The Decommissioning and Abandonment from Regulatory Oversight of Dalhousie University's SLOWPOKE-2 Nuclear Research Reactor – 14170

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ABSTRACT

The Dalhousie University SLOWPOKE-2 (***S***afe ***LOW PO***wer ***K***ritical ***E***xperiment) was a 20 kW thermal sealed-container-in-pool type research reactor. It was located in the Dalhousie University SLOWPOKE-2 reactor (DUSR) facility located in the basement of the Life Sciences Centre of the Department of Chemistry in Halifax, Nova Scotia until 2008 when the university decided to proceed with decommissioning.

This paper examines the Canadian regulatory processes by which decommissioning and abandonment were achieved, and the final result of the project.

INTRODUCTION

In 2008, Dalhousie University (DU) advised the Canadian Nuclear Safety Commission (CNSC) that it intended to proceed with decommissioning the DUSR facility that had operated since 1974 as part of the university's Trace Analysis Research Centre. The end state objective was to obtain a *Licence to Abandon* from the CNSC which, when expired, would release the facility from future regulatory oversight. This licence would allow DU to assume unrestricted future use of the building and the spaces associated with the DUSR.

DU contracted Atomic Energy of Canada Limited (AECL), designer of the SLOWPOKE-2 reactor and the contractor which had maintained and upgraded the reactor over its lifetime, to conduct the preparations for and decommissioning of the complete reactor facility. As a licensee of the CNSC, DU remained responsible for the activities being conducted under the licence, but AECL had responsibility to DU for developing the programs, methods and procedures by which decommissioning would be conducted.

BACKGROUND

SLOWPOKE-2 Reactor

The SLOWPOKE-2 is a small reactor design (Figure 1) based upon a critical assembly immersed in light water, which relies on natural convection for cooling. These reactors are mainly used for neutron activation analysis, but may also be used for teaching, training, irradiation studies, radiography and tracer production. The SLOWPOKE-2 was developed by AECL in the mid-1970's, and between 1976 and 1984, seven SLOWPOKE-2 reactors were commissioned, six in Canada and one in Jamaica [1].

The reactor fuel is highly enriched uranium (93%) contained in uranium-aluminum alloy fuel pins covered with aluminum cladding. The reactor core is an assembly of approximately 300 fuel pins, 22 cm in diameter and 23 cm high, surrounded by a beryllium annulus and a bottom beryllium plate. Criticality is maintained over time by adding additional beryllium in a tray on top of the core and reactor operation is controlled though the use of a gravity fed control rod. For the DUSR, a second beryllium annulus called the extended life annulus was added in 1996 on top of the first one that compensated for the decrease in reactivity due to U-235 burn-up.

The critical assembly is composed of a framework of trays and structures that support the reactor core and control rod, its associated beryllium reflectors, various irradiation tubes and instrument sockets. The reactor design requires that the core be completely surrounded by beryllium to maintain criticality. The upper tray supporting the beryllium is designed with a central tube, which is used to guide the cadmium control rod into the core.

