

1997

General Information

Assigned Office: NMSS

OEDO Due Date:

Other Assignees:

SECY Due Date:

Date Response

Requested by Originator:

Other Parties:

Subject: Inventory of High Enriched Uranium Waste Suspended in Nitric Acid Presently Stored at Chalk River Laboratory Returning to the United States

Description:

CC Routing: OIP

ADAMS Accession Numbers - Incoming:

Response / Package:

Other Information

Cross Reference No: LTR-13-0133

SRM\Other: No

Process Information

Action Type: Appropriate Action

OEDO Concurrence: No

Signature Level: No Signature Required

OCM Concurrence: No

Special Instructions:

OCA Concurrence: No

For Appropriate Action. If response is determined, please be sure to create an ADAMS Package to include the incoming (version we forward to you from DPC), with response and process accordingly. Copies should be sent to RidsEdoMailCenter and RidsSecyMailCenter.

Document Information

Originator Name: John Brauneisen

Date of Incoming: 02/11/2013

Originator Org: Citizens

Document Received by OEDO Date: 02/12/2013

Addressee: Commission

Incoming Task: E-mail

OEDO POC: Yen-Ju Chen

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

Date Printed: Feb 12, 2013 13:30

PAPER NUMBER: LTR-13-0133 LOGGING DATE: 02/12/2013

ACTION OFFICE: EDO/OIP

AUTHOR: John Brauneisen
AFFILIATION: CANADA
ADDRESSEE: Chairman Resource (Chrm & Comrs)
SUBJECT: Expresses his concern regarding a headline in the Ottawa Citizen that the inventory of High Enriched Uranium waste suspended in nitric acid that is presently stored at Chalk River Laboratory will be returned to the United States

ACTION: Appropriate
DISTRIBUTION: RF, SECY has Ack.

LETTER DATE: 02/11/2013

ACKNOWLEDGED Yes

SPECIAL HANDLING: Assigned to: EDO/OIP.
Lead office to publicly release
24 hours after SECY's assignment, via SECY/EDO/DPC.

NOTES:

FILE LOCATION: ADAMS

DATE DUE: DATE SIGNED:

Joosten, Sandy

From: JBrauneisen [jbrauneisen@cogeco.ca]
Sent: Monday, February 11, 2013 1:22 PM
To: imacleod@ottawacitizen.com; dgardner@ottawacitizen.com; Michael.Binder@cncs-ccsn.gc.ca; pm@pm.gc.ca; Joe.Oliver@parl.gc.ca; peter.kent@parl.gc.ca; bob.rae@parl.gc.ca; Nycole.Turmel@parl.gc.ca; dmcguinty.mpp.co@liberal.ola.org; ahorwath-qp@ndp.on.ca; tim.hudakco@pc.ola.org; CHAIRMAN Resource; CMRSVINICKI Resource; CMRMAGWOOD Resource; CMRAPOSTOLAKIS Resource; CMROSTENDORFF Resource; wna@world-nuclear.org; executive-editor@nytimes.com; foreign@nytimes.com; Crentsil, Kofi; LawrenceSolomon@nextcity.com; nukes@platts.com; Peter.Elder@cncs-ccsn; info@ontarioliberal.ca; thomas.mulcair@parl.gc.ca
Cc: letters@ottawacitizen.com
Subject: Ottawa Citizen Headline: Canada to Secretly Ship Toxic Stew - Monday Feb 11th, 2013
Importance: High

To All Addressees:

This morning I was pleasantly surprised to read the headline in the Ottawa Citizen that the inventory of High Enriched Uranium (HEU) waste suspended in nitric acid that is presently stored at Chalk River Laboratory will be returned to the United States. It is nearly one year since my earlier message on this subject was sent to distribution. The Governments of both the United States and Canada deserve credit for taking positive action to deal with this ticking time bomb buried in the ground on the site of the Chalk River Laboratory. This is the equivalent of 7 nuclear explosive devices dissolved in 24,000 litres of nitric acid stored in a stainless steel tank that needs continuous heating and has been known to leak. The risk of transporting the inventory of fissile material back to its country of origin pales against a potential criticality accident at Chalk River. Transport would be done in quantities that preclude a nuclear accident from occurring.

