Northwatch Review of the NWMO's Consolidated Information on the Transportation of Used Fuel - Plain Language Summary

Deep Geological Repository (DGR) for Canada's Used Nuclear Fuel Project
IAAC Ref# 88774

www.northwatch.org northwatch@northwatch.org

1. Introduction

On January 6, 2025 the Impact Assessment Agency invited comments from the public and Indigenous people on the summary of an Initial Project Description prepared and submitted by the Nuclear Waste Management Organization (NWMO) with respect to their proposed Deep Geological Repository (DGR) for Canada's Used Nuclear Fuel Project.

Northwatch was one of more that 600 individuals and organizations who provided comments on that Initial Project Description, with more than 95% of those intervenors being critical of or opposed to the NWMO's project and the NWMO's presentation of the project in the Initial Project Description.

On February 16th the Impact Assessment Agency of Canada (IAAC or "the Agency") posted their Summary of Issues which included instructions to the NWMO to respond to that summary, but made clear the expectation that the proponent review all submissions on the Canadian Impact Assessment Registry Internet site (the Registry) for the project (Reference Number #88774) and requested that the proponent consider issues that may not have been captured by the IAAC SOI.

The NWMO posted their 767-page Response to the Summary of Issues on March 12, 2026. That initial response was comprised of a one-page executive summary, a two-page introduction, and 48 pages described as "*Response to Summary of Issues* Tables". More than 600 pages of the NWMO "response to the Summary of Issues" submission was comprised of a subset of transportation-related documents the NMWO has produced during its two decades of operation. The criteria for presentation of this subset of transportation-related reports versus other transportation-related reports was not provided.

The NWMO states in their response to the summary of issues that "*This present document contains complete responses to the SOI issued by IAAC, including to concerns raised about transportation of used fuel*."[1]

We disagree. By our assessment the NWMO response to the SOI does not respond to the issues and concerns set out in the submissions on the IPD made by the public, Indigenous people, local governments and federal departments and agencies. Rather, it restates or summarizes claims and generalizations made in the IPD and for which the IPD was soundly criticized.

In the same paragraph in their response to the summary of issues, the NWMO went on to state that "*The NWMO recognizes the high level of interest regarding transportation and will*

[1] Registry document # 710, Executive Summary, page iii

be submitting an additional document to consolidate the information on the transportation of used fuel in a single location before the end of the 30-day period allocated for the proponent's response."

On March 17 the NWMO posted that "additional document", which was a supplementary report with the title "Consolidated Information on the Transportation of Used Fuel - Plain Language Summary" (Registry Document #713).

The purpose of this communication is to provide Northwatch's comments on the NWMO's supplementary response to the SOI, aka the "*Consolidated Information on the Transportation of Used Fuel - Plain Language Summary*".

This commentary on NWMO's supplementary response to the IAAC Summary of issues is in four parts: 1) the introduction (above), 2) Northwatch's review of the NWMO's *Consolidated Information on the Transportation of Used Fuel - Plain Language Summary* and 3) Northwatch's assessment of the NWMO's response to the transportation-related issues raised in Northwatch's comments on the IPD. Brief concluding remarks are found in Section 4.

2. Northwatch Review of the NWMO's Consolidated Information on the Transportation of Used Fuel - Plain Language Summary

As outlined above, the NWMO supplementary response to the IAAC generated Summary of Issues and to the submissions on the Canadian Impact Assessment Registry Internet site failed to respond to comments and issues raised by Northwatch with respect to transportation.

Below we briefly provide comments on the content of the NWMO's supplementary filing on transportation concerns.

As a preface to that review, we note that again the NWMO's text lacks substance and supporting evidence and is frequently and largely promotional in nature. This is inconsistent with the practice and expectations of impact assessment.

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In this document, the NWMO is consolidating the information we have provided related to transportation in both our Initial Project Description and our response to the Summary of Issues so that it is easier for a member of the public to have: • Confidence that transportation of used nuclear fuel is safe.	It the public is to gain confidence that the transportation of used fuel is safe it will be through a rigorous and robust examination of the evidence that would be presented in support of such claims. If the NWMO's objective is public confidence in the safety of nuclear waste transportation they should be arguing for a full and comprehensive examination of the all aspects of the transportation plan, including those issues raised by Northwatch and others, such as container design, dose calculation, route planning and notification, emergency response, etc.
• Transportation will have no new impacts on their health or the environment during normal operations or in the event of an accident because used fuel will use an existing CNSC certified transportation container and will be transported on existing road/rail infrastructure.	The NWMO preliminary transportation report and the 2021 conceptual design for transportation both identify 3 containers, including the Basket Transportation Package which at last report had not yet been designed or certified. See below of comment on the certification of the Used Fuel Transportation Package and related testing.
The NWMO has been part of thousands of conversations about the transportation of used nuclear fuel. We continue to engage widely across Canada, including with Indigenous Nations, communities and organizations, first responders, municipalities and the public, to share information, and invite feedback. This is an ongoing conversation that will continue throughout the many years before any shipments begin in the 2040s.	Northwatch has also been part of thousands of conversations about the transportation of used nuclear fuel, and we have consistently heard concerns from the public about the transportation of nuclear waste, including routing, notification, transportation containers, accident potential, emergency response, increased risk to First Responders, and issues of community and Indigenous consent.
The Impact Assessment will assess potential effects for the area where the NWMO will be making physical changes. The NWMO is including in the project two physical changes associated with transportation: construction	The information provided in the IPD with respect to these proposed "two physical changes" is inadequate in and of itself, but the larger issue is the proposed exclusion by the NWMO of

