

Comments to IAAC re NWMO DRG Initial Project Description

I appreciate being able to provide concerns with this DGR project.

I've been following this project for a couple of years, and having worked in high-regulated industries (both nuclear and medical device design and manufacturing), this project is worrisome, and literally keeps me up at night.

First, I have concerns about the IA process in that the public had only 30 days to respond - especially dealing with a project of this magnitude and an IPD of over 1200 pages. In the spirit of fairness, the NWMO has been working on this for 20 years, others have had the opportunity to review the document for a year, but the public was given only 30 days.

This leads me to a concern about this entire process being a "David and Goliath" story.

Goliath:

NWMO (with a seemingly unlimited budget), funded by the Nuclear waste producers including OPG (93.68% of the funding), NB Power (3.66%) and Hydro Quebec (2.07%), and AECL (.59%). NWMO is not an independent body, when they are funded by the waste producers and their board members are employed by OPG and NB Power, and who have strong connections to OPG.... This is not an arm's length or independent Board.

David:

Individuals and alliances of interested groups, who are primarily volunteers, with no funding, and no opportunity to hire "experts". The opposition is primarily individuals doing our own work and research.

Result: There is little fairness in this process.

Transportation Concerns:

NWMO has excluded Transportation from their Project Description, yet, for the last 20 years, NWMO has been describing transportation of Nuclear Waste as part of their proposed plan. Hundreds of communities will be impacted by 2-3 trucks (and possible additional rail shipments) per day carrying high-level radioactive nuclear waste travelling thousands of kilometres from the current waste locations (nuclear generating stations in NB, Quebec and Ontario) to the proposed DGR site at the headwaters of the Wabigoon and Rainy Rivers, between Ignace and Dryden. This means that NWMO expects the DGR decision to be made without considering transportation of the waste. NWMO contends that Transportation can be excluded because nuclear waste is already transported in Canada, and it is the joint responsibility of the CNSC (handles safety, security, and health aspects) and Transport Canada (who regulates the transport of dangerous goods.). WTNNFN contends that "Long-distance transportation must be included in the Impact Assessment and that the DGR and Transportation must be the subject of a full impact assessment and public hearing", since:

- Long distance shipping of high-level radioactive nuclear waste has never been done in these volumes, for such long distances (2,843 km from Pt. Lepreau, NB, and an average of 1650km from Southern Ontario for at least 30 years.
- Hundreds of communities and First Nations will be impacted by 2-3 trucks (and possible additional rail shipments) per day carrying high-level radioactive nuclear waste, placing significant burden on municipal emergency responders and preparedness planning and budgeting
- Local businesses, residences and the general public have not been informed or consulted, and they are directly impacted since existing highways and rail lines run directly through communities, next to schools, businesses, playgrounds, bicycle lanes, pedestrian crossings, etc., some just feet away from the highways and rail line.
- In many areas along northern Ontario highways, there are no shoulders and no places for trucks or cars to safely move away from active lanes of traffic. There are no rest areas, unless you accept a gas station parking lot as a safe rest area
- Highway safety has become increasingly more dangerous in Canada, for a variety of reasons, and the risks need to be assessed and mitigated
- In the "[Guide to preparing an IPD](#)" and a [Detailed Project Description](#) - Annex I - Contents of an Initial Project Description", Para 9 states: *"This is to include the physical activities that are incidental to the designated project. In determining such activities, the following criteria shall be taken into account:....*
 - *nature of the proposed activities and whether they are subordinate or complementary to the designated project;*
 - *whether the activity is within the care and control of the proponent;*
 - *if the activity is to be undertaken by a third party, the nature of the relationship between the proponent and the third party and whether the proponent has the ability to "direct or influence" the carrying out of the activity;*
 - *whether the activity is solely for the benefit of the proponent or is available for other proponents as well; and*
 - *the federal and/or provincial regulatory requirements for the activity."*
- In NWMO's own words, "Transportation of used nuclear fuel is an important component of APM (Adaptive Phased Management). Used nuclear fuel is currently safely stored in facilities licensed by the Canadian Nuclear Safety Commission (CNSC) at or near sites where it is produced. Placing all of Canada's used nuclear fuel in a single location will require transportation from these interim storage facilities to the deep geological repository. (from [NWMO's Moving forward together](#) - An invitation to review a draft planning framework for the transportation of used nuclear fuel -2021_12).
- in NWMO's own words, "***Who is responsible for the safety of transporting used nuclear fuel? What are the roles of the federal, provincial and local governments in overseeing the transportation of used nuclear fuel? The NWMO will have overall responsibility for the safe transportation of used nuclear fuel from nuclear reactor sites where it is currently stored to a deep geological repository, once it is constructed. In Canada, the safe, secure movement of radioactive materials for all modes of transport is jointly regulated by the CNSC and Transport Canada. The CNSC regulates the transport of nuclear materials through the Packaging and Transport of***