The residents of Eastern Ontario, the North Eastern U.S. and everyone on this planet can breath a sigh of relief that our Governments are going to take prompt action to disarm this potential threat to the citizens of our planet. Even a delay of 6 months, pending environmental reviews, presents an ongoing time at risk that is too long. Every responsible action to mitigate this risk must be taken immediately.

Best regards,

John Brauneisen
Kemptville, Ontario.

----- Original Message -----

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Sent: Tuesday, February 21, 2012 1:44 PM

Subject: Clear and Present Danger - Nuclear Criticality Accident Looming at Chalk River Laboratories, A Ticking Time Bomb

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Subject: Clear and Present Danger – Nuclear Criticality Accident Looming at Chalk River Laboratories, A Ticking Time Bomb

The Ottawa Citizen deserves to be congratulated (Ref 1) for bringing to public attention the threat posed to the people of eastern Ontario and the State of New York from the Fissile Solution Storage Tank (FISST) at Chalk River Laboratories.

This ticking time bomb, equivalent to 7 nuclear weapons is a two hour drive from Ottawa and three hours from Ogdensburg New York. Chalk River Laboratories sits on the Ottawa River, upstream of the nation's capital. This river provides the drinking water supply to more than a million people. Suspended in a highly radioactive acidic solution, occupying a volume of approximately three metres by four metres by 2 metres, is 175 kg of fissile Uranium-235. The International Atomic Energy Agency defines a significant quantity of fissile nuclear material to be that needed to make a nuclear explosive device. In the case of Uranium-235, this quantity is 25 kg and for plutonium the quantity needed is 8 kg.

As long as the Uranium-235 remains in solution, there is little concern of a nuclear criticality accident. Once this fissile nuclear material begins to precipitate out of solution to form a solid, one has the possibility of a nuclear chain reaction. Although, it is unlikely to have an explosion similar to that of Hiroshima, there could be enough heat released by the chain reaction to cause the vaporization of the 24,000 litres radioactive acid, and the consequent rupture of the double walled stainless steel tank, encased in concrete and buried underground. Rather, than the equivalent explosive force of many 10s of thousands of tonnes of TNT, one could still have a

force equivalent of several tonnes of TNT. The location of the FISST tank is second source of concern. All of the vital facilities at Chalk River Laboratories are located inside the primary security area, which is adjacent to the Ottawa River, including the FISST. Within 10s of metres of the FISST are the operating NRU research reactor and its irradiated fuel storage bay. Also, in this area is the unirradiated fuel storage building that houses the remaining unirradiated High Enriched Uranium (HEU) on site. A nuclear criticality accident within the FISST could with a high probability affect the NRU reactor and other sensitive facilities within this inner security area.

What do the public know about the FISST? It contains 17 years worth of radioactive waste and has been out of service since 2003 or about 9 years. This makes the tank about 26 years old and has contained an acidic solution for all these years. Since 2006, there have been 3 leaks from the tank and temperature monitoring equipment has failed. Temperature monitoring is important because of the need to keep the solution warm. If the temperature starts to drop, the solubility of uranium in solution decreases and one is at risk of precipitation of uranium from solution. The FISST could have been installed around 1986, is this tank seismically qualified to withstand an earthquake of a certain magnitude? Nuclear power reactors are generally built to withstand an earthquake of 6 on the Richter scale. The Ottawa River valley is prone to earthquakes, and the Geological Survey of Canada has once again pointed to the risk of an earthquake, as recently as December 2011. After 26 years, what is the condition of the tank? In other words, the concern is about the structural integrity of the FISST. By way of comparison, when the NRU reactor was relicensed in 2006, a condition assessment of the 25 year old reactor vessel was undertaken by the licensee. The nuclear regulator (CNSC) accepted this submission, and the reactor was licensed for another 5 year period. However, in 2008, the NRU reactor had to be shut down for more than a year to repair cracks in the reactor pressure vessel.