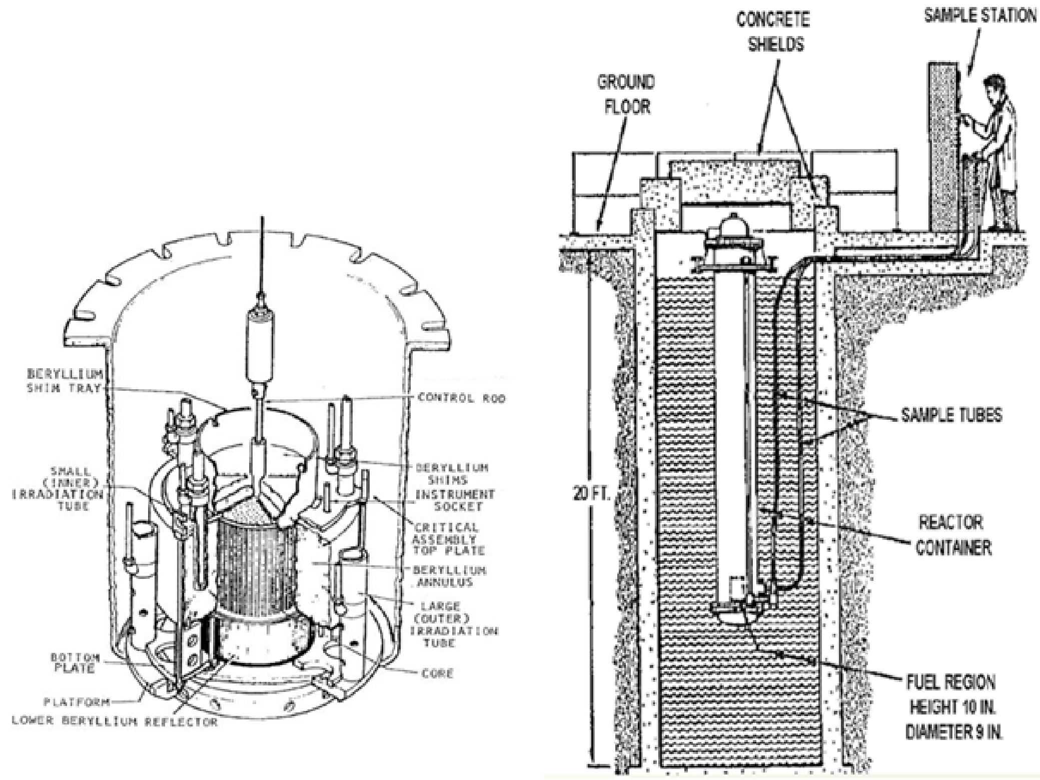

Figure 1: SLOWPOKE-2 Reactor

The critical assembly contains two sockets used for a neutron flux detector and for a coolant outlet temperature thermocouple, and multiple fittings (3 large and 5 small) for sample irradiation tubes. The critical assembly is immersed in light water within the reactor container which provides radiation shielding and acts as moderator, outer reflector and heat transfer medium. The reactor container is constructed in two parts, with the critical assembly being bolted to the lower part. The water within the reactor container is kept separate from pool water and does not mix with it during normal operations. The two-part design enables the core to be removed from the reactor container while remaining underwater. The reactor container is suspended from I-beams placed across the top of the pool and the length of hangers assures that the pool and reactor water levels are maintained at the same height and at 14.5 ft. above the upper surface of the core.

Facility Layout

The DUSR facility (Figure 2), comprising the reactor, and supporting rooms and corridors was located in the Life Sciences Centre, on the DUs' campus in downtown Halifax.

As the facility was located in the basement, not all adjacent areas around the DUSR had been excavated or developed. The areas to the north and east were un-excavated while the areas to the south and west were occupied by the psychology department and contained animal rooms and small laboratories. The area above the facility was occasionally occupied although there were no rooms directly above the reactor room itself. There were two adjoining corridors, one of which provided access to a receiving/shipping area where decommissioning wastes (and the reactor core) could be transferred directly to a shipping dock.

The reactor pool was normally covered with concrete shielding in the form of removable blocks to attenuate radiation should the pool water level drop. To manage the removal of the blocks and reactor components, a 4.5 ton manual crane was located in the reactor room.

Decommissioning Objectives and Constraints

The objective of the decommissioning project was to conduct the work safely and efficiently while minimizing any potential impacts to humans or the environment, and to achieve unrestricted future use of the site. Decommissioning was not to include demolition of any structural features of the building such as walls, rooms or corridors associated with the DUSR, as the university intended to reconfigure the space for other university uses.

