



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant

SRB Technologies (Canada) Inc.

Subject

Application to Renew the Class IB Nuclear
Substance Processing Facility-Operating
Licence for the Gaseous Tritium Light Source
Facility in Pembroke, Ontario

Public Hearing
Date

May 14, 2015

RECORD OF PROCEEDINGS

Applicant: SRB Technologies (Canada) Inc.

Address/Location: 320-140 Boundary Road, Pembroke, Ontario K8A 6W5

Purpose: Application to renew the Class IB Nuclear Substance Processing Facility Operating Licence for the gaseous tritium light source facility in Pembroke, Ontario

Application received: September 8, 2014

Date of public hearing: May 14, 2015

Location: Best Western Pembroke Inn, 1 International Drive, Pembroke, Ontario.

Members present: M. Binder, Chair
R. Velshi A. Harvey
S. McEwan D. D. Tolgyesi

Secretary: M.A. Leblanc
Recording Secretary: S. Dimitrijevic
Senior General Counsel: L. Thiele

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Intervenors	Document Number
See Appendix A	

Licence: Renewed

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1.0 INTRODUCTION

1. SRB Technologies (Canada) Inc. (SRB) has applied to the Canadian Nuclear Safety Commission¹ for the renewal of the Class 1B Nuclear Substance Processing Facility Operating Licence for its facility located in Pembroke, Ontario. The current operating licence, NSPFOL-13.00/2015, expires on June 30, 2015.
2. SRB operates a gaseous tritium light source manufacturing facility. The facility processes tritium gas to produce light sources and manufactures radiation devices for containing the sources. Both the sources and the radiation devices are distributed in Canada and internationally. SRB has been in operation since 1990 and currently employs 43 people. SRB's facility occupies leased space in an industrial building, and includes a fenced area behind the building that encloses the ventilation stacks. The area surrounding SRB is primarily used for industrial and commercial purposes. The closest residences are located in a small residential area approximately 250 metres from the facility.
3. In 2006, information on tritium releases from SRB and groundwater contamination around the facility led CNSC staff to conclude that the operation of the SRB facility had resulted in an unreasonable risk to the environment. Subsequently, the Commission issued SRB a Nuclear Substance Processing Facility Possession Licence that did not allow tritium processing activities.² After making a number of improvements to its facility and programs, SRB applied for an operating licence in December 2007 and was issued a two-year licence following a two-part public hearing on April 3 and June 12, 2008.³ In 2010, SRB applied for a licence renewal and, after a two-part public hearing on February 17 and May 19, 2010, the Commission issued a five-year operating licence.⁴ With this licence, the Commission directed SRB to continue its practice of not processing tritium during precipitation, in order to keep releases ALARA (as low as reasonably achievable). This directive was reflected in SRB's Licence Conditions Handbook (LCH), as a matter against which CNSC staff would verify SRB's compliance.
4. SRB has requested a licence renewal for a period of ten years. After reviewing SRB's application and documents submitted in support of the application, and after evaluating SRB's safety performance during the current licence period, CNSC staff supported SRB's request.

¹ The *Canadian Nuclear Safety Commission* is referred to as the "CNSC" when referring to the organization and its staff in general, and as the "Commission" when referring to the tribunal component.

² Record of Proceedings on *Application for the Renewal of Class 1B Operating Licence for the Gaseous Tritium Light Source Facility in Pembroke, Ontario*, November 27, 2006.

³ Record of Proceedings on *Application to Resume the Processing and Use of Tritium at the Gaseous Tritium Light Source Facility in Pembroke, Ontario*, June 12, 2008.

⁴ Record of Proceedings on *Application for the Renewal of Class 1B Operating Licence for the Gaseous Tritium Light Source Facility in Pembroke, Ontario*, May 19, 2010.

Issue

5. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*⁵ (NSCA):
 - a) if SRB is qualified to carry on the activity that the licence would authorize; and
 - b) if, in carrying on that activity, SRB would make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Public Hearing

6. The Commission, in making its decision, considered information presented for a public hearing held on May 14, 2015 in Pembroke, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*.⁶ During the public hearing, the Commission considered written submissions and heard oral presentations from CNSC staff (CMD 15-H5 and 15-H5.A) and SRB (CMD 15-H5.1, CMD 15-H5.1A and CMD 15-H5.1B). The Commission also considered oral and written submissions from 45 intervenors (see Appendix A for a detailed list of interventions). The hearing was webcasted live via the CNSC website, and video archives are available for a three-month period following the hearing.