The Canadian nuclear regulator (CNSC) has assured the Ottawa Citizen that the FISST was safe in its present state. However, CNSC staff would like to see the FISST decommissioned within the term of the present operating licence, which ends in 2016. There are concerns about the FISST; although, the CNSC does not appear ready to take regulatory action. Meanwhile, Atomic Energy of Canada Limited (AECL) has no immediate plans to decommission the reactor but wants to study the situation for possibly another 10 years before anything is done. In my view, this is an unacceptably long period of time at risk.

What has been the Federal Government's response to the future of Chalk River Laboratories? In the February 10th edition (Ref 2) of the Ottawa Citizen, it was reported that the Federal Government is seeking expressions of interest from a private partner to manage Chalk River Laboratories. The deadline for responses is April 2, 2012. The article went on to suggest there were possibly 2 groups interested. One possibility is the engineering giant SNC-Lavalin, which is headquartered in Montreal. It also appears that the Federal Government is not too interested in taking immediate action to protect the Canadian public from FISST and the consequences should something go bump in the night or during the day. The accidents at Chernobyl in 1986 and Fukushima in 2011 clearly demonstrated that the effects of a nuclear accident can go beyond national borders.

Action needs to be taken immediately to empty the FISST. Chalk River Laboratories has the equipment and facilities to undertake this task. If AECL or Canada doesn't have the technical expertise, then we can ask the United States to assist with this priority to protect the people living in eastern Ontario and New York State. Expertise resides at Los Alamos National Laboratory, or Oak Ridge National Laboratory, or Rocky Flats National Laboratory. The HEU used at Chalk River Laboratories originated from the United States and quite likely the U.S. Government would be willing to take back this material for safe storage.

Consider the potential consequences of a nuclear criticality accident inside the FISST. One could reasonably anticipate the lost of human life at Chalk River Laboratories because it is staffed continuously around the clock. There will be radioactive contamination of the Ottawa River and the surrounding lands. As well, there may be the need to establish an exclusion zone because of the radioactive contamination, perhaps up to 20 km from the accident site, as was done for Chernobyl and Fukushima. This could result in the closure of the Trans Canada

Highway, for example. Airborne contamination will likely be detected in major cities such as Ottawa, Montreal and New York. Conceivably, there will be the requirement to evacuate individuals in the areas with the greatest contamination.

Also given the fact that the NRU research reactor would be in close proximity, as well as other sensitive facilities on site, the radioactive integrity of these nuclear installations could be breached. The short and longer term costs to the country and the people of Ontario could be substantial.

In the January 2012 edition of the Nuclear Regulatory (NUREG) Group Newsletter (Ref 3), one finds the following in Section 11:

“Tokyo Electric Power (TEPCO), operator of the Fukushima nuclear power plant, has effectively been taken under state control in exchange for ¥890 billion (\$11.4 billion) in government aid. TEPCO reported a ¥627 billion consolidated net loss for April-September. Also, up to 1 million residents of municipalities within 50 kilometres of the stricken Fukushima nuclear power plant will be eligible for nuclear accident compensation.

As we reported in the December 2006 issue of this numinous newsletter, “Nuclear regulation exists partly because governments backstop the financial liability involved in the use of nuclear power – Nuclear Liability Act. According to a *Business Week* article on potentially unfunded liabilities of the American government, the taxpayer could be on the hook for “unlimited funds” (\$3.4 trillion for bank deposit insurance; \$1.5 trillion for pension insurance; \$643 billion for flood insurance and \$100 billion per annum for terrorism insurance.) As part of their fiduciary responsibility, governments have to provide the necessary political oversight. To paraphrase Clemenceau, “nuclear safety is far too important to be left up to regulators.” We highly recommend Ron Rosenbaum’s “How the End Begins: The Road to Nuclear World War III” (CNSC Library #112346).”

Consider the likelihood of the next major nuclear accident in the world where there is a loss of human life, major release of radioactivity to the environment, major economic loss, or all of the preceding. The facts are:

- Three Mile Island (USA) 1979;
- Chernobyl (former USSR) 1986;
- Tokai Nuclear Fuel Fabrication Plant (Japan) 1999; and
- Fukushima Nuclear Power Complex (Japan) 2011.

