuel can be perceived as “green washing” and thus, is a term that should be used judiciously. For the reasons above, we’d suggest using alternative language (i.e. not “recycling”).

Hope this is helpful, and happy to discuss further should it prove helpful for your discussions.

Best,

Jamie

(he/him/il/lui)
Senior Advisor | Conseiller principale
Uranium and Radioactive Waste Division | Division de l’uranium et des déchets radioactifs
Telephone | Téléphone: 343.543.6983
NEW: Jamie.Fairchild@NRCan-RNCan.gc.ca

From: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>
Sent: Monday, October 23, 2023 10:00 AM
To: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>; Deroukakis, Eleni <eleni.deroukakis@NRCan-RNCan.gc.ca>; Akomah, Jeffrey <jeffrey.akomah@NRCan-RNCan.gc.ca>; Dutt, Amitabh <amitabh.dutt@nrcan-rncan.gc.ca>; Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Temnikov, Dimitri <dimitri.temnikov@NRCan-RNCan.gc.ca>; Kenney, Jason <Jason.Kenney@NRCan-RNCan.gc.ca>; Jackson, Candice <Candice.Jackson@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle) <jade.hilborn@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: [REDACTED]; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>
Subject: RE: EBRD Mining Sector Strategy [RES]

UNCLASSIFIED - NON CLASSIFIÉ

Documents are attached. COB today can work since there are new folks getting looped in today that were not copied last week.

Thanks for your time taking a look at this.

-Zach Edwards
[REDACTED]

From: Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>
Sent: Monday, October 23, 2023 9:57 AM
To: Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>; Edwards, Zachary <Zachary.Edwards@fin.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>; Deroukakis, Eleni <eleni.deroukakis@NRCan-RNCan.gc.ca>; Akomah, Jeffrey <jeffrey.akomah@NRCan-RNCan.gc.ca>; Dutt, Amitabh <amitabh.dutt@nrcan-rncan.gc.ca>; Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Temnikov, Dimitri <dimitri.temnikov@NRCan-RNCan.gc.ca>; Kenney, Jason <Jason.Kenney@NRCan-RNCan.gc.ca>; Jackson, Candice <Candice.Jackson@nrcan-rncan.gc.ca>; Hilborn, Jade (she, her | elle, elle)

<jade.hilborn@nrcan-rncan.gc.ca>; Yuen, Pui Wai <puiwai.yuen@NRCan-RNCan.gc.ca>
Cc: [REDACTED]; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>
Subject: RE: EBRD Mining Sector Strategy [RES]

UNCLASSIFIED - NON CLASSIFIÉ

Hi Yassen,

That timeline won't be possible to meet unless you're satisfied with a simple yes/no. COB maybe.

Are there documents for our review that should have been included?

Many thanks.

Jamie

(he/him/il/lui)

Senior Advisor | Conseiller principale

Uranium and Radioactive Waste Division | Division de l'uranium et des déchets radioactifs

Telephone | Téléphone: 343.543.6983

NEW: Jamie.Fairchild@NRCan-RNCan.gc.ca

From: Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>

Sent: Monday, October 23, 2023 9:42 AM

To: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>; Deroukakis, Eleni <eleni.deroukakis@NRCan-RNCan.gc.ca>; Akomah, Jeffrey <jeffrey.akomah@NRCan-RNCan.gc.ca>; Dutt, Amitabh <amitabh.dutt@nrcan-rncan.gc.ca>; Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>; Fairchild, Jamie <jamie.fairchild@NRCan-RNCan.gc.ca>; Temnikov, Dimitri <dimitri.temnikov@NRCan-RNCan.gc.ca>; Kenney, Jason <Jason.Kenney@NRCan-RNCan.gc.ca>

Cc: [REDACTED]; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>

Subject: RE: EBRD Mining Sector Strategy [RES]

UNCLASSIFIED - NON CLASSIFIÉ

Hi all,

Also looping in our Uranium and Radioactive Waste Division (URWD) colleagues for input.

Input requested by early afternoon today.

Thanks,

Yassen Atallah

Policy Advisor | Conseiller en politiques

Multilateral Affairs Division | Division des affaires multilatérales

International and Intergovernmental Affairs | Affaires internationales et intergouvernementales
Strategic Policy and Innovation Sector | Secteur de la politique stratégique et l'innovation
Natural Resources Canada | Ressources naturelles Canada
Yassen.Atallah@nrcan-rncan.gc.ca

From: Atallah, Yassen

Sent: Monday, October 23, 2023 9:19 AM

To: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>; Deroukakis, Eleni <eleni.deroukakis@NRCan-RNCan.gc.ca>; Akomah, Jeffrey <jeffrey.akomah@NRCan-RNCan.gc.ca>; Dutt, Amitabh <amitabh.dutt@nrcan-rncan.gc.ca>; Gauthier, Tim <tim.gauthier@NRCan-RNCan.gc.ca>; Robibero, Erica <erica.robibero@NRCan-RNCan.gc.ca>

Cc: [REDACTED]; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>

Subject: RE: EBRD Mining Sector Strategy [RES]

Importance: High

Hi Zach,

I am looping in our nuclear colleagues for input on this one.