2.0 DECISION

7. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*, the Commission concludes that SRB is qualified to carry on the activity that the licence will authorize. The Commission is of the opinion that SRB, in carrying on that activity, will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed. Therefore,

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the Nuclear Substance Processing Facility Operating Licence issued to SRB Technologies (Canada) Inc. for its gaseous tritium light source manufacturing facility located in Pembroke, Ontario. The renewed licence, NSPFOL-13.00/2022, is valid from July 1, 2015 until June 30, 2022.

8. The Commission includes in the licence the conditions as recommended by CNSC staff

⁵ Statutes of Canada (S.C.) 1997, chapter (c.) 9.

⁶ Statutory Orders and Regulations (SOR)/2000-211.

in CMD 15-H5, with the following change:

“Licence condition 12.2 is changed to: the licensee shall implement and maintain a decommissioning strategy.”

9. The Commission accepts the revised financial guarantee as set out in section 1.3 of the draft LCH and proposed in CMD 15-H5.
10. With this decision, the Commission directs CNSC staff to provide annual reports on the performance of the SRB facility, as part of the Directorate of Nuclear Cycle and Facilities Regulation Annual Regulatory Oversight Report on Nuclear Substance Processing Facilities in Canada. CNSC staff shall present these reports at public proceedings of the Commission, where the public will be provided an opportunity to be heard.

3.0 ISSUES AND COMMISSION FINDINGS

11. In making its licensing decision, the Commission considered a number of issues relating to SRB’s qualification to carry out the proposed activities and the adequacy of the proposed measures for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.

3.1 Management System

12. The Commission examined SRB’s Management System which covers the framework that establishes the processes and programs required to ensure that the licensee achieves its safety objectives and continuously monitors its performance against these objectives, and fosters a healthy safety culture. The specific areas that comprise this safety and control area (SCA) for SRB are management system, organization and performance assessment, improvement and management review. CNSC staff rated SRB’s performance for this SCA as satisfactory.

3.1.1 Quality Management

13. SRB presented to the Commission its management system and quality assurance program. The presentation included details about SRB’s management system documentation structure, management system improvements and the company’s management system transition to CSA N286-12 standard *Management System Requirements for Nuclear Facilities*. SRB representatives noted that the changes made to SRB’s management system included improvements related to radioactive waste management practices, fire protection, emergency preparedness, personnel training, maintenance program, public information program, and implementation of CSA standards.

14. CNSC staff informed the Commission that SRB has an acceptable quality assurance program that complies with CNSC requirements outlined in the LCH. CNSC staff stated that they had verified the implementation of SRB's program through routine compliance inspections and one focused management system inspection conducted in 2012. The routine compliance inspections covered quality assurance elements, such as organization, maintenance, calibration, and records. Based on these inspections, CNSC staff concluded that SRB has improved its programs and their implementation.
15. CNSC staff reported that, in 2014, it had adopted a new revision of the CSA N286-12 standard, *Management system requirements for nuclear facilities*, as compliance verification criteria for management systems. CNSC staff confirmed that SRB had carried out a review of its program documentation and processes against the new requirements of this CSA standard revision and developed a comprehensive project plan to meet the new version of the standard by December 31, 2016. CNSC staff reviewed the submitted transition plan and found it acceptable.

3.1.2 Organization

16. SRB presented to the Commission the company's organizational chart that represents the current structure at the company and informed the Commission that, during the current licence period, SRB had increased its staff from 15 to 43 employees to meet production demands. SRB informed the Commission about additional organizational changes that were made to further ensure the protection of the public, the workers and the environment. The SRB representative noted that several new positions have been added to the organization including the Import and Export Manager, Project Engineer, Compliance Manager, Manager of Health Physics and Regulatory Affairs and Production Control Manager. SRB also informed the Commission about the activities of the following committees that have been formed to develop and refine the company's programs and procedures:
 - Health Physics Committee;
 - Workplace Health and Safety Committee;
 - Executive Committee;
 - Fire Protection Committee;
 - Mitigation Committee;
 - Public Information Committee;
 - Waste Management Committee;
 - Production Committee; and
 - Training Committee.
17. CNSC staff confirmed that SRB had increased its staff to 43 employees and that the modifications to the organizational structure and the roles and responsibilities of the new positions are documented in SRB's *Quality Manual*.