Nuclear Substances Regulations. Transport Canada administers the Transportation of Dangerous Goods Act and provides operating and safety oversight of railways. Together, their regulations cover the certification of the transportation package design, the licence to transport, security planning, emergency response planning, training, and communication arrangements.", from [Safe and Secure Transportation of Canada's Used Nuclear Fuel, May 2015](#)

- NWMO appears to be relying on the regulators to address the transportation aspects of the project. This demonstrates a lack of ownership of and accountability for the waste - NWMO must own the waste and the entire process - the regulators exist for oversight and certifications - they are not expected to do your work for you. Under robust process/product development standards I would expect:
 - Review and analysis of safety/use cases and safety/use scenarios that determine the scope and requirements of the project. NWMO cannot ignore the transportation scenarios that they have heard from some of their consultations: *"the NWMO has heard that people are interested in understanding more about the implications of these types of extreme accident scenarios. As described in Section 3, the NWMO's future work will include more detailed studies of accident scenarios, including assessing potential radiological doses to members of the public and workers in these very unlikely events."* (from NWMO, Preliminary transportation plan, December 2021). Why are these "detailed studies" not part of the scope of this Project Description?. "Studies" are not defined by NWMO - there is no evidence that a full risk assessment will be done including Failure Mode Affect Analysis (FMEA) to address all potential failures and what will be done to prevent or mitigate the risks of real-life scenarios. These risks need to be assessed as part of this project. NWMO cannot rely on existing Provincial and Municipal services to figure things out in the future:
 - Have impacted first responders on transportation routes been involved in this project?
 - Northern highways are frequently closed for hours/days due to severe accidents, including waiting hours for accident investigators to arrive at accident locations
 - Some northern communities do not have adequate OPP or first responder staffing (for example, some police stations are not open 24/7)
 - Imagine the effort and cost it will take to train and equip first responders across Highway 11, Highway 17, through countless communities large and small. I personally know many who are not interested in accepting that danger or responsibility.
 - Risk mitigation plans and costs related to transportation must be included in this project.

Engineering Standards and Methods concerns:

- NWMO refers to "using the best practices", however, this project is based on concepts and theory, and there is no operating DGR anywhere in the world. Finland is working on a DGR, and they are further ahead.

<https://www.bbc.com/future/article/20230613-onkalo-has-finland-found-the-answer-to-spent-nuclear-fuel-waste-by-burying-it>