Input requested by early afternoon today.

Thanks,

Yassen Atallah

Policy Advisor | Conseiller en politiques

Multilateral Affairs Division | Division des affaires multilatérales

International and Intergovernmental Affairs | Affaires internationales et intergouvernementales

Strategic Policy and Innovation Sector | Secteur de la politique stratégique et l'innovation

Natural Resources Canada | Ressources naturelles Canada

Yassen.Atallah@nrcan-rncan.gc.ca

From: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>

Sent: Monday, October 23, 2023 8:57 AM

To: Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>; Deroukakis, Eleni <eleni.deroukakis@NRCan-RNCan.gc.ca>; Akomah, Jeffrey <jeffrey.akomah@NRCan-RNCan.gc.ca>

Cc: [REDACTED]; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>

Subject: RE: EBRD Mining Sector Strategy [RES]

UNCLASSIFIED - NON CLASSIFIÉ

Sorry, could you also confirm what the CAN position on MDB financing of uranium mining should be?

Thanks,

-Zach Edwards

s.13(1)(a)

s.13(1)(b)

s.15(1) I.A.

s.16(2)

s.19(1)

s.21(1)(b)

From: Edwards, Zachary

Sent: Monday, October 23, 2023 8:55 AM

To: Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>; Deroukakis, Eleni <eleni.deroukakis@NRCan-RNCan.gc.ca>; Akomah, Jeffrey <jeffrey.akomah@NRCan-RNCan.gc.ca>

Cc: <[REDACTED]>; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>

Subject: RE: EBRD Mining Sector Strategy [RES]

Yassen, Eleni, Jeffery – following up to see if you have any comments. Grateful if you could share anything by early afternoon at the latest.

-Zach Edwards
<[REDACTED]>

From: Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>

Sent: Wednesday, October 18, 2023 2:51 PM

To: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>; Deroukakis, Eleni <eleni.deroukakis@NRCan-RNCan.gc.ca>; Akomah, Jeffrey <jeffrey.akomah@NRCan-RNCan.gc.ca>

Cc: <[REDACTED]>; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>

Subject: RE: EBRD Mining Sector Strategy [RES]

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Zach!

Silly me, forgot to loop in Eleni and Jeffrey right after saying that I would do so!

@Deroukakis, Eleni @Akomah, Jeffrey Note the original request on our views on if Canada should support the new additions to the strategy, and whether we can support the strategy overall, **by Friday (Oct. 20) COB.**

-
Best,

s.16(2)

s.19(1)

Yassen Atallah

Policy Advisor | Conseiller en politiques

Multilateral Affairs Division | Division des affaires multilatérales

International and Intergovernmental Affairs | Affaires internationales et intergouvernementales

Strategic Policy and Innovation Sector | Secteur de la politique stratégique et l'innovation

Natural Resources Canada | Ressources naturelles Canada

Yassen.Atallah@nrcan-rncan.gc.ca

From: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>

Sent: Wednesday, October 18, 2023 2:42 PM

To: Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>

Cc: [REDACTED]; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>

Subject: RE: EBRD Mining Sector Strategy [RES]

UNCLASSIFIED - NON CLASSIFIÉ

Thanks Yassen for clarifying. Here are the attachments.

Best,

-Zach Edwards

[REDACTED]

From: Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>

Sent: Wednesday, October 18, 2023 2:39 PM

To: Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>; Edwards, Zachary <Zachary.Edwards@fin.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>

Cc: [REDACTED]; El-Batrik, Stephanie <stephanie.elbatrik@nrcan-rncan.gc.ca>

Subject: RE: EBRD Mining Sector Strategy [RES]

UNCLASSIFIED - NON CLASSIFIÉ

Hi all,

@Eric thanks for looping us in. @Zach For any and all future MDB-related requests for NRCan, when in doubt, feel free to email myself and my DD Stephanie El-Batrik, who are the point people for the department.

As for the original request, we would greatly appreciate receiving the updated copy of the EBRD's mining strategy (must have gotten lost when we got looped in). As for NRCan's input, I can confirm that all of NRCan's input has gone through FIN for compilation with any other OGD input.

Looping in Eleni and Jeffrey who are our international specialists on mining and who have been providing great input on related MDB mining requests (and removing Orly, Phoebe, Brandon, and Anna from the email chain given they are no longer the MDB leads/are no longer with NRCan).