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of a new Hwy 17 turn-off with accompanying access roads to the site and construction of a potential rail spur. The NWMO is making no other changes to highway or railway infrastructure in Canada.	the long-distance transportation of the nuclear fuel waste. The more significant change the NWMO will be making is to the volume and frequency of the nuclear wastes being transported.
To clarify, transportation effects associated with those activities were included in the Initial Project Description and the NWMO continues to propose that they be included in the scope of the assessment in this way. This is consistent with impact assessment practice in Canada – effects are studied where a change is proposed to be made.	The significant change the NWMO will be making is to the volume and frequency of the nuclear wastes being transported.
Safe and secure transportation of radioactive material, including used fuel, already occurs in Canada today. It occurs on existing highways and railways, as well as through other modes. Safe transportation is a well-established practice with a strong track record of safety, governed by existing federal and provincial regulations, such as the CNSC's *Packaging and Transport of Nuclear Substances Regulations* (PTNSR) and Transport Canada's *Transportation of Dangerous Goods Regulations* (TDGR).	It is important to note that the "one million packages of radioactive materials" the NWMO and CNSC frequently refer to as evidence of Canada's excellent transportation record are mostly packages of single isotopes being shipped for medical or industrial uses. These shipments are not radioactive waste, and they are certainly not high-level radioactive waste The NWMO has estimated that there are on average five shipments per year of nuclear fuel waste. Typically, these are shipments of a single bundle being transported for research purposes (e.g. from a reactor station to the Chalk River Nuclear Laboratory). Incidents with Class 7 (nuclear) materials are minimally reported, but Transport Canada does report 90 transport-related radiological emergencies in the last ten years.[2] Canada has no public registry or publicly accessible database of radioactive shipments, or of accidents or incidents involving the shipment of radioactive

[2] https://tc.canada.ca/en/dangerous-goods/canutec/annual-statistics

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	wastes and other materials, with the exception of single number annual statistical reporting by Transport Canada on transport-related radiological emergencies. The CNSC has previously reported some incidents on their web site, but do not appear to do so consistently.
The TDGR are federal regulations made under the *Transportation of Dangerous Goods Act, 1992*. That act, and the TDGR, administered by Transport Canada, form an extensive and overarching framework regulating, used nuclear fuel transport in Canada. The TDGR requirements include: - Training and certification of persons who package, load, offer for transport, transport, unload and pack dangerous goods; - Clear and standardized documentation to accompany the shipment at all times, identifying hazards and providing essential information for safe packing, loading, transporting, unloading, and unpacking; - Marking and labelling of packages and conveyances; and - Reporting of incidents associated with the transportation of dangerous goods.	Transport Canada and the CNSC employ an opaque system for the regulation of the transport of radioactive materials. It is unclear from the NWMO response whether the "training and certification of persons" extends to emergency response personnel. For a variety of factors we assume that it does not, but the training of emergency response personnel is a key issue related to the transportation of radioactive waste. Northwatch partnered with the Ontario Law Society in 2018 to carry out a study of training for first responders in northern Ontario and found that training was minimal and largely comprised of reliance on the Emergency Response Guidebook. The 392-page guide is primarily a listing of materials with relatively general instructions on how to respond in a fire situation. Eleven pages deal with six different groupings of radioactive materials, ranging from low level to high level (in terms or radioactivity) and including wastes, fissile material, and uranium hexafluoride. Disconcertingly, each of the six sections begins with the statement "*Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases*."

