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Oral Presentation

Written submission from Safety Probe International

Exposé oral

Mémoire de Safety Probe International

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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BWXT Nuclear Energy Canada Inc.

Application to renew licence for the Toronto and Peterborough Facilities

Oral Submission of

Safety Probe International

March 2-6, 2020

Helmy Ragheb, *PhD, P.Eng.*

Safety Analysis Report (SAR) should be Completed Before Construction and Operation

The *Class I Nuclear Facilities Regulations* (CINFR)

Section 5(f)

Requires that an application to construct a Class I nuclear facility include a preliminary SAR and

Section 6(c)

Requires that an application for a licence to operate include a final SAR. A safety analysis must include an analysis of the postulated sequences and consequences of conditions that could arise from initiating events and associated hazards

Modification is a Separate Stage of Authorization

IAEA Safety of Nuclear Fuel Cycle Facilities No. SSR-4

Section 3.3: (Footnote 8)

"Although the utilization and modification of nuclear fuel cycle facilities are activities that are normally included under operation, in some cases they are considered separate stages in the authorization process, ……

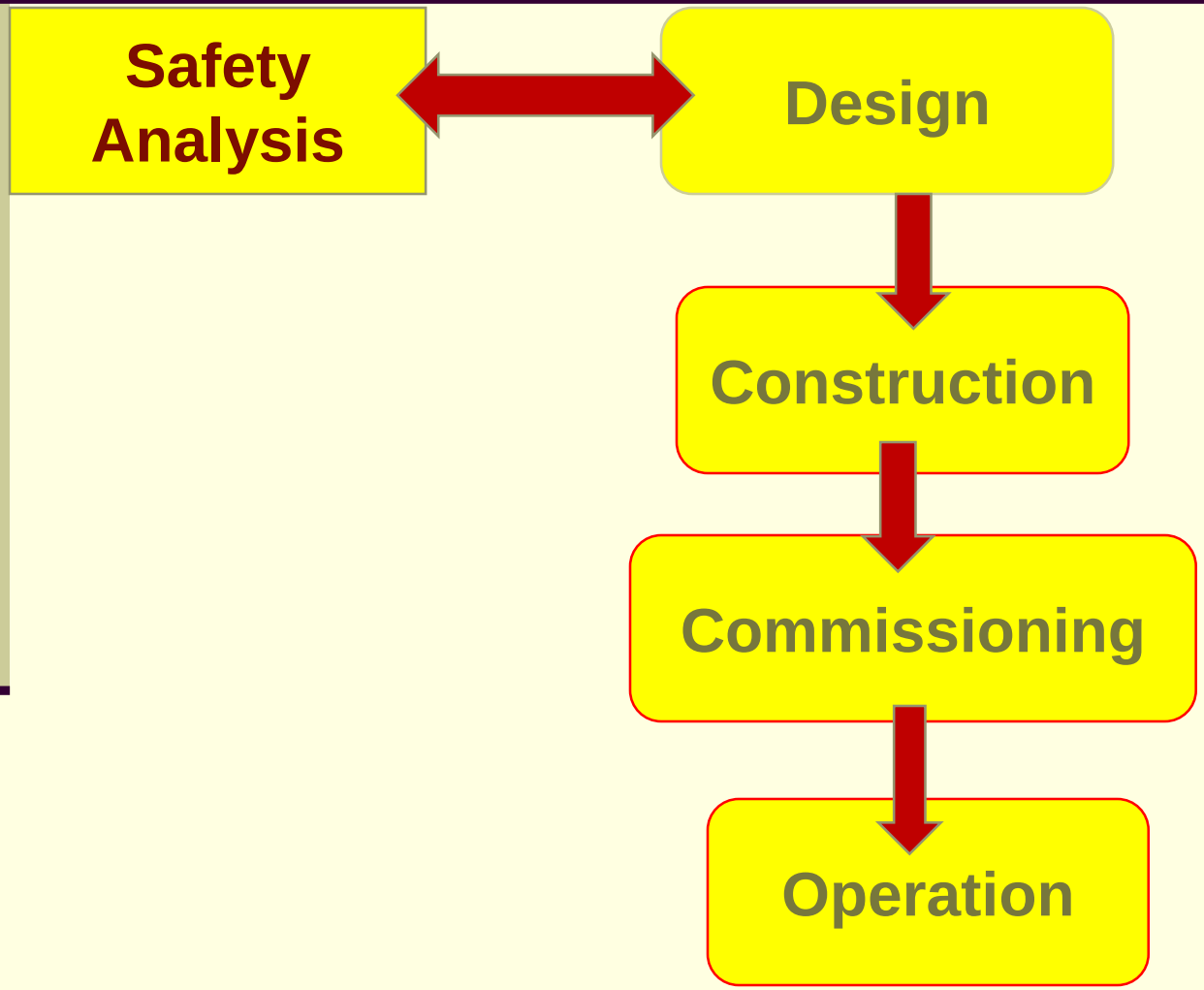
Safety Analysis should be performed during the Design

IAEA Safety of Nuclear Fuel Cycle Facilities No. SSR-4

Section 6.65

“ The safety analysis and the design are **interactive and iterative processes** undertaken to ensure an adequate level of safety”

Safety Analysis and Nuclear Facility Development Phases



Impact of pelleting in Peterborough on:

Plant design, equipment, stacks and emission

Emissions of both uranium and beryllium are controlled at the source by the use of engineering and management controls such as **the design of machines, material handling equipment, and dust collection systems**.