18. The Commission noted that SRB had expanded during the current licence period and had to introduce a number of changes, and asked SRB to characterize the stage of maturity of their current management system. The SRB representative stated that approximately half of SRB's programs have undergone significant changes in the last few years, mainly as a result of the new regulatory standards, the CSA standards, and new regulatory documents that have been issued, while the other half are mature and have been implemented for a long time. SRB representatives added that they had been approaching the changes in their management system in a systematic manner and that they have an implementation plan accepted by CNSC staff to close all of the gaps between their current management system and the new standard by the end of 2016. CNSC staff stated that SRB has been transitioning to new CSA standards and had introduced changes in a manner and with a rate that is appropriate to a company of its size.
19. The Commission asked about the relatively late creation of the Manager of Health Physics and Regulatory Affairs position, given the challenges that SRB had during earlier licence periods. The SRB representative responded that, in the past, these duties had been shared by members of SRB management; however, as the company grew, it was not possible to continue in the same way and a new position, entirely dedicated to these duties, had to be created.

3.1.3 Performance Assessment, Improvement and Management Review

20. SRB informed the Commission about self-assessments, numerous audits, including ISO 9001 registrar audits, and multiple CNSC inspections conducted to assess and verify compliance with the NSCA, CNSC regulations and the operating licence conditions.
21. CNSC staff stated that SRB continued to review the effectiveness of its quality assurance program and safety programs and conducts self-assessments to critically evaluate its performance and to identify opportunities for improvement. CNSC staff confirmed that, based on its assessments and inspections, SRB's performance with respect to management reviews, assessments and continuous improvement is satisfactory.
22. The Commission noted that the performance of SRB had been assessed by OPG, which conducted three audits, and asked about the scope of these audits and whether they overlapped with CNSC assessments. The SRB representative responded that the OPG audits covered items that are assessed by CNSC staff, but from a different perspective. Areas, such as inventory control records; storage; use and handling of the isotopes; training activities; physical security measures at the facility; staff monitoring procedures, and instrument calibration and tritium accounting, as well as SRB's operating licence, to ensure that SRB had a valid operating licence to possess and process tritium.

3.1.4 Conclusion on Management System

23. Based on its consideration of the presented information, the Commission concludes that SRB has appropriate organization and management structures in place and that the operating performance at the facility provides a positive indication of SRB's ability to adequately carry out the activities under the proposed licence.

3.2 Human Performance Management

24. Human performance management encompasses activities that enable effective human performance through the development and implementation of processes that ensure licensee staff is sufficient in number in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties. CNSC staff stated that, for SRB, the specific area considered in this SCA was personnel training, and that CNSC staff's regulatory focus in the next licence period will be on SRB's transition to a Systematic Approach to Training (SAT) -based program and the requirements of CNSC REGDOC-2.2.2, *Personnel Training*. CNSC staff rated SRB's performance in this SCA as satisfactory.

3.2.1 Personnel Training

25. SRB informed the Commission about their activities in determining the initial scope of the first cycle of the new SAT-based training program and other efforts to meet the criteria defined in the new CNSC REGDOC-2.2.2, *Personnel Training*. The SRB Executive Committee had formally established a new "Training Committee", which is tasked with implementing the SAT-based training program. The SRB representative added that the training modules include the following training areas:
 - facility operation and processes;
 - radiation protection;
 - fire protection;
 - health physics;
 - occupational health and safety; and
 - transport of dangerous goods.
26. CNSC staff informed the Commission that SRB had continued to maintain and implement an acceptable training program using a combination of theoretical and practical knowledge training modules. CNSC staff further informed the Commission that SRB had submitted a comprehensive project plan for the implementation of its revised training program, as part of its transition to REGDOC-2.2.2. CNSC staff is satisfied with SRB's transition plan and the steps taken to meet the specifications of REGDOC-2.2.2. CNSC staff will monitor SRB's performance for this SCA through documentation reviews and compliance inspections planned for the second half of

2015.