A0072391_6-001093

Thanks,

Yassen Atallah

Policy Advisor | Conseiller en politiques

Multilateral Affairs Division | Division des affaires multilatérales

International and Intergovernmental Affairs | Affaires internationales et intergouvernementales

Strategic Policy and Innovation Sector | Secteur de la politique stratégique et l'innovation

Natural Resources Canada | Ressources naturelles Canada

Yassen.Atallah@nrcan-rncan.gc.ca

From: Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>

Sent: Wednesday, October 18, 2023 1:43 PM

To: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>; Jacob, Orly <orly.jacob@NRCan-RNCan.gc.ca>; Baumgarten, Phoebe <phoebe.baumgarten@NRCan-RNCan.gc.ca>; Geithner, Brandon <Brandon.Geithner@NRCan-RNCan.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>

Cc: [REDACTED]; Atallah, Yassen <Yassen.Atallah@nrcan-rncan.gc.ca>;

Trevelyan, Anna <Anna.Trevelyan@nrcan-rncan.gc.ca>

Subject: RE: EBRD Mining Sector Strategy [RES]

Hi Zach,

Mining falls outside of ECCC/CF&Ps domain, so we would defer to NRCan colleagues for input. I've CC'd Yassen and Anna from NRCan whose team coordinates these requests over on the NRCan side.

Thank you,

Eric

From: Edwards, Zachary <Zachary.Edwards@fin.gc.ca>

Sent: October 18, 2023 1:26 PM

To: Jacob, Orly <orly.jacob@NRCan-RNCan.gc.ca>; Baumgarten, Phoebe <phoebe.baumgarten@NRCan-RNCan.gc.ca>; Geithner, Brandon <Brandon.Geithner@NRCan-RNCan.gc.ca>; Evans, Christopher (il, lui | he, him) (ECCC) <Christopher.Evans@ec.gc.ca>; Lam, Eric (il, lui | he, him) (ECCC) <Eric.Lam@ec.gc.ca>

Cc: [REDACTED]

Subject: FW: EBRD Mining Sector Strategy [RES]

Dear NRCAN and ECCC colleagues – we have received an updated version of EBRD's Mining Sector Strategy for 2024-28, following this summer's public consultation. Clean and tracked change versions are attached, along with a report on the results of the consultation.

The strategy will be discussed at EBRD on Tuesday (Oct. 24). We would be grateful for your views on if Canada should support the new additions to the strategy, and whether we can support the strategy overall. Any broader comments are of course welcome as well.

Apologies for the short turnaround, but **requesting input by Friday (Oct. 20) COB**. The input you provided previously is included in the attached email for reference.

NRCAN specifically – we noted that NRCAN was listed as consulted summary of consultations (see page 21). Did NRCAN provide input separately from what you shared with FIN? Grateful if you could clarify and share any other material you might have provided so we can ensure it is reflected in our

interventions at EBRD.

Also, apologies for the scatter shot to contacts at ECCC and NRCAN. I seem to have lost track who covers mining issues at your department. Grateful if you could confirm who the right contacts are for these issue going forward.

As always, feel free to reach out if you have any questions.

Best,

-Zach Edwards



203929 / FW: CANDU Reactors

May 10, 2024 13:37

Subject	203929 / FW: CANDU Reactors
From	Wilkinson, Jonathan - M.P.
To	Office of the Minister / Bureau du Ministre
Sent	September 21, 2023 09:23

From: [REDACTED] > **Sent:** September 21, 2023 12:34 AM

To: Wilkinson, Jonathan - M.P. <Jonathan.Wilkinson@parl.gc.ca>

Subject: Re: CANDU Reactors

Hello again Minister Wilkinson:

Earlier today I sent you a congratulatory message with respect to the Romania nuclear reactor deal. Barely 2 hours later I heard on CBC that your government is back sliding on the CO2 emissions cap. It is what your government does, not what it says, that counts. Mr. Trudeau has become no more trustworthy than Mr. Lavarov of Russia.

If you want to be reelected your government must now bite the bullet on the CO2 emissions cap issue. That probably means terminating work on the Trans Mountain pipeline and admitting that it was all nothing but a \$30 billion dollar Liberal payoff to the fossil fuel industry. Maybe this pipeline could be reengineered to transport nuclear generated electrolytic hydrogen from Burnaby to Alberta.

The only thing keeping your government in power right now is foolish Conservative party policy. If the Conservatives do a U turn on the CO2 emission tax issue you will soon be out of a job.

I am in possession of a letter from your Ministry in which your ministry has denied funding for recovering FNR fuel from used CANDU fuel, in spite of Russian control of this nuclear fuel market..

I am debating sending copies of this letter and supporting information from CNL to CBC and CTV.

Please immediately clarify in writing your government's position on these issues.