At the **Peterborough** facility, a single uranium process emission point exists which is used to open and empty welded fuel elements.

At the **Toronto** facility, there are six stacks that filter uranium dust and exhaust to the atmosphere due to the fuel pelleting operations.

Impact of pelleting in Peterborough on: **Plant design, equipment, stacks and emission**

At Peterborough facility, uranium emissions are expected to increase from the combined pelleting operations and fuel bundling process being housed at one facility. This increase is expected to be equivalent to emission levels currently seen at the Toronto facility.

CNSC staff recommended Authorization for Pelleting in Peterborough **Without Completed Safety Analysis**

- CNSC staff recommend that the Commission take the following actions:
  - Renew the licence held by BWXT to operate its two facilities for a period of 10 years, with **authorization to conduct pelleting operations** at the Peterborough facility.

Rational for CNSC's Authorization:

Not based on SAR

"BWXT's request for authorization to conduct pelleting operations at the Peterborough facility is acceptable, as:

- The requested activities are within this facility's current operating limits.
- BWXT has the required management system programs and resources in place to implement pelleting operations at the Peterborough facility.
- The hazards associated with the proposed activities are well characterized and controlled, and
- BWXT's operations would remain protective of the public and the environment.

Issue No.1:
No SAR submitted for the new Plant configuration at Peterborough

The BWXT application **does NOT include an SAR** for the proposed newly constructed/ modified facility that merges two different processes (pelleting and fuel bundle manufacturing), creating a new plant configuration.

Rather,

The application included updated SARs for two separate facilities in Toronto and Peterborough.

Issue No. 2

CNSC staff assessment addressed two **existing** facility configurations

NOT the new plant configuration at Peterborough.

"CNSC staff evaluated the information provided in the SARs for **both the Toronto and the Peterborough facilities** and determined that BWXT has adequately assessed the hazards associated with licensed activities and has demonstrated an adequate level of protection over a broad range of operating conditions."

Issue no. 3

CNSC's stack re-evaluation

NOT based on Safety Analysis

"The stack re-evaluation would be reviewed by CNSC staff prior of the conduct of pelleting operations to assure adequate protective measures are in place."

Issue no. 4

CNSC's licence condition 15.2 requires a commissioning report, **not completed SAR first**

- Licence condition 15.2 requires that the licensee shall **submit a commissioning report** related to production of fuel pellets as described in paragraph (iv) of Part IV of this licence,

Issue no. 5
Safety analysis deliverable with the commissioning report not with design

"Deliverables under licence condition 15.2 would include a revised fire hazard analysis, **updated safety analysis**, ……." (page 52 of 60)

Issue no. 6

CNSC Staff appear to support implementation of pelleting at Peterborough Immediately upon Commission approval

3.3.3.3 Proposed Improvements

"If the Commission grants approval for BWXT to conduct pelleting operations at the Peterborough facility, CNSC staff expect BWXT to focus its efforts in ensuring safe operations while implementing new equipment and processes and update procedures related to pelleting operations under a facility specific licence condition 15.2. "

Summary of Issues

1. BWXT did not submit an SAR for the proposed new plant configuration at Peterborough.
2. CNSC staff assessment addressed two separate facility configurations and NOT the new plant configuration at Peterborough.
3. CNSC staff evaluation of stack is NOT based on Safety Analysis specific to plant.
4. The proposed licence condition 15.2 requires a commissioning report and not completed SAR first.
5. Safety Analysis deliverable is required with the commissioning report and not earlier with the design.
6. CNSC Staff appear to support implementation of pelleting at Peterborough Immediately upon Commission approval without first finalizing the Safety Report.

Recommendations of

Safety Probe International

1. Modify the proposed licence condition 5.2 to require the Applicant to submit:
   a. A preliminary Safety Analysis Report (SAR) for the Peterborough plant covering the new configuration that includes the pelleting process. The SAR is to be submitted for approval by the CNSC 90 days before the implementation of any modifications to the existing facility at Peterborough.
   b. A final SAR for approval by the CNSC following the commissioning and prior to the operation of the plant.
2. The CNSC to expedite issuing REGDOC 2.4.4 "*Safety Analysis for Class 1B facilities*.

Background Notes

What is Safety Analysis?

Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

Contents of Safety Analysis Report

IAEA Safety of Nuclear Fuel Cycle Facilities No. SSR-4
Section 3.6 – 3.7

- Any restrictions on inputs to and outputs from the facility
- The application of the safety principles and criteria in the design for the protection of workers, the public and the environment.
- Analysis of the hazards associated with the operation of the facility
- Demonstration of compliance with the regulatory requirements and criteria.
- Analyses of accidents and of the safety features incorporated in the design for preventing accidents or minimizing the likelihood of their occurrence and for mitigating their consequences in accordance with the concept of defence in depth.
- Identification of the safety functions, associated safety limits and items important to safety