27. The Commission sought more details regarding the written tests that are conducted after annual radiation protection training. The SRB representative responded that, should an employee not satisfy the pass/fail criteria, the critical parts of the training would be repeated and the test would be re-administered to regain confidence that this person is fully qualified for their position. The SRB representative noted that the test had been given to all individuals, even those who do not work with tritium, and that, in the last year, all employees passed the test.

3.2.2 Conclusion on Human Performance Management

28. Based on its consideration of the presented information, the Commission concludes that SRB has appropriate programs in place and that current efforts related to human performance management provide a positive indication of SRB's ability to adequately carry out the activities under the proposed licence.

3.3 Operating Performance

29. Operating performance includes an overall review of the conduct of the licensed activities and the activities that enable effective performance as well as improvement plans and significant future activities at SRB facility. The specific areas that comprise this SCA for SRB are conduct of licensed activity and reporting and trending. CNSC staff rated SRB's performance in this SCA as satisfactory.

3.3.1 Conduct of Licensed Activity

30. SRB informed the Commission about the company's licenced activities and cited that it is authorized to operate a tritium processing facility to possess, transfer, use, process, manage and store nuclear substances related to the operation of the facility, and to possess a maximum of 6,000 TBq (terabecquerels) of tritium in any form. The SRB representative stated that the company has grown significantly during the current licence period, with an expanded staff complement and increased production. SRB representatives noted that their production remains suspended during precipitation in order to avoid deposition of tritium on the ground.
31. CNSC staff reported that they had performed annual compliance inspections of SRB's licensed activity, as well as several focused inspections to assess SRB's performance regarding Radiation Protection and Waste Management, Security, Management System, Transport, Environmental Protection and Emergency Response. The compliance inspections resulted in no major findings. CNSC staff further reported that due to the tritium emission reduction initiatives undertaken by SRB, while the amount of tritium processed had increased from 6,644 TBq in 2010 to a maximum value of

30,545 TBq in 2013, tritium emissions decreased by one half. CNSC staff is of the opinion that SRB continues to identify and implement improvements to its manufacturing processes, equipment and programs, and sets Safety Performance Objectives annually to track these improvements.

32. The Commission noted that SRB's tritium possession limit as per its licence condition was 6000 TBq, and asked about the annual limit for the amount of tritium processed at the SRB facility. The SRB representative noted that the amount of tritium processed could be increased considerably, as long as the possession and release limits are respected. The existing equipment would allow SRB to further increase its production by approximately 50%. CNSC staff concurred with this response and noted that the possession limit is based on criteria for the protection of workers, as well as safety in case of beyond design basis events and malfunctions, while the release limits were set to protect the environment. CNSC staff added that this approach was based on SRB's ability to increase the amount of processed tritium while reducing the releases to the environment.
33. One intervenor submitted that the technology that SRB produces is obsolete and does not justify risks related to tritium processing. The Commission asked about the company's future. The SRB representative responded that the market for its products is growing, that approximately 90% of the products manufactured at SRB are shipped outside of Canada, mostly to the U.S. and U.K, and that the biggest challenge faced by SRB is the lack of resources to meet demand.

3.3.2 Reporting and Trending

34. SRB informed the Commission that it submits Annual Compliance Reports to CNSC staff, as well as quarterly comprehensive reports on SRB's Environmental Monitoring Program. Within these reports, key data and indicators are trended over time in order to establish that SRB is making adequate provisions to protect the public and the environment, and to validate environmental models. The SRB representative noted that the final versions of the Annual Compliance Reports are posted on the company's website. SRB also meets reporting requirements regarding its dosimetry services licence and import and export permits. During the licence period, CNSC staff reviewed these reports and found no issues regarding the safe operation of the facility.
35. The Commission enquired about SRB's commitment to increase research, improvements and innovation, and asked about periodic updates on these activities and reports. The SRB representative responded that, in order to advance these initiatives, SRB had engaged an experienced contractor who will support the SRB's Manager of Health Physics and Regulatory Affairs to initiate collaboration with various organizations that have experience with alternative emission-reduction technologies, such as the University of Ottawa.

3.3.3 Conclusion on Operating Performance

36. Based on the above information, the Commission concludes that the operating performance at the facility during the current licensing period provides a positive indication of SRB's ability to carry out the activities under the proposed licence.