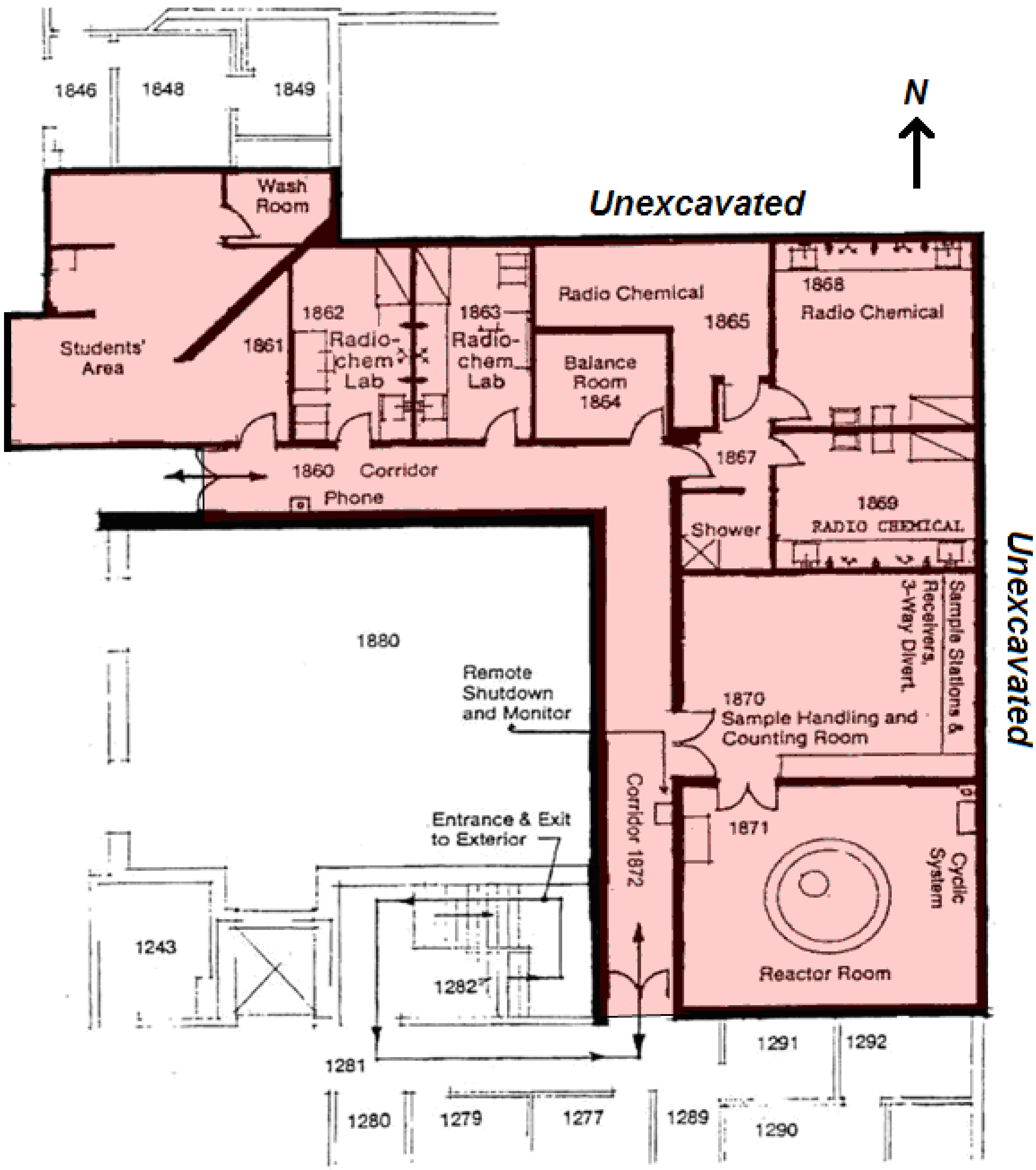

Figure 2: DUSR Facility

The ventilation system and other services (water, air, electrical) were to remain in place as would the structure of the reactor pool, but it would be backfilled with concrete. The manual overhead crane located over the reactor pool would remain in service and be available for any other use.

Major activities were to include:

- preparation of the rooms in the building where the reactor was located, by removal of all items not required for the defueling and decommissioning process;
- preliminary surveys to identify areas with potential radioactive contamination;
- defueling the reactor and disposal of fuel;
- dismantling reactor components and identifying radioactive, contaminated, hazardous or clean components;
- packaging and transporting all radioactive components;
- disposal of other radioactive and non-radioactive waste;
- decontamination of the site; and
- backfilling the pool with concrete

The project would be finalized by completing confirmatory radiation surveys, developing an end state report and requesting and achieving release from regulatory oversight.

Various criteria were identified for both hazardous and radiological releases from the project. They included criteria for the release of pool water, criteria for airborne releases and criteria for release of materials to conventional waste streams. Sampling of the reactor pool concrete and reinforcing steel was performed to a depth of approximately 15 cm in the walls and floor and in one location on the floor directly beneath the reactor, a sample was taken to a depth of 23 cm.

To the extent possible, conventional uncontaminated wastes (such as the biological shielding concrete blocks, and other equipment and systems) were sent to appropriate local conventional waste management facilities. Being highly enriched uranium, the reactor core itself was sent to the U.S. Department of Energy's Savannah River National Laboratory while other radioactive wastes were sent to AECLs' Chalk River Laboratories in the upper Ottawa valley.

Complicating the project were building-wide renovations being conducted to upgrade key electrical and ventilation services. Consequently, significant coordination was required between the university project management team, its utility contractors, the university decommissioning project team, the decommissioning contractor and the CNSC to assure that there was no conflict during the conduct of all projects.

The project was also on a strict timeline, as the decommissioning activities and the shipment of radioactive wastes was intended to be completed during the summer, prior to the return of the student body in September.

Operational History

Criticality of the DU reactor was achieved on July 8, 1976, and it was placed in to regular service one week later. Over its operating life, the DUSR accumulated nearly 40,000 hours of operation, with an average of more than 1,000 hours per year. No significant incidents or accidents occurred that impacted its decommissioning, and no contamination events affecting the floor, walls or working surfaces took place in any of the areas or rooms of the DUSR facility. At the time of decommissioning, total power output exceeded 313,000 kWh.