In 32 years there have been 4 major nuclear accidents in the world. Using this reality, one could anticipate another major nuclear accident in next 8 to 10 years. Is this an unreasonable estimate of the accident frequency associated with nuclear power production? Germany doesn't think so. In the aftermath of Fukushima, Germany will dismantle its extensive nuclear power program. Personally speaking, it would be regrettable to see Canada's name added to this list because of a waste storage tank that needed to be studied for more than 20 years after its use had been discontinued instead of neutralizing this threat to public safety.

In the preceding paragraphs, the concept of relative risk has been described. Risk is defined as the frequency of occurrence times its consequences. The ongoing existence of the FISST, in its current state, does pose a significant risk.

In the examples of serious nuclear accidents listed above, there is a common factor. That factor is the action of individuals operating the facilities or involved in governance of regulated activities. Two of the four accidents

were caused by the operators failing to observe safety procedures, the lack of proper training, or a combination of these considerations. One classic example of where lack of proper training lead to a catastrophe was the sinking of the Ocean Ranger off shore drilling platform in 1982. The 30th anniversary of this event was the week of February 13th, 2012. The initiating event was a broken porthole window, however, more than 80 people died because the onboard operators lacked the proper training to respond to the cascading events.

Before closing, it is important to discuss the importance of regulatory oversight. The last time that the CNSC (the federal regulator) and Atomic Energy of Canada Ltd (the licensee) got into a pissing contest over a licensed facility at the Chalk River site was in 2007/2008, and the Federal Government had to intervene to restore public safety. In 2007, the CNSC overacted to a lack of compliance on the part of the licensee, and a misunderstanding of level of risk posed by this noncompliance on the part of certain key members of the CNSC at the time. Meanwhile, in 2012, the situation at Chalk River Laboratories appears to be somewhat different. This time around both the regulator and the licensee appear to be in agreement that the FISST doesn't pose a problem to public safety. Yet CNSC staff would like to see the licensee deal with the FSST in the current licence period. The mandate of the CNSC under the 'Nuclear Safety and Control Act' (NSCA) of 2000 is not to promote the economic well being of the regulated nuclear activity; but rather, to protect the health and safety of Canadians and the environment. In my view, it is time again for the Federal Government to intervene to maintain public safety at the Chalk River Laboratories. Fukushima is a good example where the Government and the Federal Regulator failed to protect public safety. The emphasis was on promoting a nuclear program over good governance.

Conclusion

The Federal Government must intervene once again in the affairs of Chalk River Laboratories to protect public safety. AECL must be ordered to address the immediate threat posed by the FISST, and AECL must receive the necessary funding to neutralize the FISST. There is international expertise available to assist with the mission. Finally the fissionable U-235 recovered should be returned to the United States, as the country of origin.

Compared to the potential cost to clean-up after the fact, the expenditure of these funds and expertise now to prevent a tragedy is good insurance. The Government of Canada can not afford to do nothing because its integrity as a player in international affairs is clearly at risk. An incident with the FISST has the potential to affect this nation's ability to be seen as a responsible and capable exporter of energy (uranium, oil and natural gas) to an energy hungry world. A good regulatory framework with a strong and competent regulatory authority makes for a strong and competitive industry.

Finally in my considered opinion, it is unethical, in 2012, to turn over the management of Chalk River Laboratories to a privately owned group without first addressing the threat posed by FISST. The Federal Government shares some the responsibility for the current state of FISST because the cost of radioactive waste management was never adequately funded after the Federal Government, under the leadership of Brian Mulroney, sold off the radio-isotope marketing arm of AECL to a private company in the 1980's

Sincerely yours,

John Brauneisen

Kemptville, Ontario

References:

1) Ottawa Citizen: 'A FISST Full of Trouble' by Ian MacLeod, December 20, 2011

2) Ottawa Citizen: 'Federal Government Tests Private Interest in Chalk River Labs' by Ian MacLeod, February 10, 2012

3) Nucleat Regulatory (NUREG) Group Newsletter, January 2012, Section 11: 'Nuclear Liability'
<http://www.pipsc.ca/portal/page/portal/website/groups/nureg/010512>