3.4 Safety Analysis

37. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or the operation of a facility, and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. It supports the overall safety case for the facility. CNSC staff stated that the specific area considered for this SCA is hazard analysis. CNSC staff rated SRB's performance in this SCA as satisfactory.
38. SRB informed the Commission that their operating practices and processes are conducted in alignment with SRB's *Safety Analysis Report (SAR)*. The SRB representative further informed the Commission that SRB had conducted a gap analysis to determine areas that require actions in order to transition SRB's Management System into compliance with the revised N286-12. One of the gaps identified was that a formal process for conducting a safety analysis had not been sufficiently established in the Management System. An action plan to align the management system with N286-12 includes developing this formal process and introducing it in the revised SAR that would be submitted to CNSC staff by the end of 2015.
39. SRB also informed the Commission about the results of their comprehensive review of SRB's safety case conducted in response to CNSC staff's request under subsection 12(2) of the *General Nuclear Safety and Control Regulations*, following the Fukushima Daiichi accident in 2011. SRB stated that the review resulted in improvements made to SRB's Emergency Plan, with a general conclusion that the overall safety case for SRB remained valid. CNSC staff concurred with SRB.
40. CNSC staff informed the Commission that SRB reviews on an annual basis its SAR, which includes measures in place to protect the safety of the workers, the public and the environment, under normal operations, abnormal operations and accident conditions. CNSC staff reported that they had reviewed the SAR and additional analyses, and are of the opinion that the performance of SRB in this SCA meets requirements.
41. On the basis of the information presented, the Commission concludes that the systematic evaluation of the potential hazards and the preparedness for reducing the effects of such hazards is adequate for the operation of the facility and the activities under the proposed licence.

3.5 Physical Design

42. Physical design includes activities to design the systems, structures and components to meet and maintain the design basis of the facility. The design basis is the range of conditions, according to established criteria, that the facility must withstand without exceeding authorized limits for the planned operation of safety systems. The regulatory focus and specific areas that comprise physical design at the SRB facility are design governance and facility design. CNSC staff rated SRB's performance in this SCA as satisfactory.
43. SRB informed the Commission that the key structures, systems and components relating to the facility, their licensed activities, and to safety, has not been altered in any significant way over the term of the current operating licence. A notable change during the licensing period was the reduction in the diameter of process tubing used on tritium processing equipment. This change resulted in a reduction of tritium emission per process cycle by 65%. CNSC staff recognized the improvement, but identified a non-conformance with respect to regulatory expectations relating to change management. SRB stated that it had retroactively conducted an expanded engineering change control strategy to provide documented safety assurance. Other improvements, such as the modernization of the real-time stack monitors, the recorders associated with these monitors, and the tritium-in-air sampling systems used to establish weekly releases were all controlled using engineering change processes.
44. CNSC staff confirmed that SRB had not made significant changes to the design of its facility. Some upgrades to existing systems were completed as part of facility maintenance and continuous improvement, following SRB's *Engineering Change* procedure, which was updated during the current licensing period. CNSC staff reported that during a 2014 compliance inspection, it had requested that SRB improve documentation regarding the change management related to modification to the processing rig piping. In response, SRB had submitted the revised change control documentation that included risk assessment of the changes, qualification requirements, installation and commissioning requirements. CNSC staff stated that the revised change control documentation met CNSC requirements.
45. On the basis of the information presented, the Commission concludes that the design of the SRB facility is adequate for the licensed activities.

3.6 Fitness for Service

46. Fitness for Service covers activities that are performed to ensure the systems, structures and components at the SRB facility continue to effectively fulfill their intended purpose. CNSC staff stated that the specific areas for this SCA are equipment fitness for service, equipment performance and maintenance. CNSC staff rated SRB's performance in this SCA as satisfactory for the period 2010-2013, and fully satisfactory for 2014.