When DU advised the CNSC that they intended to proceed with the decommissioning of the reactor, the facility was taken out of service. However, as a licence requirement, DU was required to test the reactor's operating and shutdown systems on low power (10%) for 15-30 minutes weekly. This continued until the reactor was finally dismantled. Decommissioning of the DUSR began January 2011, approximately 35 years after the reactor went critical.

CNSC REGULATORY FRAMEWORK

In Canada, the CNSC regulates the use of nuclear energy and materials to protect the health, safety and security of Canadians and the environment; and to implement Canada's international commitments on the peaceful use of nuclear energy. The organization is composed of an administrative Commission tribunal consisting of up to seven appointed permanent members, and approximately 840 staff that are set up at arm's length from government, with no ties to the nuclear industry.

Decisions are made transparently, usually in the forum of a public hearing often held in communities that host nuclear facilities, and the CNSC transmits its hearings live on the internet via webcast. Decisions, hearing transcripts, webcast archives, and other information is publicly available on the CNSC web site.

CNSC staff support the Commission and its activities by:

- implementing Commission decisions
- verifying compliance with licences and regulations
- reviewing licence applications
- developing regulatory guidance
- advising the Commission on regulatory policy and options
- engaging the public and aboriginal groups through outreach,
- implementing measures and international obligations to which Canada has agreed

Figure 3 illustrates the regulatory framework that supports Commission activities. It consists of laws passed by Parliament that govern the regulation of Canada's nuclear industry, and regulations, licences and documents that the CNSC uses to regulate the industry. Documents fall into two broad categories: those that define requirements and those that provide guidance. The foundation of the regulatory framework is the *Nuclear Safety and Control Act (NSCA)*. It empowers the CNSC to make regulations and to develop regulatory tools to establish requirements for, and provide guidance about the use of nuclear energy and materials.

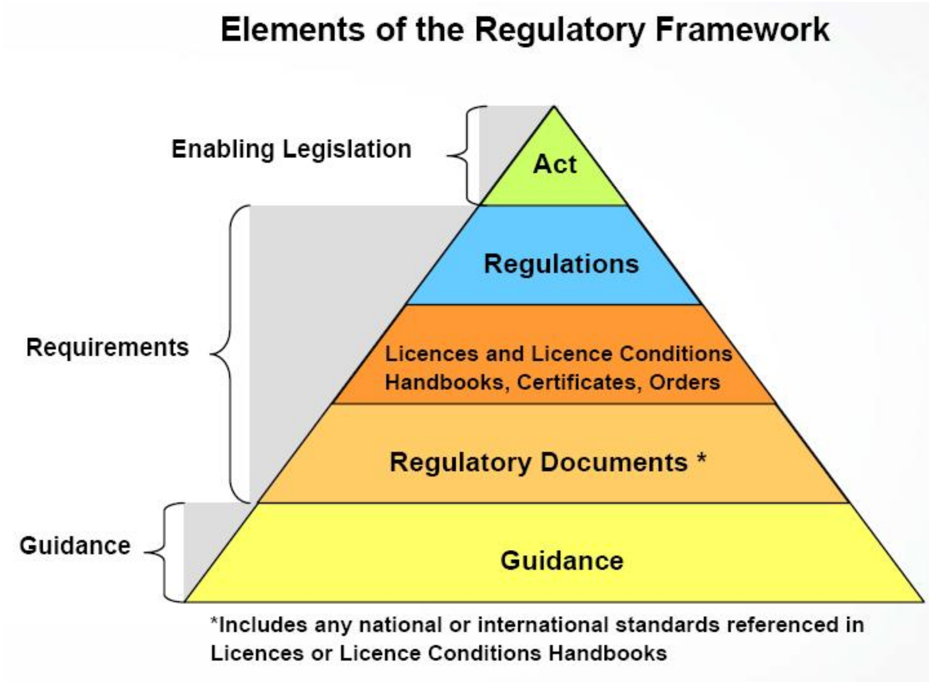

Figure 3: CNSC Regulatory Framework

The *Nuclear Safety and Control Act*

The *NSCA* established the CNSC and sets out its mandate, responsibilities and powers. This legislation provides the CNSC with the authority to regulate the development, production and use of nuclear energy and the production, possession and use of nuclear substances, prescribed equipment and prescribed information in Canada.