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	The descriptions go on to say that undamaged packages are safe, that the materials are seldom flammable and that the "*presence of radioactive material will not influence the fire control processes and should not influence selection of techniques*". This lack of training and inadequate and even misleading training materials places first responders at greater risk. These issues must be examined within the impact assessment process, and despite Northwatch having raised them in this review and on previous occasions the NWMO does not address or respond to these fundamental issues.
Shipments of radioactive materials must also comply with the CNSC's PTNSR. The PTNSR incorporate the requirements from the International Atomic Energy Agency's (IAEA) SSR-6 *Regulations for the Safe Transport of Radioactive Material*. The requirements of the PTNSR include: - Licences for certain types of shipments or material (as is the case for used nuclear fuel); - Package design requirements for normal and accident conditions of transport, certification and registration of use; - Limits on dose rates from packages to limit radiation exposure to people along transportation route and workers involved in the shipment; - Consignor and transporter (i.e., the carrier) responsibilities beyond those imposed under the TDGR, including the requirement to have a radiation protection program; and - Reporting of dangerous occurrences by consignors, carriers, and consignees.	These are matters of public interest and concern. This explanation by the NWMO of PTNSR requirements and their application to the NWMO's proposed shipments illustrate why transportation must be included in the impact assessment process.

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In addition, to be given permission to transport the used nuclear fuel, the NWMO will need to prove it could respond to an emergency. In Canada, the federal, provincial, and local governments use a comprehensive approach to emergency management, which includes having in place measures for prevention, mitigation, preparedness, and response and restoration activities for all modes of transportation. This applies today to shipments of radioactive materials, including used fuel.	These are matters of public interest and concern. This explanation by the NWMO that the NWMO will need to prove it could respond to an emergency illustrates why transportation must be included in the impact assessment process.
Used fuel will be placed into specially designed and built transportation containers for shipment from the existing sites. The container meets rigorous requirements based on international standards; safety is inherent to the package design. The packaging for used fuel provides protection against radiation and prevents release of contents, even in the event of accidents.	The design of these packages must be examined during the impact assessment process. The CNSC uses an opaque process wherein these decisions are made through internal review and by designated officers. There is no transparency, no public review, no peer review and not even direct oversight by the Commission members.
There will be no spill of the used nuclear fuel, which is a solid, if an accident were to occur.	This is a standard trope from the NWMO, that the fuel is “solid” and there will be no “spill”. The matter of public interest is radiological releases, dose and exposure, none of which require the radioactive materials to “liquid” or spill as the NWMO well knows.
The NWMO’s Used Fuel Transportation Package (UFTP), has been certified by the CNSC and is currently in use by Canadian Nuclear Laboratories to safely transport used fuel. It has been demonstrated to meet the regulatory requirements and will provide adequate radiation shielding and containment of radioactive materials, including through drop, puncture, fire and immersion tests that simulate cumulative accident scenarios.	Only one of three of the NWMO’s proposed transportation containers has been certified (the “Used Fuel Transportation Package”). The testing of this package was carried out in the 1980s on a half-scale model and the tests were only partially completed and partially successful and were carried out only for the drop and puncture tests. Under the CNSC regime the fire and immersion tests can be substituted

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	with calculations and computer modelling. This misrepresentation by the NWMO of the status and requirements of certification and container testing illustrate very well why these matters must be examined through the impact assessment process with an independent panel adjudicating. Through repeating these misleading statements on an ongoing basis over a number of years the NWMO has damaged their credibility with respect to transportation safety issues to the point where public trust will be difficult to restore even following a independent and science-based review. However, public trust will certainly not be achieved if the NWMO is the information source and there is no independent review and adjudication.
The container also provides shielding that protects the people and the workers involved in the transportation from harm.	We certainly acknowledge that the container will provide considerable shielding during optimal conditions. However, c*arte blanche* statements such as this also contribute to the lack of public confidence in transportation safety in its blanket claim of full protection. The NWMO acknowledges that there are releases during transportation, albeit – as they will emphasise – at a relatively low level. Changed conditions can impair or reduce the protection provided by the shielding, and an evidence-based examination of the containers shielding properties and other factors (distance, duration of exposure, potential container or fuel defects) is required.
Carleton University assessed the impact to members of the public of a passing UFTP along a hypothetical transport route.2 Radiological	The Carleton University study provides an example of information the NMWO promotes but which has not been

