Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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Supplementary Information
Oral Presentation

Written submission from
Janet McNeill

Renseignements supplémentaires
Exposé oral

Mémoire de
Janet McNeill

In the Matter of the

**BWXT Nuclear Energy Canada Inc.,
Toronto and Peterborough Facilities**

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

Commission Public Hearing

March 2 to 6, 2020

À l'égard de

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

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

Audience publique de la Commission

Du 2 au 6 mars 2020

Canada

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Filed on February 18, 2020

From: Janet McNeill

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1. WHO - IAEA deal from 1959

Agreement Between the International Atomic Energy Agency and the World Health Organization

ARTICLE I
Co-operation and Consultation

1. The International Atomic Energy Agency and the World Health Organization agree that with a view to facilitating the effective attainment of the objectives set forth in their respective constitutional instruments, within the general framework established by the Charter of the United Nations, they will act in close co-operation with each other and Will consult each other regularly in regard to matters of common interest.
2. In particular, and in accordance with the Constitution of the World Health Organization and the Statute of the International Atomic Energy Agency and its agreement with the United Nations together with the exchange of letters related thereto, and taking into account the respective co-ordinating responsibilities of both organizations, it is recognized by the World Health Organization that the International Atomic Energy Agency has the primary responsibility for encouraging, assisting and co-ordinating research and development and practical application of atomic energy for peaceful uses throughout the world without prejudice to the right of the World Health Organization to concern itself with promoting, developing, assisting and co-ordinating international health work, including research, in all its aspects.
3. Whenever either organization proposes to initiate a program or activity on a subject in which the other organization has or may have a substantial interest, the first party shall consult the other with a view to adjusting the matter by mutual agreement.

ARTICLE II
Reciprocal Representation

1. Representatives of the World Health Organization shall be invited to attend the General Conference of the International Atomic Energy Agency and to participate without vote in the deliberations of that body and of its subsidiary organs (e. g. commissions and committees) with respect to items on their agenda in which the World Health Organization has an interest.
2. Representatives of the International Atomic Energy Agency shall be invited to attend the World Health Assembly and to participate without vote in the deliberations of that body and of its subsidiary organs (e. g. commissions and committees) with respect to items on their agenda in which the International Atomic Energy Agency has an interest.
3. Representatives of the World Health Organization shall be invited, as appropriate, to attend meetings of the Board of Governors of the International Atomic Energy Agency and to participate without vote in the deliberations of that body and of its commissions and committees with respect to items on their agenda in which the World Health Organization has an interest.
4. Representatives of the International Atomic Energy Agency shall be invited, as appropriate, to attend meetings of the Executive Board of the World Health Organization and to participate without vote in the deliberations of that body and of its commissions and committees with respect to items on their agenda in which the International Atomic Energy Agency has an interest.
5. Appropriate arrangements shall be made by agreement from time to time for the reciprocal representation of the International Atomic Energy Agency and the World Health Organization at other meetings convened under their respective auspices which consider matters in which the other organization has an interest.

ARTICLE III
Exchange of Information and Documents

1. The International Atomic Energy Agency and the World Health Organization recognize that they may find it necessary to apply certain limitations for the safeguarding of confidential information furnished to them. They therefore agree that nothing in this agreement shall be construed as requiring either of them to furnish such information as would, in the judgment of the party possessing the information, constitute a violation of the confidence of any of its Members or anyone from whom it has received such information or otherwise interfere with the orderly conduct of its operations.

2. Subject to such arrangements as may be necessary for the safeguarding of confidential material, the Secretariat of the International Atomic Energy Agency and the Secretariat of the World Health Organization shall keep each other fully informed concerning all projected activities and all programs of work which may be of interest to both parties.
3. The Director General of the World Health Organization and the Director General of the International Atomic Energy Agency or their representatives shall, at the request of either party, arrange for consultations regarding the provision by either party of such special information as may be of interest to the other party.

ARTICLE IV
Proposal of Agenda Items

After such preliminary consultations as may be necessary, the World Health Organization shall include on the provisional agenda of its Assembly or its Executive Board items proposed to it by the International Atomic Energy Agency. Similarly, the International Atomic Energy Agency shall include on the provisional agenda of its General Conference or its Board of Governors items proposed by the World Health Organization. Items submitted by either party for consideration by the other shall be accompanied by an explanatory memorandum.

ARTICLE V
Co-operation between Secretariats

The Secretariat of the International Atomic Energy Agency and the Secretariat of the World Health Organization shall maintain a close working relationship in accordance with such arrangements as may have been agreed upon from time to time between the Directors General of both organizations. In particular Joint committees may be convened when appropriate to consider questions of substantive interest to both parties.