Under the *NSCA*, the Commission implements regulations and by-laws. Regulations set out information requirements for licence applications and sets out licensee obligations. By-laws govern management and conduct of the Commission's affairs. The current suite of regulations includes the:

- Class I Nuclear Facilities Regulations;
- Class II Nuclear Facilities and Prescribed Equipment Regulations;
- General Nuclear Safety and Control Regulations;
- Nuclear Non-Proliferation Import and Export Control Regulations;
- Nuclear Security Regulations;
- Nuclear Substances and Radiation Devices Regulations;
- Packaging and Transport of Nuclear Substances Regulations;
- Radiation Protection Regulations;
- Uranium Mines and Mills Regulations;
- Administrative Monetary Penalties Regulations;
- CNSC By-Laws;

- CNSC Cost Recovery Fees Regulations, and;
- CNSC Rules of Procedure.

Other Federal Legislation

Other legislation may apply to facilities regulated by the CNSC, and to the operations of the CNSC itself, including: *Canadian Environmental Protection Act, Fisheries Act, Nuclear Fuel Waste Act, Nuclear Liability Act, Transportation of Dangerous Goods Act and* the *Canadian Environmental Assessment Act*, among others.

The *Canadian Environmental Assessment Act (CEAA)* ensures that government projects, or projects that may be approved by the government, are safe for the environment. Environmental assessments (EAs) are used to predict the environmental effects of proposed projects before they are carried out and they also provide opportunities for public participation during the assessment process.

CNSC Licensing Process

The licensing process for nuclear activities in Canada is very much dependent upon the kind of activity being proposed. More complex operations usually have higher risks and for these types, licences can only be issued by the Commission tribunal.

Class I nuclear facilities (including uranium mines and mills) must abide by more complex licence application requirements that are defined by regulation. These types of facilities are typically complex, are associated with greater operational risk, gain more public interest and consequently licensing decisions are taken in the forum of a 1 or 2 day public hearing often within the community where the activity will be conducted.

Class I facilities, such as the DUSR are subject to life-cycle phases of licensing. This means that a nuclear facility is regulated during its entire lifecycle, from site preparation to construction, from operation to decommissioning and abandonment. Each phase requires a separate licence, and for each step, potential environmental impacts have to be assessed in compliance with the *CEAA*.

Consideration of a licence application can only proceed if the EA concludes that the potential environmental impacts from the project are not significant, taking into account any additional mitigation measures that may be required. As shown in Figure 4, separate licences are required to prepare, site, construct, operate, decommission and abandon a nuclear facility.

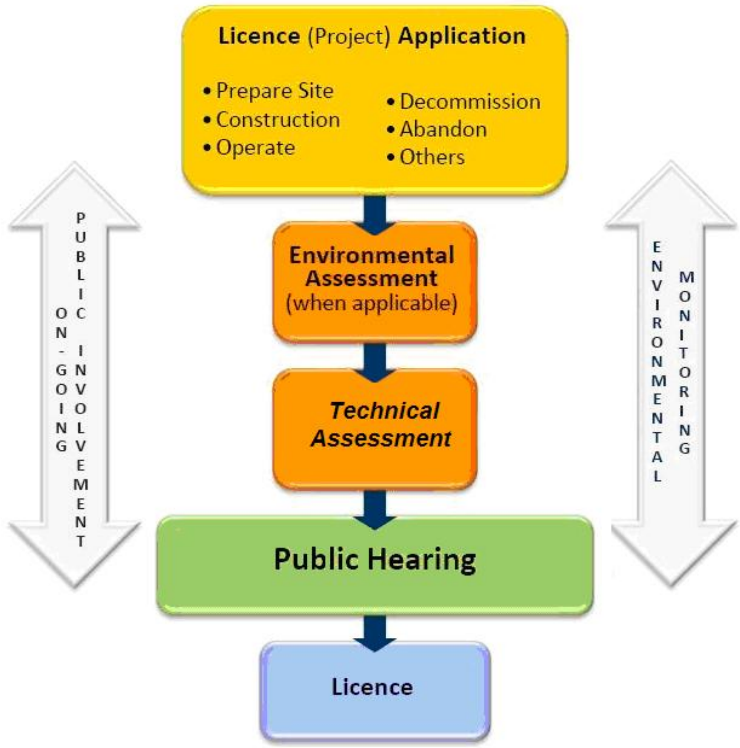

Figure 4: CNSC Licensing Process

Environmental effects must be considered for each stage of licensing, and each stage follows the same general process: project assessment, EA (if applicable), licence application, technical assessment, public hearing, licence issuance and compliance monitoring.