- NWMO is not following the same designs as the so-called “best practices” under development in Finland. The application and thickness of the copper-clad burial container is different - NWMO’s uses a thinner coating of copper.
- We all know, a chain is only as strong as its weakest link. With that in mind, there is no detail on how the burial containers will be sealed shut/welded shut to ensure 100% quality. Does the weld meet the same corrosion resistance requirements as the steel/copper construction? How are the welds inspected to guarantee 100% quality and corrosion resistance requirements? Will NWMO be using x-ray/non-destructive testing on the welds and the containers? My concern stems from the initial construction of the Candu reactors in Canada - the steel tubes inside the steam generators had long welded seams that were welded in the manufacturer’s plant. During on-site pressure testing, the tubes leaked at the welds, and 100% of them needed to be replaced on-site. The welds in the replacement tubes were 100% tested using x-ray technology. Based on research of the DGR project in Finland, the quality of the welding process has caused delays in their project, and it’s not clear to me if it’s resolved in Finland or by NWMO
- NWMO cannot provide guarantees of safety or proof of concept or validation from an engineering or quality perspective, because they are “flying the plane while building it”. There are conflicting studies related to the copper-clad burial containers. For example:
 - NWMO is funding research at Western University on the corrosion of the copper-clad burial containers. Western has published research studies about the potential corrosion of the burial containers, including, ["Corrosion Related to the Nuclear Waste Containers"](#), by Ebrahimzadeh Pilehrood, Ali, 2023-10-17. Page 6 indicates: *"The Impact of Nuclear Waste on the Environment Nuclear waste, once buried, can substantially affect human health due to the potential for leakage and radiation. As high-level radioactive waste has extremely lengthy half-lives, the corrosion of the materials used to contain the waste makes the disposal plan of the waste so challenging. **Over time, any material used for burial will inevitably corrode, leading to the release of radioactive substances. This leakage, in turn, can contaminate groundwater, jeopardize the safety of drinking water sources, and release radiation into the environment.**"*
 - Peter Szakalos, a corrosion science engineer at the KTH Royal Institute of Technology in Stockholm, has expressed significant concerns regarding the long-term safety of the Onkalo nuclear waste repository. He suggests that despite using bentonite clay for containment, natural water ingress could cause rapid, unexpected copper corrosion, potentially breaching canisters within a century. "Water will enter the tunnels and it will corrode copper much faster than the theoretical model predicts."
- Design Engineering projects normally include methods to verify and validate that design solutions meet requirements. NWMO has used a combination of methods to develop their DGR concept, including research, computer modelling, and review of international

projects (such as Finland's DGR). Without full-scale, real-life testing, these methods can never guarantee design validation or safety.

- From what I see in the IPD, NWMO has no plans to test or validate or guarantee that the burial container won't corrode and leak in the long term. The IPD references an underground characterization facility: *"Along with continued characterization of the site, further demonstration of the technology to contain and isolate used fuel in a deep geological repository would continue at the **underground characterization facility**. The NWMO has conservatively assumed a period of 20 years of research and demonstration at the underground characterization facility would be required to confirm the suitability of the site, to gain sufficient confidence in understanding the long-term issues and to prove the safety of isolating used fuel in a deep geological repository."* There is no indication that real-world DGR conditions will ever be tested and validated in this "demonstration" facility. 20 years is not a long period of time when you consider how long this waste will live into the future.
- Design Engineering projects normally include a robust Quality System, including a detailed risk assessment, including a Failure Mode Effects Analysis, which would identify all potential failures and solutions for how to prevent the failures or mitigate the risks. In the IPD, NWMO has not provided a fulsome risk assessment or FMEA. Thus, the IPD is weak on providing evidence that demonstrates a robust Quality System. The public has a right to know and understand the risks.
- It's not clear to me if the DGR is designed to allow for waste to be retrievable in the event of a failure, or for future recycling.

Mining Operations vs Nuclear Operation concerns

- In the IPD, NWMO has described the DGR as a mining operation vs being treated as a Nuclear operation that handles high-level radioactive materials. In addition to the DGR, there are also surface operations to repackage waste, load the DGR, there is a plan for retention ponds, and possibly an interim storage facility. The Township of Ignace indicated in their review of the [IPD Output Document](#), they are concerned that this project is not taking a Nuclear Safety Culture approach, and I agree with their concerns:
 - *"The upset conditions envisioned and worker protection appear to be specific to mines rather than radiological upset conditions. If the design approach is inverted, we would expect more focus on worker and occupational health and safety."*
 - *"if the design approach is inverted, there would be greater emphasis on radiological risk and how the DGR design would avoid risk. For example, at each nuclear generating station, the movement of used fuel on-site is well recognized as an area of critical risk. "*
 - *With respect to radiological protection practices, we are concerned that: 1) there are no references in the IPD to the well understood concept of 'defence in depth'; 2) the IPD design overly accepts the 'mitigation' of effects vs the nuclear*

standard of 'avoiding' radiological effects - as stated in the IAAC Operational Policy Statement.