ARTICLE VI
Technical and Administrative Co-operation

1. The International Atomic Energy Agency and the World Health Organization agree to consult each other from time to time regarding the most efficient use of personnel and resources and appropriate methods of avoiding the establishment and operation of competitive or overlapping facilities and services.
2. The International Atomic Energy Agency and the World Health Organization agree that the measures to be taken by them, within the framework of any general arrangements for co-operating in regard to personnel matters which are made by the United Nations, will include:
    a. Measures to avoid competition in the recruitment of their personnel; and
    b. Measures to facilitate interchange of personnel on a temporary or permanent basis, in appropriate cases, in order to obtain the maximum benefit from their services, making due provision for the protection of the seniority, pension and other rights of the personnel concerned.

ARTICLE VII
Statistical Services

In view of the desirability of maximum co-operation in the statistical field and of minimizing the burdens placed on national governments and other organizations from which information may be collected, the International Atomic Energy Agency and the World Health Organization undertake, bearing in mind the general arrangements for statistical co-operation made by the United Nations, to avoid undesirable duplication between them with respect to the collection, compilation and publication of statistics, to consult with each other on the most efficient use of information, resources, and technical personnel in the field of statistics and in regard to all statistical proJeCtS dealing with matters of common interest .

ARTICLE VIII
Financing of Special Services

If compliance with a request for assistance made by either organization to the other involves or would involve substantial expenditure for the organization complying with the request, consultation shall take place with a view to determining the most equitable manner of meeting such expenditure.

ARTICLE IX
Regional and Branch Offices

The World Health Organization and the International Atomic Energy Agency agree to consult together with a view, where practicable, to entering into co-operative arrangements as to the use by either organization of the premises, staffing and common services of regional and branch offices which the other has already established or may establish later.

ARTICLE X
Implementation of the Agreement

The Director General of the International Atomic Energy Agency and the Director General of the World Health Organization may enter into such arrangements for the implementation of this agreement as may be found desirable in the light of the operating experience of the two organizations.

ARTICLE XI
Notification to the United Nations and Filing and Recording

1. In accordance with their respective agreements with the United Nations, the International Atomic Energy Agency and the World Health Organization will inform the United Nations forthwith of the terms of the present Agreement.
2. On the coming into force of this Agreement it will be submitted to the Secretary-General of the United Nations for filing and recording in accordance with the existing regulations of the United Nations.

ARTICLE XII
Revision and Termination

1. This Agreement shall be subject to revision by agreement between the World Health Organization and the International Atomic Energy Agency on the request of either party.
2. If agreement on the subject of revision cannot be reached, the Agreement may be terminated by either party on 31 December of any year by notice given to the other party not later than 30 June of that year.

ARTICLE XIII
Entry into Force

This Agreement shall come into force on its approval by the General Conference of the International Atomic Energy Agency and by the World Health Assembly.

B. Protocol

This Agreement was approved by the General Conference of the International Atomic Energy Agency on 1 October 1958 and by the World Health Assembly on 28 May 1959 and thus, in accordance with the terms of Article XIII, entered into force on that latter date.

IN WITNESS WHEREOF, the Director General of the International Atomic Energy Agency and the Director General of the World Health Organization have affixed their signatures to two authentic texts of the Agreement, the texts in English and French being equally authentic.

For the International Atomic Energy Agency:
(Signed) Sterling Cole
13 July 1959

For the World Health Organization:
(Signed) P. Dorolle
for M. G. Candau
24 July 1959

2. CNSC item re: licence granting

Number of licenses refused by the Canadian Nuclear Safety Commission

*From: M******
Sent: February-27, 2017.
To: Information (CNSC/CCSN)*

Can you please provide me with a list of license refusals or withdrawals that have been issued since the inception of the CNSC?

From: Belzile2, Han-Sen (CNSC/CCSN)
Sent: March 30, 2017.

Subject: List of licence refusals and withdrawals

Hi M******,

Thank you for your patience. Please see below for the response approved by CNSC subject matter experts:

As you may know, the Canadian Nuclear Safety Commission (CNSC) regulates the use of nuclear energy and materials to protect health, safety, security and the environment, and to respect measures of control and international obligations to which Canada has agreed.

The CNSC is therefore responsible for the issuance of a variety of licences to ensure safe uranium mining, nuclear power, nuclear medicine, nuclear research, waste management, export and import, etc.