Only the Commission tribunal has authority under the *NSCA* to issue licences. However, under section 37 of the *NSCA*, the Commission may delegate its authority to a designated officer for issuance of lower risk licences, such as a licence for possession of a nuclear gauge or for activities associated with the use of nuclear substances in a laboratory. The president of the Commission may also establish a panel, consisting of one or more members to exercise or perform any or all of the powers, duties and functions of the Commission. This approach is typically used when the proposed decision is considered to be low risk and has low public interest. Panel hearings may or may not be conducted in the forum of a public hearing.

Technical Assessment

A major consideration for CNSC staff when developing recommendations on the qualification of a licence applicant is the technical assessment. CNSC staff considers all relevant criteria for the assessment; including criteria set out by the *NSCA*, the regulations, CNSC regulatory documents and guidance, international and domestic standards, international obligations and industry best practices. At the end of this process, CNSC staff makes a recommendation on the licence application in the form of a Commission member document.

The assessment process is lengthy and iterative as CNSC staff provides guidance to the applicant throughout the process. If licensee submissions are not meeting CNSC expectations, the applicant is informed resulting in program rewrites and revisions. CNSC staff must be confident that the licence application is complete and acceptable before they put the matter to the Commission for decision. The negative aspect of this process is the perception by observers that CNSC staff always agree with nuclear companies in relation to their licence applications.

By matter of process CNSC staff must resolve any disagreements with the applicants submissions prior to making licensing recommendations to the Commission. Only in very unique cases where the applicant is not receptive in addressing CNSC comments and where the disagreement is substantial, will licensing recommendations be forwarded to the Commission for decision, although they do occur.

When evaluating applicant submissions or licensee performance indicators, CNSC staff evaluates them within a set of 14 safety and control areas (SCAs) as follows:

- Management System
- Operating Performance
- Physical Design
- Radiation Protection
- Environmental Protection
- Waste Management
- Safeguards and Non-Proliferation
- Human Performance Management
- Safety Analysis
- Fitness for Service
- Conventional Health and Safety
- Emergency Management & Fire Protection
- Security
- Packaging and Transport.

SCAs have only been recently adopted by the CNSC, and are now addressed in all licensing recommendations and performance reports that are provided to the Commission. This assures that all relevant factors have been considered, and assures that all licensees and applicants are treated equally.

Compliance

Compliance assessment begins with the issuance of a licence and ends when the licence is no longer in effect. As part of the CNSC‘s compliance monitoring programs, physical inspections are conducted throughout a facilities lifecycle. The number of inspections conducted is directly related to the risk and complexity of the facility, and performance of the licensee.

Compliance inspections consist of collecting evidence that the licensed activities are being conducted in compliance with the regulatory framework applicable to that licence. CNSC inspectors conduct radiation and contamination surveys for fixed and non-fixed contamination, take evidence in the form of swipes for removable contamination, examine records, interview staff, inspect signage and take any other measurements or samples that the inspector feels is required to make an assessment of the licensed activities. CNSC inspector authority is designated by the *NSCA* and inspectors have the authority of search and seizure and may place any order that the inspector feels is justified to assure the health and safety of persons and the environment.

DUSR REGULATORY MILESTONES

Under the *NSCA*, the DUSR is a Class IA nuclear facility[1]. Consequently licence application requirements are found in Section 3 of the *General Nuclear Safety and Control Regulations* and Sections 3 and 7 of the *Class I Nuclear Facilities Regulations*.

In addition, lifecycle licensing phases apply to the DUSR and both a decommissioning licence and an abandonment licence must be applied for, and issued prior to releasing the facility from regulatory oversight. The main licensing milestones for the DUSR project are described below.

Project Description

November 2004: The CNSC received notice from DU of its intent to de-fuel and decommission the DUSR facility. At that time, the university had provided a brief outline of the project to initiate the environmental assessment process. When it was determined that defueling the reactor would be an activity authorized under the decommissioning licence, the university requested that the EA process be put temporarily on hold in order for it to assess the implications of this activity on the project.

July 2008: The university notified the CNSC of its intention to proceed with decommissioning allowing the CNSC to complete an EA determination.

An EA determination is required to determine if *CEAA* is to be applied to the project and if so, what specific *CEAA* track it should take. It concluded that *CEAA* did apply, that an environmental assessment was required and that the appropriate track would be a screening level study. This information would be confirmed by the Commission to confirm the guidelines used to develop the environmental impact statement that would form that basis of the screening report.

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[1] A nuclear fission or fusion reactor, a subcritical nuclear assembly or a vehicle that is equipped with a nuclear reactor.

