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Oral presentation

Written submission from John D'Orsay

Exposé oral

Mémoire de John D'Orsay

In the Matter of the

À l'égard de

BWXT Nuclear Energy Canada Inc., Toronto and Peterborough Facilities

BWXT Nuclear Energy Canada Inc., installations de Toronto et Peterborough

Application for the renewal of the licence for Toronto and Peterborough facilities

Demande de renouvellement du permis pour les installations de Toronto et Peterborough

Commission Public Hearing

Audience publique de la Commission

March 2 to 6, 2020

Du 2 au 6 mars 2020

Canada

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Re: An Application for the renewal of the license for Toronto facilities of BWXT Nuclear Energy Canada

Who: John D'Orsay I recognize that we all have diurnal exposure to a nuclear fusion reactor – the sun. We are also warmed by a nuclear reaction in the earth's core, so not surprisingly there are background levels of radiation. Nonetheless I have concerns about the BWXT plant on Lansdowne adding to those exposure.

Where: I live on Lansdowne below Davenport.

When: I have lived in the neighborhood for three years. The local history provided was that there was residential construction ongoing on a brownfield site which had once been the heavy industry heartland of Toronto. When we arrived the BWXT plant still had signage for GE Hitachi and we assumed it was a warehouse for large screen televisions or some other appliances. The sign indicating BWXT Nuclear did provoke me to search for information abourt a year ago. There were online accounts about the previous licensing application. Further information on the current application taught me that the facility was not merely a warehouse or an office building. The recent BWXT sign on the corner should be supplemented by visible WHMIS signage on the exterior.

Why do I have concerns: I grew up in Halifax. For 15 years I lived in a house with an unobstructed view from the front porch of the site of the Mount Blanc explosion. There were memorial bells for the 2000 dead and 9000 injured 100 metres from the back door. There was a distinct line in the basement where the pre-explosion wall was topped up during the reconstruction. I have had opportunities to think about explosions.

My father, in the latter part of his navy career, was a nuclear biological chemical decontamination instructor. As I teenager a family outing to the NBCD school to watch film footage of Hiroshima and nuclear bomb tests is memorable. I have had opportunities to think about nuclear explosions.

I had throat cancer and received radiation therapy in 1998. I didn't pursue detailed self education on the cancer disease process but I have had opportunities to think about radiation exposures.

Another legacy of Halifax is a concern about radon, a gas whose molecules attach themselves to dust particles, enter the lungs and cause cancer over the long term.

What are my concerns: On reviewing the application and the staff assessment I am concerned that the review has not achieved the standards of the General Nuclear Safety and Control Regulation. The staff assessment does acknowledge that the "as low as reasonably achievable ALARA standard is applicable to the implementation of paragraphs 12(1)(c) and (f) of the Regulation. The regulation also recognizes that application of that standard requires that the operation optimize the design of their facility to achieve the ALARA standard. One of the

concerns with a legacy facility after 60 years of operation is that maintenance and incremental acquisition of replacement equipment may leave a considerable gap with what is achievable.

More importantly the sections of the health assessment and environmental assessment use a methodology which is not consistent with ALARA to set the standards to be applied. The text indicates that the exposure limits and emission standards are derived from the "dose limits for members of the public". This procedure generates a huge gap between the exposures and emissions permitted and the "as low as already achieved" demonstrated by the operators practice. The means to achieve ALARA is, t through reverse engineering the standards of the Ontario Ministry of Environment, Conservation and Parks, but conscientiously inquiring whether other ISO -14001 compliant operators have achieved better results. The reported results of the last ten years demonstrate that the Ministry standard is out of touch with what is reasonably achievable. The applicable standard consistent with ALARA should be the best results achieved by this operator or the best operators in the world. In consequence I suggest there is a basis to make the "action levels" identified the compliance standard. Alternatively, if I were doing my day job, I would suggest that employing the standard in the staff report puts the NRC at risk of a reviewable error by departing from an ALARA derived standard.

I also note that the experience with asbestos, feldspar and uranium has been that appreciation of health effects lags behind the exposures permitted by regulations have lagged behind the impact on the worker and community residents. I am recalling that Ontario occupational health officials told Elliot Lake miners that they had no discernible concerns with the exposure to uranium, radon or the treatment with aluminum, even after the provinces' epidemiologists announced a positive link in Geneva.