That clarity would be enhanced by you terminating for cause the employment of the CEO of the NWMO (Ms. Lauri Swami) and perhaps also other "experts" in your nuclear division who act against Canadian nuclear interests. These interests relate to the TRU in used CANDU fuel.

Regards,

[REDACTED]

On Wed, Sep 20, 2023 at 7:01 PM [REDACTED] > wrote:

To Minister Jonathan Wilkinson:

Congratulations for the recent two CANDU reactor deal with Romania..

There are many other opportunities for world wide application of CANDU reactors, CANDU support services and Fast Neutron Reactors (FNRs) that start using TRU which is obtained by reprocessing used CANDU fuel.

For details please refer to:

[REDACTED]

RE: Reprocessing Working Group Kick-Off Meeting

April 29, 2024 12:57 PM

Subject	RE: Reprocessing Working Group Kick-Off Meeting
From	Yuen, Pui Wai
To	Prosser, Kathleen; Wittmann, Tess (she, her elle, elle)
Cc	Hilborn, Jade (she, her elle, elle); Fairchild, Jamie
Sent	February 16, 2024 8:06 AM

PROTECTED B - PROTÉGÉ B

Hi Kate,

Thanks for addressing my comments. Sorry for the delay. [REDACTED]

If you're good with that, it's ready to go.

Thanks again,
PW

-----Original Message-----
From: Prosser, Kathleen
Sent: Wednesday, February 14, 2024 9:26 AM
To: Yuen, Pui Wai ; Wittmann, Tess (she, her | elle, elle)
Cc: Hilborn, Jade (she, her | elle, elle) ; Fairchild, Jamie
Subject: RE: Reprocessing Working Group Kick-Off Meeting

PROTECTED B - PROTÉGÉ B

Thanks Pui Wai -

We've gone in and addressed your comments. I think the additional detail provided on the second page is valuable for the OGD introduction as it gives a stronger understanding of the scope of work we're hoping to accomplish and will better enable a critical discussion of the proposed work.

Tess will work with Jade to get a pre-meeting set up, we'll target Wednesday of next week so we have a day to polish anything before the discussion on Friday.

We'll get the PDFs and proposed workplan sent out ASAP.

Thanks,
Kate

Kathleen Prosser, PhD.
(she/her/elle)

Uranium and Radioactive Waste Division | Natural Resources Canada Division de l'uranium et des déchets radioactifs | Ressources naturelles Canada _____

-----Original Message-----

From: Yuen, Pui Wai

Sent: Wednesday, February 14, 2024 8:17 AM

To: Wittmann, Tess (she, her | elle, elle)

Cc: Hilborn, Jade (she, her | elle, elle) ; Prosser, Kathleen ; Fairchild, Jamie

Subject: RE: Reprocessing Working Group Kick-Off Meeting

PROTECTED B - PROTÉGÉ B

Thanks Tess and apologies for the delay!

I reviewed Annex B and left comments and edits under tracked changes. The main question I also have is that the first and second page more or less covers the same thing, i.e., [REDACTED] timeline and scope. As such, are they both needed or could we just speak to the details using one?

Also, to confirm, Annex B is the only new document that we are sending as they already have the two attached PDFs (from December email that Fred sent as indicated below) - is that correct?

The draft email message for the calendar invite, I believe is already included in the meeting invite since when I look at the placeholder invite, I see the same text. Please advise.

Happy to further discuss if you would like. Also, as mentioned at Teams meeting yesterday, let's huddle before the call. I'd like to chat about how we could [REDACTED]
[REDACTED]

Thanks very much and apologies for the delay again!
PW

-----Original Message-----

From: Wittmann, Tess (she, her | elle, elle)

Sent: Tuesday, January 16, 2024 10:00 AM

To: Yuen, Pui Wai

Cc: Hilborn, Jade (she, her | elle, elle) ; Prosser, Kathleen ; Fairchild, Jamie

Subject: Reprocessing Working Group Kick-Off Meeting

PROTECTED B - PROTÉGÉ B

Good morning!

We have sent out the placeholder for the kick-off meeting for the reprocessing working group. The first meeting will take place Friday, February 23, 2024, from 11:00am-12:00pm with representation from ISED, TC, CNSC, GAC, HC, and ECCC. We are hoping to get the documents finalized to be sent out in advance of the meeting, so if you can take a look at these by Thursday, January 25 COB, that would be great. Jamie and Kate have both green lit these materials.

Attached to this email include PDFs of the used fuel reprocessing brief that was sent out in the initial email in December (no changes have been made) and Annex A – the 1973 Enrichment Policy.

It would be great if you could take a look at Annex B – Work Plan Summary: ANNEX B - Work Plan Summary.docx , as well as the email that will be in the body of the calendar invite: Draft Email February 2024 Meeting.docx .

Best,
Tess