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doses to members of the public were determined to be very, very small, between approximately 0.0000013 to 0.00054 mSv per year, a tiny fraction of the CNSC regulatory dose limit3 of 1 mSv per year or in comparison the 1.8 mSv the average Canadian receives on an annual basis from natural background radiation.	tested or examined in an independent review process or by independent technical experts. It should be noted that this 2014 study was contracted by the NWMO and is described a joint study by the NWMO and Carleton University. Independent technical review is in order.
Our drivers, security escort and other workers will also be safe; occupational doses were assessed to be within a range of approximately 0.012 to 0.35 mSv per year.	These are unsupported statements. It is not clear from this statement if the NWMO is referencing the Carleton-NWMO study or a different study. Again, this claim needs to be verified or refuted through the review process.
The safety inherent to the UFTP provides confidence that the transportation of used nuclear fuel will not result in people or the environment being harmed by radiation.	There has been no demonstration of safety being "inherent to the UFTP". The lack of transparency, public review, and full testing of the package all contribute to the lack of public confidence and the need for independent review, such as would be afforded through inclusion of transportation in the impact assessment.
Although transportation will not start for many years, the NWMO has developed a Preliminary Transportation Plan.4 This Plan outlines potential safety and operational features such as enhanced vehicle safety technologies, shipment monitoring and communications through a transportation command centre, escort vehicles to identify potential hazards, and operational controls that account for weather, road conditions, and other factors. The NWMO is considering two transportation options, either an all-road used fuel transportation system; or a road/rail used fuel transportation system. Both transportation mode options can be safely implemented to the Project location.	The NWMO statement that "*Both transportation mode options can be safely implemented to the Project location*" has not been established through an independent technical review. These empty boasts have not and will not result in public confidence. If the NWMO chooses to make such claims, the basis of such claims must be provided and must be the subject of public examination, independent technical review and adjudication by an independent body. For example, though an integrated impact assessment process and panel review.
To develop a robust preliminary transportation plan, the NWMO collected available collision data relevant for both road and rail transport of	The NWMO analysis must be subject to the impact assessment process.

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used nuclear fuel. This was analyzed and assessed to understand the types of collisions, severity, and potential causal factors (including inclement weather). The NWMO then explored potential preventative and mitigating measures that can be used by the NWMO to reduce the likelihood of transportation collisions.	
During operations, the NWMO anticipates two to three used fuel shipments arriving at the Project location per day, six days per week, nine months per year. This represents about a 0.5% increase in existing traffic volumes on the TransCanada Highway and is therefore not expected to increase the potential for collisions.	According to the NWMO's Transportation System Conceptual Design Report (September 2021) the NWMO will ship approximately 120,000 fuel bundles per year, which is an increase of 119,995 fuel bundles over the current average of 5 per year. The increased volume of radioactive waste shipments is the issue at hand, not the total number of trucks on northern Ontario's highways.
With respect to demands on existing infrastructure, a truck carrying used nuclear fuel is roughly the same size and weight as a logging truck, well within the existing design capacity of the highway.	Again, the NWMO is obscuring the core issues, just as they do when comparing a fuel bundle to a "fire log". The core issue is the content and associated risk.
The NWMO will also develop, consistent with the establish process, a transportation emergency response plan. The transportation emergency response plan will show the co-ordination among the NWMO, provincial and local first responders, as well as federal agencies, that would occur if an accident happened. The NWMO will be required to establish specialized teams with expertise and training in response and recovery that could be dispatched to the scene of an accident.	The transportation emergency response plan must be developed and reviewed in an open and transparent manner. Northwatch's experience (such as the Whiteshell shipments from Pinawa to Chalk River, through northern Ontario) is that the Emergency Response Action Plan is developed without public knowledge or input and then very difficult to access even through access to information requests.
This Preliminary Transportation Plan and other information will continue to be updated. Before any shipments of used nuclear fuel can begin and the NWMO will be required to demonstrate that all applicable safety and security requirements have been met.	The NWMO states that "*NWMO will be required to demonstrate that all applicable safety and security requirements have been met*" but from a public interest perspective this demonstration to an unidentified staff

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	person in the CNSC based on incomplete and inadequate safety testing is not equivalent to a public review and assessment and is inadequate in terms of responding to public concerns and interests.
Transportation of used nuclear fuel is safe and is regulated through existing processes by the CNSC and Transport Canada. In over 60 years of transportation shipments of radioactive materials and more than 20,000 shipments of used nuclear fuel worldwide, no harm to people or the environment has resulted from radioactive release from any transportation accident. People and the environment are protected by the package in which the used fuel is shipped, and by the practices and processes the NWMO must follow to meet the existing regulatory requirements, including the relationships we will have with first responders.	While frequently made by the NWMO, these are unsupported statements. It is known that there have been multiple incidents of radioactive releases from transportation accidents both in Canada and internationally. It has not been established that there has been no harm; based on the extensive information searches carried out by Northwatch we have concluded that there has been no institutional effort to investigate or establish the associated or co-related levels of harm. International reports do indicate that there has been harm to human health as a result of transportation accidents and related radiological releases.
The NWMO will confirm in the Impact Assessment the safety of transportation as we assess the changes that we will make to enable road and rail access to the Project site.	This limiting of consideration of transportation to site access is unacceptable, as set out by multiple intervenors during the comment period on the Initial Project Description.