What hazards need more control?

My first concern is the storage cylinder, which is so conspicuous on the property and so modestly sited away from the buildings. I appreciate that these containers, whether they are storing propane, natural gas or medical gases are designed to fail without causing an explosion. However, there was a tank of similar design on Keele and Wilson Avenue in Toronto, which did explode in August 2010 leaving 100 families homeless.

In addition, in May 2019 a Korean hydrogen tank explosion destroyed two buildings in a research park. In Halifax, I did an extensive interview with a materials engineering researcher who used compressed hydrogen to manufacture pure silicon materials for his university laboratory. His tank was much smaller but he was very conscious of the risk of destroying the neighborhood. The tank on this site is industrial size and would likely have more impact on the surroundings.

This suggests the community could follow one of two courses in dealing with this concern: don't build around the property or find a way to reduce the storage need. With construction under way for some 4,000 additional units on adjoining properties, there is no compelling reason for those landowners to defer to BWXT's folly. It also wouldn't seem to be in the city's interest to

maintain a development desert around this plant. It would seem this is a matter the regulator should address in order to reduce the hazard.

Another relevant and basic insight comes from adapting a normal health and safety practice: you don't store chemicals so liquids are above the lithium. In this case the hydrogen is stored over the processing and storage facilities for tons of uranium. Dirty bombs are a recognized security threat. All a prospective Timothy McVeigh needs is a much smaller explosion than the one in Oklahoma City**.**

My second concern is the radon

Barrels of yellowcake are shipped to the plant by truck. An identified hazard associated with this form of uranium is that radon gas forms in the barrels. The NRC public meeting didn't identify control measures associated with radon, or whether there was a measurable increase in the radon content in the air around the plant. Adding to the background level of radon by bringing it into a residential area, is a risky behaviour that should be controlled by the regulator.

In the reviews the word radon is raised once, in the context of a broad study by Health Canada. There was no mention of any review of literature from other nations seeking to limit radon exposures. Monitoring only for uranium emissions is not sufficient to meet the legislation obligation to control the hazards within the site and into the environment.

A third concern is that the applicant and the regulator have focused on the small amount by weight of uranium: 4 grams, released into the environment. It would be reassuring if this small amount was in the form of, or even equivalent to, easter egg sized globules as one participant at the NRC public meeting suggested. If that was the case we could organize easter egg hunts and give prizes as a means to address the risk. My concern is that the release is as 10 to the power 21 gas molecules, which residents have even more opportunity to ingest by breathing than the workers in the plant, (who wear respirators).

I am sure processes and standards have improved in the sixty years since the plant was built. This seems to be a major message of the BWXT website. Apparently, the Cambridge engineering site is more camera friendly than the aged ugly duckling on Lansdowne, since the latter was omitted. Further, the website highlights BWXT facilities which recover uranium from scrap metals and permit reuse of the metals. The use of a tractor trailer to store hazardous waste is one demonstration that the authors of Three Mile Island aren't consistently incorporating their own` best practices. Moreover, the regulator does not appear to be challenging the applicant to improve processes to reduce emissions and hazards. Merely ensuring emissions are less than Port Hope is not the standard the regulator should promote if ALARA is the intention.

The decommissioning funding: I noted in reviewing other licenses that the NRC requires trust funds for decommissioning. Why is the provision for BWXT less onerous? The published financials for BWXT note it has a 75-95% return on equity. However, the assets and liabilities

reported suggest that the decommissioning costs of this facility would be significant impact in the short term.

As I understand the staff report, the Nuclear Liability and Compensation Act does not apply to this facility. BWXT, we are told is insured, like other industrial operations. On this basis it makes sense that insurance be required proportionate to the risks to 10,000 people and billions in buildings soon to be in the immediate area. This will make these risks a part of BWXT's internal accounting. However, the BWXT annual report indicates the company uses a captive insurance company and there are extensive references to the difficulties obtaining insurance for nuclear related businesses. On this path, BWXT doesn't seem any more able to pay the costs of a failure than Sunrise Propane Industrial Gases were able to fund the judgement adjoining homeowners received following the 2010 explosion.