EA Guidelines

March 2009: The Commission conducted a public hearing to approve the environmental assessment guidelines for the project and to delegate the completion of technical studies to the applicant [2]. It confirmed the factors to be considered when assessing potential environmental impacts from the project. An environmental impact statement (EIS) [3] was developed for the project by the applicant, and it was submitted to the CNSC in early 2010. The Commission also decided [2] during this hearing that it would consider the proposed EA Screening Report in the context of a closed session (panel) of the Commission at a future date.

EA Screening Report

CNSC staff assessed the EIS and developed a draft EA screening report for consideration by the Commission.

January 20, 2011: The Commission decided [4] that the project was not likely to result in significant adverse environmental effects given proposed mitigation measures. This allowed the Commission, in a panel, to proceed to making a decision on the application for a licence to decommission.

Application for a Decommissioning Licence

The submission of a licence application is required for all licensing phases. It demonstrates that the applicant is qualified to conduct the work and has the programs and safety measures in place to adequately protect workers, the public and the environment. Application requirements have to be met and assessed before CNSC staff can make any recommendations on licensing to the Commission.

March 2010: A partial licence application was received from DU, well in advance of the January 2011 hearing to determine the acceptability of the EA screening report. Although no decision on the EA has been made, CNSC staff can still proceed with assessing the licence application, but the Commission cannot proceed with licensing until the EA decision has been made.

There are substantive program requirements associated with an application for a Class I licence. Each program must be assessed for adequacy, and in many cases further revisions are required before CNSC staff is satisfied that the application is complete. In this case, the initial licence application was submitted in March 2010, but the review and revision process continued until February 2011. In support of the application, DU submitted 26 different programs, plans or procedures for CNSC review and acceptance.

Application for a Transport Licence

In parallel with the submission of an application for a decommissioning licence, an application for a transport licence was also required. This type of licence is specific to the transport of the reactor core. Submission requirements included a transportation plan and a transportation security plan.

October 2010: The application for a Transport Licence was submitted.

December 2010: the transportation security plan is submitted. As the reactor core is subject to the *Nuclear Security Regulations*, transport is considered to be prescribed information, and the security and transport plan is not publically available.

Decommissioning Licence Hearing

January 2011: The licensing hearing was conducted by a panel of one after a decision had been made on the environmental assessment. CNSC staff and DU made submissions and CNSC staff submitted a proposed draft licence and an associated Licence Conditions Handbook (LCH) for the project.

The decommissioning licence was the first to utilize a LCH for a nuclear decommissioning project in Canada. It was also unique in that it had to authorize reactor operations in addition to decommissioning activities. The procedure for dismantling a SLOWPOKE-2 requires that it be conducted while being operated on low-power. Consequently, the licence had to authorize both decommissioning and reactor operations at the same time. It also had to allow the reactor to be operated on low-power to confirm operability of the shutdown systems prior to dismantlement.

Associated with the licence was the LCH, which was one of the first LCH's issued. The LCH is a document that is used in concert with the licence, to guide licensees and staff on compliance verification criteria. The LCH also provides information regarding delegation of authority and current versions of documents.

January 20, 2011: Non-Power Reactor Decommissioning Licence NPRDL-W4-2010-1.00/2015 and its accompanying LCH was issued [5][6] by the Commission that would remain in force until December 31, 2015, allowing decommissioning to proceed.

January 2011 to April 2011: Decommissioning of the DUSR facility occurred. Several inspections were also conducted by CNSC staff during this period.

Abandonment Licence Hearing

June 22, 2011: DU notified the CNSC that decommissioning of the DUSR was complete and submitted an application for a Licence to Abandon along with the end-state project

summary report.
August 26, 2011: A public hearing was held on the DUSR application for a licence to Abandon, during which the Commission considered written submissions from CNSC staff and DU. The Commission issued [7] Licence to Abandon NPRAL-W4-2011-1.00/2011 and revoked the DUSR decommissioning licence. The licence was valid for 30 days from August 31, 2011 to September 30, 2011 at which time it expired.

DUSR PROJECT ISSUES

While it is unlikely that any decommissioning project (nuclear or conventional) would proceed without unexpected situations or occurrences, the programs and requirements associated with the issuance of a licence assure that even unexpected events can be addressed safely and expeditiously. Challenges on the DUSR project were as follows:

Degraded Pool Liner

In preparation for decommissioning, it was observed that there was significant debris and sediment on the pool bottom. It was determined that the origin of the sediment was a brushed-on lining that was applied over the concrete when constructed. Over the years the pool lining partially sloughed off and pieces collected on the pool bottom. Unlike a swimming pool liner, this coating had no formal role in water retention. Attempts to vacuum the debris from the bottom caused sediments to go into suspension, overloading the water purification system. This caused a several month delay as filtration equipment had to be acquired to clean the pool water before ion exchange methods could be employed to purify the water to prepare it for testing and release. During that time testing of the safety shutdown system had to be suspended, as water quality did not meet the standard for reactor operations.