3.6.1 *Equipment Fitness for Service/Equipment Performance*

47. SRB informed the Commission that it performs regular checks to confirm the effective operation of the equipment and that it annually employs the services of an independent third party to verify stack flowrates and to confirm the stacks are performing to design requirements. SRB has committed extensive resources to the modernization and renewal of in-service safety-critical structures, systems and components, including ventilation systems, liquid scintillation counters, tritium-in-air monitors, stack monitoring equipment, and its weather station. In addition, once every two years, SRB contracts a third party to validate SRB's tritium-in-air sample collection system.
48. CNSC staff noted that no major equipment failures were reported during the current licence period and that SRB had implemented several upgrades to the facility and its equipment. CNSC staff informed the Commission that they had conducted compliance inspections and verified that SRB continues to maintain the facility to ensure that its systems, structures and components remain fit for service over time.
49. The Commission asked if SRB's actions to modernize and renew some its systems, structures and components, including the engagement of a third party to validate SRB's tritium-in-air sample collection system, were initiated by CNSC staff requests. The SRB representative responded that the actions were the result of SRB's own initiatives. CNSC staff confirmed that there were a number of areas throughout SRB's programs, including fitness for service, where it voluntarily initiated improvements beyond CNSC staff requests. These SCA areas were rated by CNSC staff as fully satisfactory.

3.6.2 *Maintenance*

50. SRB informed the Commission that it had revised its *Maintenance Program* to proactively incorporate some elements from nuclear power plant programs and to further enhance the quality and effectiveness of SRB's maintenance activities. The revision was done following guidelines available in CNSC Regulatory Guide RD/GD-210, *Maintenance Programs for Nuclear Power Plants*.
51. CNSC staff stated that, based on conducted compliance inspections, maintenance at SRB is performed as required, and that required records for maintenance and calibration are maintained. CNSC staff added that SRB had submitted a revised *Maintenance Program*, which is aligned with applicable nuclear industry guidance and best practices for maintenance. CNSC staff confirmed that SRB had proactively incorporated elements from RD/DG-210 into its maintenance program.

3.6.3 *Conclusion on Fitness for Service*

52. The Commission is satisfied with SRB's programs for the inspection and life-cycle management of key safety systems. Based on the above information, the Commission

concludes that the equipment as installed at the SRB facility is fit for service.

3.7 Radiation Protection

53. As part of its evaluation of the adequacy of how the licensee provides for protecting the health and safety of persons, the Commission considered the past performance of SRB in the area of radiation protection. The Commission also considered the radiation program at SRB to ensure that both radiation doses to persons and contamination are monitored, controlled and kept as low as reasonably achievable (ALARA), with social and economic factors taken into consideration. CNSC staff stated that this SCA encompasses the following specific areas: application of ALARA, worker dose control, radiation protection program performance, radiological hazard control, and estimated dose to the public. CNSC staff rated SRB's performance in this SCA as satisfactory for the current licence period.

3.7.1 Radiation Protection Program Performance

54. SRB informed the Commission about the company's comprehensive program of contamination control, and that radiation hazards which are present as part of the licensed activities are controlled through several aspects of SRB's *Radiation Safety Program*. SRB representatives stated that, during the current licence period, there were no exceedances of any action levels associated with radiation protection. These action levels had been revised in 2013, and formally incorporated into SRB's descriptive licensing document *Licence Limits, Action Levels, and Administrative Limits* and accepted by CNSC staff in 2014.
55. SRB further informed the Commission that, in a typical week of operation, over 200 contamination assessments are conducted in work areas and on items that are being removed from active operating areas in radiation protected zones, and that the Health Physics Team performs a comprehensive review of contamination control data on a quarterly basis. The Health Physics Team is responsible for ensuring that radiation doses are continually maintained ALARA.
56. CNSC staff informed the Commission that SRB had undertaken a formal review of its *Radiation Safety Program* to ensure that appropriate radiation protection measures are being implemented commensurate with the current operating state of the facility. The revised *Radiation Protection Program* was reviewed and accepted by CNSC staff. In 2012, SRB reviewed their action levels and in 2013, SRB implemented revised action levels set lower than those from previous years. These revised action levels were reviewed and accepted by CNSC staff. CNSC staff reported that there were no action level exceedances during the current licence period.
57. CNSC staff further informed the Commission that SRB controls and minimizes the spread of radioactive contamination using a radiation zone control program and

monitoring to confirm the effectiveness of the program. During the current licence period, SRB reviewed the routine contamination measurement locations to ensure that contamination control measures were effective. Levels of tritium contamination were verified by means of the swipe method and liquid scintillation counting of the swipe material, and airborne tritium levels were also continuously monitored in work areas. CNSC staff is satisfied that radiological hazards at SRB are being controlled in accordance with regulatory and licensing requirements.