3. Assessment of the NWMO's Response to the Summary of Issues Address of Transportation-Related Issues Raised in Northwatch's Comments on the IPD

Northwatch's submission on the NWMO's IPD included but was not limited to commentary with respect to transportation concerns and a response to the NMWO proposition that the off-site transportation of the nuclear fuel waste be excluded from the impact assessment process. Near the beginning of that submission, we summarised Northwatch's transportation-related comments on NWMO's IPD as follows:

- The NWMO's consideration of alternative means of carrying out the project is too limited; the alternative means examination should also include … transportation in used fuel containers instead of in transportation packages … and alternatives in used fuel container design (including transportation containers)

- The NWMO excluded the first step in their project, which is the transfer of the used fuel waste from dry storage containers into transportation containers at the reactor site; this is consistent with past practice.
- Without foundation the NWMO is attempting to exclude long-distance transportation from the Impact Assessment process; this is inconsistent with the impact assessment law in Canada and with the manner in which the NWMO has been describing their project over the last twenty years.
- There are significant gaps and deficiencies in the Initial project description; several subject areas fundamental to the assessment of the deep geological repository are extremely limited or fully absent including the subjects of long-term safety, emergency response and evacuation plans, accidents and malevolent acts and security.
- The long-distance transportation of nuclear fuel waste from the reactor stations to the proposed repository site must be included in the impact assessment

The following table summarizes Northwatch's evaluation of NWMO's response to issues raised by Northwatch during the review and comment period on the Initial Project Description as presented in their supplementary filing, the "Consolidated Information on the Transportation of Used Fuel - Plain Language Summary". Note that Northwatch's submissions on the IPD have been abbreviated, retaining key points for the purpose of comparison. For the full comments please refer to Northwatch's submission on the IPD.

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
The IPD and the subsequent impact statement must consider the alternative means of placing the used fuel in a "final container" at the reactor station (referred to in the NWMO concept as the "fuel container) rather than in a transportation container (referred to in the NWMO concept as the Used Fuel Transportation Package and the Basket Transportation Package)[3] for transport to the site and subsequent transfer from the transportation container / package into the final used fuel container.	The NWMO did not acknowledge or respond to this issue.

[3] NWMO, Deep Geological Repository Transportation System Conceptual Design Report Crystalline / Sedimentary Rock, APM-REP-00440-0209 R001, September 2021, as found at https://www.nwmo.ca/-/media/Reports---Reports/APMREP004400209.ashx?sc_lang=en

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
The IPD does not include a discussion of transportation from the reactor stations to the project site, but it does include summaries of how transportation is described in the *2005 Choosing A Way Forward* report which is the basis for the NWMO's siting and design of the deep geological repository concept for which they have now entered the impact assessment process. In summarizing Option 1 from *Choosing a Way Forward* (*Deep Geological Disposal in the Canadian Shield*) the IPD sets out that "there would be a need for transportation containers and facilities to produce them; processing facilities to load the fuel into transportation containers; production facilities for deep repository containers; processing facilities to transfer the fuel from transportation to deep repository containers; and production facilities for sealing materials."[4] In summarizing Option 4 (Adaptive Phased Management) the IPD indicates that during *Phase 2 – Design And Characterization* the NWMO would "Examine the possible need for transportation containers and facilities to produce them; processing facilities to load the fuel into transportation containers; production facilities for storage containers; and processing facilities to transfer the fuel from transportation to storage containers".[5]	The NWMO did not acknowledge or respond to this issue.
It is problematic that the NWMO has not incorporated "lessons learned" from the Yucca Mountain project in the U.S. and the evolution of that project under scrutiny. A key change in the project design between 2002 and 2008 was with respect to the packaging of the wastes, and the elimination of a step which is also problematic with the NWMO concept design, that being the receipt of the wastes in transportation containers and transfer of the wastes into final containers at the repository sites. Initial plans for Yucca Mountain included shipment of wastes from current locations to the repository site where the fuel would be transferred into the disposal canisters (referred to as "used fuel containers" in the NWMO concept) for placement in the repository using a series of hot cells, as is the case with the NWMO's conceptual "Used Fuel Packaging Plant". In the technical literature this method is also referred to as "in air transfer" (as opposed to transfers in water, such as in the irradiated fuel bays at reactor stations, which is how all transfers of used fuel take place at nuclear generating stations in Canada).	The NWMO did not acknowledge or respond to this issue.