Transport of Reactor Core

The Department of Energy (DOE) which operates the Savannah River site where the core was to be taken, advised AECL that a maintenance outage was being planned for the period when the reactor core was initially planned to be transferred. While in this outage, the core could not be received at Savannah River.

Consequently, a new approach was required in order to allow transport of the core from the university when originally planned, but to take it temporary, secure storage until it could be received at Savannah River. Consequently, the plan was revised allowing the core to be taken to AECL’s Chalk River Laboratories in Ontario. Once the DOE site was available again, the core was successfully and uneventfully transferred to and received at that facility.

Partial Extraction of Control Rod

In late January 2011, the reactor control rod was partially and inadvertently extracted during removal of the beryllium reflectors. The event was noted immediately by a technician and a power increase was observed by the reactor engineer. The auxiliary shutdown system was activated and the reactor was shutdown limiting the excursion to less than 15% of full power. There was no increase in radiation dose rate in the reactor room, but removing the dislodged shims required several personnel to spent an additional two hours removing the dislodged shims, resulting in an additional radiation dose of 12 μSv. All decommissioning staff were Nuclear Energy Workers so the additional dose received was trivial in comparison to the annual regulatory limit of 50 mSv.

The root cause of the event was attributed to surface tension causing two overlying beryllium shims to cling together, overwhelming the ability of a suction handling tool. The suction broke causing the shims to fall back down jamming the control rod after being partially extracted from the reactor head. When the shims were removed the jammed control rod also pulled up, initiating the event.

DUSR PROJECT SUMMARY

The DUSR project took several years of planning and execution. The total volume of radioactive waste (excluding fuel) packaged during decommissioning was 7.7 m^3, well less than the 18.2 m^3 volume predicted in the waste management plan. Volume reduction was achieved by careful loading of waste into the type A transport containers, and by releasing many items that had been previously assumed contaminated. Waste was also reduced by transferring components associated with the control console, the radiation monitoring system, the capsule transfer system, the cyclic activation system and the pool water treatment system to other operating SLOWPOKE facilities.

Radiation Doses

Worker radiation doses were assessed during all phases of the decommissioning work and met the expectations for the project. The highest individual dose received during the decommissioning was 0.93 mSv, less than half of the action level (2 mSv) established for the project and only 2% of the 50 mSv annual dose limit for nuclear energy workers.

Other Emissions

In relation to other emissions, air from within the reactor facility was directed through a dedicated exhaust system to HEPA filters prior to discharge. Air conditions were continuously monitored using a Canberra I-CAM and it never alarmed due to airborne activity, (although it did alarm once due to a clogged filter). Only very low activities were detected although it was observed that once the water was drained from the pool that radon gas concentrations slightly increased.

The major release from the project was the discharge of the reactor pool water to the municipal sewer system. Approximately 21,000 litres of water were discharged after it had been treated and tested to confirm it met release criteria. Water samples were collected from two depths, 0.5 m below the surface and 0.5 m above the bottom of the pool. All water samples were analyzed by a certified laboratory for radionuclides and for hazardous substances. At discharge, all samples were well below criteria specified for the project.

Soil and vegetation samples were also collected adjacent to the facility both before and after decommissioning took place. Post-decommissioning samples confirmed that there was no impact from the decommissioning, and radioactivity within these samples did not exceed normal background levels.

Public Information

There were significant efforts made by the university to inform the public of the project. The public information program targeted faculty, students, the aboriginal community, the local community and external interest groups. Beginning October 2009, the university conducted a series of public outreach meetings with CNSC staff participating in one in August 2010. The event was broadly advertised to the community and on the university website. Three members of the public attended and no issues or concerns were raised.

Additionally, notices of public hearing were published on the CNSC web site for all of the hearings associated with the project. There were no questions received by the CNSC in relation to these postings.

In February 2011, the university gave a project update to the media (local radio and television) including a televised interview with the university director of environmental health and safety. CNSC staff received no follow-up enquiries from the public following this activity.

CONCLUSIONS

Decommissioning of the DUSR was completed safely and in compliance with the CNSC's regulatory framework and processes. Final surveys, confirmed by CNSC staff, demonstrated that radiological conditions following decommissioning were commensurate with normal background radiation and that concentrations of any residual contamination were below regulatory clearance levels.

The end state object of the project was met with the expiry of the abandonment licence on September 30, 2011. The previous location of the DUSR has been successfully reconfigured for other university uses.

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