3.7.2 Workers' Radiation Exposure

58. SRB informed the Commission about maximum and average radiation doses to workers for each year of the current licence period. The maximum effective dose received by a worker was less than 4% of the regulatory limit of 50 mSv/y (millisieverts per year) and the average doses to workers have remained relatively consistent between 0.2% and 0.4% of this regulatory limit.
59. CNSC staff informed the Commission that SRB monitors the radiation exposure of its workers to ensure compliance with the CNSC's regulatory dose limits and to keep radiation doses ALARA. During the current licence period, there were no exceedances of the regulatory limit of 50 mSv/y and the doses to workers remained well below this regulatory limit. The variation in radiation exposure was directly correlated to the level of tritium processing, the types of light sources being manufactured, and to improvements to manufacturing processes, equipment and programs. CNSC staff stated that doses to workers have been controlled well below the regulatory limits and were maintained ALARA.
60. The Commission asked if all employees undergo urine tests. The SRB representative stated that all employees from the tritium processing zone undergo weekly urine tests and those working in other zones undergo a urine test every two weeks. The SRB representative added that the action level had not been exceeded since the late 1990s.

3.7.3 Public Radiation Exposure

61. SRB informed the Commission that the ALARA concept had been also applied to the quantity and type of tritium that was released to the environment through effluent pathways. The calculation methodology for maximum public dose assumes highly conservative, worst-case scenarios for all environmental monitoring parameters. Such estimations have shown that the maximum annual dose to members of the public could have been 0.0067 mSv, compared to the regulatory limit of 1 mSv/y.
62. CNSC staff confirmed that no member of the public received a dose higher than 0.7% of the annual public dose limit of 1mSv/y. The increase in maximum annual effective dose to member of the public, observed between 2012 and 2013, is attributed to an approximate three-fold increase in tritium processing during the same period. CNSC

staff is satisfied that SRB is adequately controlling radiation doses to members of the public.

3.7.4 Conclusion on Radiation Protection

63. The Commission is of the opinion that, given the mitigation measures and safety programs that are in place and will be in place to control radiation hazards, SRB provides adequate protection to the health and safety of persons and the environment.

3.8 Conventional Health and Safety

64. Conventional health and safety covers the implementation of a program to manage workplace safety hazards. This program is mandatory for all employers and employees in order to reduce the risks associated with conventional (non-radiological) hazards in the workplace. This program includes compliance with Part II of the *Canada Labour Code*⁷ and conventional safety training. CNSC staff rated SRB's performance in this SCA as satisfactory for the period 2010-2011, and fully satisfactory for the period 2012-2014.
65. SRB informed the Commission that, during the current licence period, there was only one lost-time injury (LTI) that had occurred in 2011. No LTIs have occurred since 2011, despite a large increase in the number of workers at the facility and a large increase in tritium processing. SRB has a Health and Safety Specialist, who chairs the Workplace Health and Safety Committee and is responsible for ensuring that SRB's Hazard Prevention Program is implemented effectively and that it meets regulatory requirements, including the provisions of Part II of the *Canada Labour Code*. All workers, visitors and contractors are familiarized with the safety rules and expectations for the area that they occupy, and visitors and contractors are closely monitored while on site, to ensure that they are following safety practices.
66. CNSC staff informed the Commission that SRB maintains a Workplace Health and Safety Committee that meets monthly. CNSC staff stated that a key performance measure for this SCA is the number of LTIs that occur per year, and confirmed that, during the current licence period, there had been only one LTI. CNSC staff added that routine compliance inspections in this area conducted during the current licence period had resulted in no major findings.
67. The Commission asked if the Workplace Health and Safety Committee represents workers from the whole company. The SRB representative confirmed that the committee includes workers from all levels of the organization.
68. The Commission asked if a worker could refuse to perform an operation that might be unsafe. The SRB representative responded that a worker has this right and stated that

⁷ R.S.C., 1985, c. L-2

the fact that SRB had only one LTI during the entire licence period is indicative of safe work practices at SRB.

69. Based on the information presented, the Commission is of the opinion that the health and safety of workers and the public was adequately protected during the operation of the facility for the current licence period, and that the health and safety of persons will also be adequately protected during the continued operation of the facility.