- *high level radioactive waste has been safely stored for 50 years because of the safety culture of nuclear workers at the nuclear plants. NWMO will become a waste owner for the first time. We believe it is not too early for the safety culture to be in place so as to be a stronger influence on the description of the DGR and how the DGR is assessed.*
- *We are highly concerned with the intention to store and use dynamite underground at the same time that radioactive used fuel is also being stored underground and additional placement rooms are being excavated (p. 68). This may be an appropriate practice for a mine, but a nuclear facility should have defence in depth and keep risks as low as reasonably achievable.*
- *There is recent evidence that mining operations in the Sudbury (Lively), ON have caused earthquakes - it's likely that blasting operations taking place concurrently while nuclear fuel is being buried poses a significant risk to geological stability.*
- Perhaps NWMO doesn't fully understand what it takes to operate in a regulated industry with a Nuclear Safety Culture with robust quality systems, and where every employee understands the responsibility.

Site Selection and Lack of Ethics

- the site selection process for a "willing host" community is fraught with unethical, biased and self-serving contrived processes:
 - The 2 selected "willing hosts" are impoverished small communities - the Town of Ignace is suffering from a shrinking population and tax base (1200 residents). Wabigoon Lake Ojibway Nation (WLON) has a registered population of approx. 1,201 people, of which their on-Reserve population was 175 ([2025 Crown-Indigenous Relations and Northern Affairs Canada](#)). These communities were offered funding and economic development (and signed "Hosting Agreements") in exchange for their support.
 - Would Ignace or WLON have supported this project to move forward if they weren't paid for their consent (in other words.... Free consent).
 - Other nearby communities who are on the watershed have had no ability to "vote" on whether they support this project
 - How is it fair that 2 small impoverished communities can make this important decision for the rest of their neighbouring communities, those on the watersheds, those on the transportation routes.... This would require a referendum within Northern Ontario
 - Since Canada started producing nuclear power and nuclear waste, there has always been "talk" about burying nuclear waste in the Canadian shield by the nuclear industry. The self-serving voting processes and financial incentives appear to be engineered to arrive at this solution. There are many people and communities and First Nations in NW Ontario who are not in favour of this proposed solution, and have signed resolutions to that effect.

- There are other viable solutions, such as long term storage and management close to the nuclear power sites (the proximity concept, adopted by other nations such as Finland). Waste has been very well managed at Canada's reactor sites and there is an ability to monitor. Future generations may be able to recycle this spent fuel - to get value from it - that's where Canada's engineering focus should be. Another consideration that would support recycling is that Canada will run out of uranium in the near future: "*Canada's current requirements for its CANDU reactors are only approximately 2,000 tonnes of natural uranium per year, suggesting well over 250 years of potential reserves. However, the continued profitable exploitation at recent levels of mining and export of almost 16,000 tonnes of uranium annually by Cameco and Orono in 2015 (15,709 tonnes), 2016 (16,541 tonnes) and 2017 (15,467 tonnes)[8], will exhaust Canada's potential uranium reserves within 33 years, or by the year 2053, while the proven and probable reserves of 228,000 tonnes would be exhausted already by 2034.*" from SOVEREIGN NUCLEAR CANADA AT A CROSSROADS: RECYCLE OR DIE, by F.P. Ottensmeyer, University of Toronto, June 6, 2021.
- The IPD makes it clear that NWMO is making a tradeoff between:
 - 1) - A successful and well-monitored waste-management program in a highly populated area, and
 - 2) - A waste repository that is abandoned and not monitored, in a lower populated area, that also introduces the risks of nuclear waste being transported over long distances for 50 years.
 - As a resident of Northwestern Ontario, I'm not "willing". The people of Northwestern Ontario, and our future generations, should be the "unwilling" casualty for this tradeoff - especially since NWO has not benefited from nuclear power.
- Is there is a conflict of interest and lack of ethical conduct between OPG and NWMO. NWMO is a supplier and partner to OPG, as they carry out this work and are funded by OPG, Hydro Quebec and NB Power, the nuclear waste producers. OPG has a stringent [Code of Conduct](#) that suppliers must follow, related to bribery, gifts, behaviours, and influence: "*Suppliers must never offer, ask for, give or receive any form of bribe, kickback, any other type of improper payment, or attempt to **gain influence** or competitive advantage through improper means. **Suppliers must also never offer or give facilitation payments**, i.e. payments to foreign public officials to expedite or secure the performance of any act of a routine nature that is part of that official's duties or functions.... "Suppliers must ensure that the requirements of all applicable anti-corruption laws are met, including, but not limited to, Canada's Corruption of Foreign Public Officials Act. No payments, gifts or other benefits may be given, directly or indirectly, to public officials, political parties or political candidates for the purpose of influencing government decisions in OPG or the supplier's favour or securing any other improper advantage. Suppliers are expected to ensure that payments made to agents or other third parties are not used, in whole or in part, **to influence government decisions***"

or secure any other improper advantage. Suppliers must not engage in any form of corruption, extortion and/or embezzlement.”