The Commission (the tribunal component of the CNSC) makes decisions on the licensing of major nuclear facilities and nuclear-related activities. The Commission deals with about 30-40 of the 1700 CNSC licensees, and since the enactment of the Nuclear Safety and Control Act (NSCA) on May 31, 2000, there has not been any licence refusal by the Commission. This does not mean that all applications were accepted as is, but that applicants made the necessary changes and the Commission issued specific conditions prior to a licence being granted.

Most licensing decisions fall within the authority of designated officers (DOs). DOs are CNSC senior staff members who have been designated by the Commission and granted licensing and/or certification authority for all licences other than Class 1 and uranium mines and mills licences.

The following numbers relate to applications to import and export nuclear substances, prescribed equipment and prescribed information under the NSCA, and pursuant to application requirements under the Nuclear Non-

proliferation Import and Export Control Regulations (NNIECR) and under the General Nuclear Safety and Control Regulations (GNSCR). These statistics go back to when the NSCA and relevant Regulations came into force. The numbers thus are those accrued over a 17-year period.

The numbers represent export and import licence application withdrawals and denials, including applications that have been withdrawn formally by applicants after formal submission to the CNSC (at their own volition), and applications for which the CNSC formally has refused to issue a licence following assessment of the application (pursuant to s. 24(4)(b) of the NSCA).

- Import/export application withdrawals: 363
- Import/export licence denials (refusal to issue a licence): 13

Withdrawals of applications by applicants primarily arise due to changes in commercial or business arrangements into which the applicant may have entered. Withdrawals have been made of applications submitted under both the NNIECR and the GNSCR.

Refusals to issue a licence relate to applications made under the NNIECR only. Since 2000, the CNSC has received around 14,000 applications of this type.

A large portion of the licences issued by the CNSC are for the possession and use of nuclear substance and radiation device licences. In 2016, there were four (4) refusals and one refusal to authorize a transfer of nuclear substance and radiation device licences.

Please do not hesitate to contact us should you have any other questions.

Best regards,

Han-Sen Belzile

Canadian Nuclear Safety Commission / Government of Canada
<mailto:Cnsc.information.ccsn@canada.ca> Cnsc.information.ccsn@canada.ca /

Tel: 1-800-668-5284 I 613-995-5894

3. DRL explanation

Derived Release Limits: use of this term

The nuclear industry, whether at the Bruce Power Nuclear Generating Station, the Pickering and/or Darlington Nuclear Generating Stations, or tritium facilities such as (the now-shut-down) SSI (Peterborough), or SRBT in Pembroke, uses the term "Derived Release Limits" to reassure the public that emissions are "low" or "safe" – when in fact the term is essentially meaningless, and proves no such thing.

Two colleagues explain the limitations of the use of this term/concept:

- Dr. Ole Hendrickson (April 2009)
- Anna Tilman (March 2015)

Attached pdfs:

- Hendrickson on SSI DRLs April 2009
- Tilman on DRLS 20015

4. DRL info (Ole Hendrickson)

http://www.ccnr.org/Derived_Release_Limit.pdf

SSI's absurd release limit for tritium enables CNSC to cover up serious accident

By Ole Hendrickson, Ph.D., Concerned Citizens of Renfrew County, April 9, 2012.

When Shield Source Incorporated (SSI) – a Peterborough, Ontario-based manufacturer of tritium lights – applied to the Canadian Nuclear Safety Commission (CNSC) in 2009 for a renewal of its operating license, Dr. Ole Hendrickson of Concerned Citizens of Renfrew County pointed out the absurdity of SSI's "derived release limit" for tritium gas (HT) in the following statement:

"CNSC has currently set the derived release limit for HT from SSI at 3.40E+19 Bq/year (3.4 x 1010 GBq/a). [That's 34 million trillion becquerels per year.] This is **over 200 times higher than the total global natural tritium production rate, and more than ten times the total world steady state natural inventory of tritium.** [emphasis added]

"Each year during the past five years, in theory, SSI could have emitted more than ten times the world's current natural tritium inventory. Had they done so, tritium levels in rainfall, and in every water body in the world, would have risen several hundred-fold, reaching levels exceeding those measured at the peak of nuclear weapons testing in 1963.

"This would have triggered a global health crisis. There would have been a tremendous outcry from scientists, health professionals and civil society around the world.

"This scenario, of course, is impossible. All the reactors in Canada could not produce enough tritium for SSI to do this. The derived release limit is literally absurd.

No responsible regulatory agency would accept such absurd tritium release limits.