[4] Table 12.1: Features for Option 1—Deep Geological Disposal in the Canadian Shield, Representative Conceptual Design Activities for Deep Geological Disposal in the Canadian Shield, IPD page 77

[5] *Table 12.4: Features for Option 4—Adaptive Phased Management,* Representative Conceptual Design Activities for Adaptive Phased Management, IPD page 83

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
Initial plans for Yucca Mountain included shipment of wastes from current locations to the repository site where the fuel would be transferred into the disposal canisters (referred to as "used fuel containers" in the NWMO concept) for placement in the repository using a series of hot cells, as is the case with the NWMO's conceptual "Used Fuel Packaging Plant". In the technical literature this method is also referred to as "in air transfer" (as opposed to transfers in water, such as in the irradiated fuel bays at reactor stations, which is how all transfers of used fuel take place at nuclear generating stations in Canada). The decision regarding the packaging of nuclear waste for the proposed Yucca Mountain repository has shifted over time, with a significant emphasis placed on moving away from on-site repackaging towards utilizing standardized, transportable canisters loaded at the reactor site. The primary strategy, often associated with the Transportation, Aging, and Disposal (TAD) canister system, was intended to minimize handling and worker exposure at the repository site. Earlier repackaging was assumed to take place at the repository itself, which posed risks of increased radiation exposure to workers and added significant costs. A study of civilian spent nuclear fuel handling prepared for the U.S. Department of Energy evaluated the handling of civilian spent nuclear fuel "in air" (i.e. in hot cells) and packaging activities in the repository surface facilities and found that contamination levels and dose rates were expected to be much higher "than desirable". The study estimated that it would take approximately four to 40 days of operation to contaminate the fuel transfer cell to a level that may impact radiological safety and require periodic decontamination. The study concluded that this rate of contamination was unacceptable.[6] In 2005, the Department of Energy (DOE) moved to adopt a canister system. In this system, the canisters are designed to be loaded at commercial reactors, sealed, transported to Yucca Mountain, and placed directly into the repository without being reopened or repackaged, significantly reducing the need for on-site handling. This would reduce worker exposure and site contamination at the repository site.	

[6] Commercial Spent Nuclear Fuel Handling in Air Study, prepared for the US. Department of Energy Office of Civilian Radioactive Waste Management by BECHTEL SARC Company LLC, March, 2005 pages vi, vii, ix

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
Since completion of the Yucca Mountain FEIS in 2002, DOE has continued to develop the repository design and associated construction and operational plans. As now designed, the surface and subsurface facilities would allow DOE to operate the repository following a "canistered approach" in which most commercial spent nuclear fuel would be packaged at the reactor sites in transportation, aging, and disposal (TAD) canisters. Any commercial spent nuclear fuel arriving at the repository in packages other than TAD canisters would be repackaged by DOE at the repository into TAD canisters.[7] Also, the Yucca Mountain project evolution included the addition of a "Wet Handling Facility" which would carry out any transfer of commercial spent nuclear fuel into canisters underwater (as is the case at Canadian nuclear generating stations, where transfers from in and out of dry storage containers are handled in the irradiated fuel bay).[8] In addition, a handling canister, sealed at the reactor to eliminate further handling of bare fuel assemblies, was evaluated and eventually adopted in 2006. [9] The evolution of the Yucca Mountain project design from repackaging at the repository site to repackaging at the reactor site illustrates the importance of the NWMO including an examination of this alternative means of carrying out their project. The revised IPD or detailed project description must include an evaluation of transferring the fuel waste into the "final" used fuel container at the reactor station, thereby removing the necessity of a "used fuel packaging plant" at the repository site and so greatly reducing worker exposures and site contamination.	
The NWMO has persistently excluded the first step in their project – the transfer of the used fuel waste from dry storage containers into transportation containers at the reactor site – and have done the same in the Initial Project Description.	The NWMO did not acknowledge or respond to this issue.

[7] Final Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, VolumeI-Impact Analyses Chapters 1 through 14, U.S. Department of Energy, June 2008, pages v-vi

[8] Final Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, VolumeI-Impact Analyses Chapters 1 through 14, U.S. Department of Energy, June 2008, 2.1.2.1.4 Wet Handling Facility, Page 2-22

[9] Evolution of repository and waste package designs for Yucca Mountain disposal system for spent nuclear fuel and high-level radioactive waste, Rob P. Rechard, Michael D. Voegel, 2013