- a contrived and self-serving "voting" process determined by NWMO that was heavily influenced by providing financial funding:
 - NWMO hired a consulting firm to "survey" the people of Ignace, including children under the age of 18
 - WLON conducted their own vote
 - Community members were invited to attend the "Learn More" session, but the information provided by NWMO was about the benefits, and they have not addressed the potential risks.
 - The Town of Ignace received more than \$20M, reported by [CBC news](#). Ignace has also signed a "hosting agreement" that outlines economic development in Ignace, including a new building for a "Center of Excellence". This hosting agreement is allegedly valued at \$172Million. Apparently this agreement has a \$5M penalty if Ignace decides not to support the project.
 - *WLON has signed a "hosting agreement" and signed non-disclosure agreements, but we understand that their agreement is allegedly valued at \$4Billion, which includes building a manufacturing plant to produce the copper containers that will be used to bury the waste, and it will be 51% owned by WLON. We have also learned that each member of WLON has signed agreements and they have allegedly been paid \$140K each - the first of many milestone payments.*
 - *Comments made by residents on the Impact Assessment website have revealed the values of the "hosting agreement" and that many in Ignace feel short changed and the NWMO has been unfair in their negotiations*
 - [Comment #89](#) - Roger Dufault, past chair of the Ignace Ad Hoc committee
 - [Comment #183](#) - Sherrill Musclow, past council member
 - NWMO has been influencing support by providing funding to Ignace and WLON (and South Bruce when they were still being considered) for several years, buy purchasing fire trucks, building a new pow wow ground, sponsoring children's hockey teams and tournaments, buying equipment for the Ignace library, funding community groups etc.
- NWMO has paid staff who troll Facebook and make comments to disparage those who are opposed to or concerned about the project. In a post by We the Nuclear Free North on Feb 3/26, the following comment was made: "**Vince Ponka**: I see he's using We the Nuclear Free North's 'sacrifice zone' language...."

Lack of Transparency and Consultation

- NWMO primarily presents the economic benefits and "protecting the environment" Over the years they have conducted "learn more" sessions, but never present the project risks or possible failures. Their presentations are biased towards economic benefits and "saying" all will be safe. The IPD has many shortcomings related to employee health and safety, and operating with a Nuclear Safety Culture.

- NWMO has entered into agreements with the Town of Ignace and WLON. Agreements with WLON are kept secret, and its members have signed Non-disclosure Agreements.
- NWMO contends that they are "engaging" with indigenous people, but they have not consulted with communities along the transportation routes, nor have they consulted with all of the FN communities in Treaty 3
- NWMO refers to this project as "Canada's Plan", yet very few people in Canada are aware of this important project. Speaking with friends and family across the country, there is very little awareness. Very little advertising has been done by NWMO to make Canadians aware of "Canada's Plan" to bring awareness to the public. For example, the Ontario Government spends money on ads to make the public aware of their priority projects - more nuclear power and the Ring of Fire. The Federal Government had a significant Canada-wide advertising campaign to make sure indigenous people were aware of the settlements for Residential and Day School survivors and their descendants. I believe the NWMO is trying to keep this "**Canada's best kept secret**", and have focused their campaigns to influence primarily 2 local communities - Ignace and WLON. In fact, NWMO has only 2,600 followers on Facebook, yet a small local bakery in Thunder Bay (Nucci's Bake A Deli) has 6,100. For Canada-wide comparisons, The Liberal Party of Canada has 505K followers, The PC Party of Canada has 492K followers, Parks Canada has 395K followers, and the Nature Conservancy of Canada has 276K.

It appears that NWMO has not met safety and acceptability criteria outlined in the Seaborn Panel Report of 1998.

Diane Swiatlowski