But when it comes to tritium – indeed, when it comes to all environmental releases of radionuclides – the CNSC is not a responsible regulatory agency."

The charge that the CNSC is not a responsible regulatory agency was confirmed when the Commission awarded SSI its current 3-year license in July 2009, for the CNSC retained SSI's chosen "Derived Release Limit" in Appendix E of the license.

Why did CNSC act so irresponsibly on tritium "derived release limits" when the problem had been clearly raised during the licensing hearing?

Incorporating absurd release limits in licenses is CNSC's way of covering up and trivializing radiation releases. This was clearly illustrated when SSI had a large accidental release of tritium gas in February 2010. In a document prepared by CNSC staff for SSI's January 2011 mid-term hearing, we read the following:

"On February 1, 2010, SSI released 147.25 Terabecquerels (TBq) of tritium gas into the environment due to an accidental release from the Tritium Fill Machine, which exceeded SSI's weekly action level of 17 Terabecquerels, but is far below the licence release limits of 34 million Terabecquerels per year."

In making this statement, CNSC staff misled Commissioners and greatly understated the severity of SSI's February 2010 accident. They failed to tell Commissioners that Appendix E of SSI's license, in addition to the "derived release limit", also contains a licenced "release limit". Under

condition 4.1 of its license, SSI "shall not exceed" the licenced limit. During the February 2010 accident (which apparently only lasted about five minutes – CNSC has refused to release details) SSI released 30% of its legal yearly licenced limit for tritium gas.

"Derived release limits" are calculated by licensees themselves – not by the CNSC. SSI's derived released limit is absurd, and has no legal effect. So why have two so-called "limits" for radioactive emissions from a Canadian nuclear facility?

The answer is simple. The far higher "derived release limits" serve the CNSC and licensees as a useful communications device: a way to assure the public that radiation releases – whether "routine" or accidental" – are of no concern. For years, Canada's nuclear regulatory agency has used derived release limits in this fashion. Canadian radiation release limits (derived or otherwise) generally greatly exceed those for nuclear facilities of equivalent size in other countries.

Does the CNSC intend to continue its practice of incorporating dual release limits in its licenses – one limit for communications purposes, and another limit for legal purposes?

Unbelievably, the answer appears to be "Yes". A new draft operating license for SSI, prepared by CNSC staff for the Commission's May 2, 2012 public hearing on SSI, still includes "derived release limit", of 34 million trillion Becquerels of tritium per year, unchanged from past licenses.

5. DRL info (Anna Tilman)

B. Derived Release Limits (DRLs)

"DerivedRelease Limits" (DRLs) are the legal upper regulatory bounds set by the CNSC for releases of radioactive substances to the environment.

The DRL represents the quantity of a radionuclide that, if released from the specified facility, would result in a dose to the most exposed member of the public of 1 mSv/yr, i.e., the International Commission on Radiological Protection (ICRP) public dose limit.

The methodology for establishing DRL models is based on the Canadian Standards Association (CSA) standard CSA N288.1-08: *Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities.*

Exceedances of the DRL trigger reporting to the CNSC, followed by a formal investigation and regulatory oversight.84

In reviewing the DRLs for a number of nuclear facilities, including Bruce Power, it is evident that they are highly flawed as regulatory tools. For example:

- DRL models are prepared by the licensee and reviewed by the regulator. Licensees may choose model parameters that underestimate doses and allow much higher emissions than if doses were estimated in a precautionary manner.

- Models are used in preference to monitoring actual emissions as a basis for establishing the limits. Dose estimates for air emissions are based upon assumptions about the behaviour of stack plumes, which are notoriously difficult to model.

- The methodologies for calculating DRLs do not take into account the cumulative effects of doses that occur over a number of years, and ignore the accumulation of radionuclides in the environment and in individuals.

- Estimates of public doses arising from waterborne discharges of radionuclides are based on the dilution capacity of receiving waters, which is calculated using the average rather than the minimum water flow. The minimum water flow would be more appropriate, because of variations in water flow caused by climate change.

- Nuclear licensees and the CNSC often report emissions as percentages of DRLs, in addition to the emissions themselves. This gives the public the false impression that because emissions are well below the regulated limit, they are not significant. This is seriously misleading.

- The DRL-setting process is closed to the public, and does not involve peer review by independent scientific experts. In summary, the current practice of establishing DRLs on the 1 mSv/year regulatory dose limit is inappropriate. This practice results in release limits that are often orders of magnitude greater than the actual releases, which prevents effective and meaningful regulation, and puts the public at risk.

Eugene Bourgeois and Anna Tilman submission
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