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
NWMO has generally attempted to dodge this important topic by saying something to the effect of "that's up to the waste owners", which is unconvincing as the waste owners ARE the NWMO, including Ontario Power Generation which comprised the majority of the NWMO and in 2024 provided 94% of the budget as the owners of more than 90% of the waste. The transfer of the wastes at the reactor station must be considered as part of the project as the methods and observations made during the transfer of the wastes are likely to have bearings on the condition of the fuel as it arrives at the repository site, and subsequently on key safety issues like levels of radioactive release and worker exposure (fuel defects are a precursor to dose; if the fuel bundles are found to be defective or damaged during observation or testing this is of consequence at the repository site.	
If the fuel bundles are damaged or made defective during the transfer, this will be of consequence at the reactor site).	The NWMO did not acknowledge or respond to this issue.
Northwatch has previously investigated the dry storage of used fuel waste at Ontario nuclear generation stations, including as contributions to licence renewal hearings for the waste management facilities… The condition of the wastes in storage at the reactor stations and the handling of the wastes during transfer into the transportation container are of consequence to the operations at the repository site and the safety of those operations.	The NWMO did not acknowledge or respond to this issue.
The NWMO must be required to examine the *alternative means* of placing the used fuel in a "final container" at the reactor station (referred to in the NWMO concept as the "fuel container) rather than in a transportation container (referred to in the NWMO concept as the Used Fuel Transportation Package and the Basket Transportation Package)[10] for transport to the site and subsequent transfer from the transportation container / package into the final used fuel container.	The NWMO did not acknowledge or respond to this issue.
In the Initial Project Description, the NWMO pronounces that their current project, the subject of the current impact assessment process, does not include transportation of used fuel from reactor	The NWMO did not acknowledge or respond to this issue.

[10] NWMO, Deep Geological Repository Transportation System Conceptual Design Report Crystalline / Sedimentary Rock, APM-REP-00440-0209 R001, September 2021, as found at https://www.nwmo.ca/-/media/Reports---Reports/APMREP004400209.ashx?sc_lang=en

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
sites to the Project (beyond primary and secondary access roads at the Project site).[11].*[12]* This assertion by the NWMO that long-distance transportation is not part of the project is erroneous on three counts: - The Impact Assessment Act sets out that its application is to designated projects and to activities and effects with are "incidental" to those projects - Even within the Initial Project Description there are statements that clearly support the determination that long-distance transportation is part of the project and therefore subject to the impact assessment process initiated on January 5th - The NWMO has been describing transportation as part of the APM project for 20 years, including in the Choosing a Way Forward report which is the basis of the federal government allowing NWMO to proceed with this project	
The purpose of the Impact Assessment Act is to "prevent or mitigate significant adverse effects within federal jurisdiction — and significant direct or incidental adverse effects — that may be caused by the carrying out of designated projects".[13] The definitions section provides further clarity, stating that a "designated project … includes any physical activity that is incidental to those physical activities" The "Summary of Federal Incidental Activities and Provincial Required Assessment Matters Analysis" for the GCT Deltaport Expansion – Berth Four Project, dated June 30, 2022[14] further adds to these clarifications: *An incidental activity is an activity that is likely to happen in conjunction with a project proposed by a proponent, meaning*	The NWMO did not acknowledge or respond to this issue.

[11] IPD page vii
[12] IPD page 50
[13] Impact Assessment Act, Section 6 (1)
[14] As found at https://iaac-aeic.gc.ca/050/documents/p81010/144292E.pdf

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
that it becomes part of the designated project and must be assessed. Incidental activities are considered in the federal decision-making phase, including the federal public interest determination, and if a project is allowed to proceed, incidental activities can be subject to conditions in a decision statement. NWMO's argument rests on their faulty reasoning that the long-distance transportation is not an incidental activity to the Project "because these activities are ongoing, independently regulated, would not require changes to federal or provincially approved design standards for existing highways and railways and these activities are expected to continue regardless of the Project's implementation." This is a discountable argument on several counts including: • The long-distance transportation of high-level nuclear fuel waste is <u>not</u> an ongoing activity. • The NWMO has stated that an average of five single fuel bundles are transported per year in Canada, primarily shipments from nuclear generating stations to the Chalk River Laboratories for research purposes. This is distinctly different from the NWMO's future transportation plans which will involve an estimated 650 shipments per year over 50 years (approx. 2-3 per day). A single transportation package can carry up to 192 used fuel bundles. • The long-distance transportation of nuclear fuel waste that will be carried out incidental to their APM project is unprecedented, rather than "ongoing". • Most if not all projects assessed under the IAA are also subject to other laws and regulations; the "permitting plan" developed in the planning phase of the Impact Assessment Process is obvious evidence of this • Changes to design standards for project infrastructure is not a determination as to whether an activity is incidental to a project	

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
The Agency considers several factors to determine if an activity is part of the "designated project"; application of those factors generated the following observations: • The long-distance transportation of the nuclear fuel waste from the reactor stations to the repository site is required for the APM project; if the waste was not transported to the site, there would be no waste with which to carry out the primary project activity, i.e. the placement of the wastes in the deep geologic repository • The activity of long-distance transportation of the waste is under the direct care and control of the NWMO. As reported in their 2001 Deep Geological Repository Transportation System • Conceptual Design Report, Crystalline / Sedimentary Rock "it is assumed that ownership and operations of the transportation system are retained by NWMO". • The activity is exclusively for the benefit of the proponent and the proponent's shareholders (Ontario Power Generation, Hydro Quebec and New Brunswick Power) in that it removes the waste from the shareholders liabilities and it makes the implementation of the NWMO's project possible. • The long-distance transportation of the nuclear fuel waste from the reactor stations to the repository site is the physical link between the current waste location and the repository location; the main project cannot function absent the availability of the waste. • The regulation of the deep geological repository and the long-distance transportation of the radioactive fuel waste are both matters of federal regulation.	The NWMO did not acknowledge or respond to this issue.
Even within the Initial Project Description there are statements that clearly support the determination that long-distance transportation is part of the project and therefore subject to the impact assessment process initiated on January 5th. These include the following: • The NWMO organized a cross-jurisdictional transportation working group to seek input from provinces and federal government on the early development of transportation technical and engagement program. (page 33)	The NWMO did not acknowledge or respond to this issue.

Northwatch Transportation-Related Comments on the NWMO Initial Project Description	Assessment of NWMO Supplementary Response
• The NWMO organized a cross-jurisdictional transportation working group to seek input from provinces and the federal government on the early development of the transportation technical and engagement program. The NWMO has sought government datasets to support technical route assessments (page 34, 35, 36) • Based on annual shipping (receipt) assumptions, the maximum number of certified transportation packages received at the UFPP in any given year is estimated to be approximately 625 Used Fuel Transportation Packages (UFTPs) and 260 Basket Transport Packages, respectively (each UFTP holds 192 used fuel bundles whereas the Basket Transport Package holds up to 120 used fuel bundles). (page 73) • Used fuel arrives (approximately two trucks per day) at the UFPP from the interim storage sites (page 73) • There would be a need for transportation containers and facilities to produce them; processing facilities to load the fuel into transportation containers; production facilities for deep repository containers; processing facilities to transfer the fuel from transportation to deep repository containers; and production facilities for sealing materials. (page 77) • The operation of the centralized facility would involve moving the fuel from existing reactor site storage facilities in certified transport containers to the central site. Transportation would require an emergency response plan and adherence to security provisions. The mode of transportation (road, rail or water) would depend upon the location of the central facility and other factors. (page 77) • The operation of the centralized facility would involve moving the fuel from existing reactor site storage facilities in certified transport containers to the central site. Transportation would require an emergency response plan and adherence to security provisions. The mode of transportation (road, rail or water) would depend upon the location of the central facility and other factors (page 84) • Similarly, the public should be safe from the threat of injuries or deaths due to accidents during used nuclear fuel	

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transportation or other operations associated with the management of used nuclear fuel. (page 85) • Implications for the well-being of all communities with a shared interest (including host community, communities in the surrounding region and on the transportation corridor, and those outside of the vicinity who feel affected) should be considered in the selection and implementation of the management system and related infrastructure. (page 86) • Following consideration of social and cultural perspectives and preferences, technical suitability, transportation safety and First Nation/municipal community willingness, this location was ultimately selected for the Project. (page 95) • Mitigation Protection and Enhancement Measures: Communicate transportation plans with WLON, the Township of Ignace and other local communities. (page 215) • Project activities during site all Project phases, including site traffic, transportation of materials to and from the site, employment and procurement (page 246)	
The NWMO has been describing transportation as part of the APM project for 20 years, including in the Choosing a Way Forward report which is the basis of the federal government allowing NWMO to proceed with this project. Additionally, the Nuclear Fuel Waste Act – the legislation which provided the nuclear industry with a mandate to operate as the Nuclear Waste Management Organization – defines management, in relation to nuclear fuel waste, as "including handling, treatment, conditioning or transport for the purpose of storage or disposal". The table included in Northwatch's comments on the IPD listed a sampling of documents which describe the NWMO project and clearly include transportation as part of the NWMO project. See Appendix 1 for this listing with excerpts from each document.	The NWMO did not acknowledge or respond to this issue.

4. Conclusion

Further to our review of the NWMO's Response to the IAAC's Summary of Issues and their supplementary filing of the *Consolidated Information on the Transportation of Used Fuel - Plain Language Summary* our earlier analysis and conclusions have been affirmed and deepened: the transportation aspects of the NWMO's project to transport, process, bury and abandon all of Canada's high-level nuclear fuel waste at the Revell site in the heart of Treaty 3 territory in northwestern Ontario must be included in the impact assessment process.

It falls to the Impact Assessment Agency to ensure that these and other issues raised during the comment period on the Initial Project Description are included in the draft Integrated Tailored Impact Statement Guidelines which we understand will be released for public review and comment in the near future.