3.9 Environmental Protection

70. Environmental Protection covers SRB's programs that identify, control and monitor all releases of radioactive and hazardous substances, and to minimize the effects on the environment which may result from the licensed activities. It includes effluent and emissions control, environmental monitoring and estimated doses to the public. CNSC staff noted that this SCA encompasses the following specific areas:
- effluent and emissions control (releases);
 - environmental management system;
 - assessment and monitoring; and
 - protection of the public.

CNSC staff rated SRB's performance in this SCA as satisfactory for the current licence period.

71. CNSC staff presented to the Commission its *Environmental Assessment Information Report: SRB Technologies (Canada) Inc. Nuclear Substance Processing Facility Operating Licence Renewal*. The report included background information, a description of regulatory requirements, information on previous environmental assessments (EA) and reviews, and the current status of the environment with results of a number of specific monitoring activities. The report also included the results of the CNSC Independent Environmental Monitoring Program (IEMP). Based on this EA conducted for the SRB licence renewal, CNSC staff is of the opinion that SRB continues to make adequate provision for the protection of the environment and health and safety of persons.
72. CNSC staff informed the Commission that SRB's performance in this SCA had been verified through review of SRB's reports and submissions, annual routine compliance inspections, and two focused environmental protection inspections conducted in 2011 and 2014. Based on these compliance activities, CNSC staff is of the opinion that the implementation of the environmental protection program at SRB meets all applicable regulatory requirements.

3.9.1 Effluent and Emissions Control

Atmospheric Emissions

73. SRB provided information regarding the air emissions from its facility, which are monitored and categorized in the forms of gaseous tritium, tritium oxide (HTO), organically bound tritium (OBT), and total tritium. SRB representatives noted that, after reaching a peak in 2013, the emissions had been reduced in 2014, despite the significantly increased tritium processing at the facility. The reduced emissions have been attributed to the successful implementation of protective measures at the SRB facility.
74. CNSC staff reported that SRB's releases to the atmosphere had remained below regulatory limits with a peak in 2013, when it reached 25% of the regulatory limit for HTO and 17% of the regulatory limit for total tritium releases. The increase in 2013 had been attributed to a three-fold increase in tritium processing, while the subsequent reduction in releases in 2014 was the result of implemented improvements in protection measures. CNSC staff further reported that, in 2014, there was one gaseous tritium weekly action level exceedance that had amounted to 3.7% of the annual release limit for total tritium. The cause of the event was found to be related to leakage from a gaseous tritium light source and a manifold gauge. CNSC staff reviewed SRB's investigation report and proposed corrective actions, and found them acceptable.

Liquid Effluent

75. SRB provided data on liquid effluents from its facility, showing that liquid releases continue to be effectively controlled and maintained at about 6.5% of the licence limit.
76. CNSC staff stated that SRB continues to monitor and effectively control tritium released as liquid effluent from the facility, so that the releases are consistently well below the licence limit.

3.9.2 Environmental Management System (EMS)

77. SRB informed the Commission that it intends to analyse the latest set of CSA standards relating to environmental monitoring and effluent monitoring programs, and to compare current programs to the applicable portions of these standards. This gap analysis is scheduled to be completed in the second half of 2015. A new revision of SRB's *Environmental Monitoring Program* will be submitted to CNSC staff for review, comment and acceptance in the first half of 2016.
78. CNSC staff reported that, as part of their compliance verification activities, they review the minutes of SRB's annual safety meetings and follow up on any outstanding issues. These meetings are organized to address EMS activities associated with the protection of the environment at the facility and to establish annual environmental objectives and targets.

79. The Commission asked about the number of SRB employees who are engaged in all aspects of environmental protection including the preparation of reports and other documentation. The SRB representative responded that all employees are involved to some extent in environmental protection and related activities, and specified that the Health Physics Team is made up of seven employees who are dedicated to the reduction of the impact of operations on workers, the environment and the public. During earlier licence periods, only one employee was dedicated to these activities.

3.9.3 Assessment and Monitoring

Air Monitoring

80. SRB informed the Commission that it has a total of 40 passive air samplers located at eight sectors within a two-kilometer radius of the facility. The samples are collected monthly and analyzed by a qualified third-party laboratory.
81. CNSC staff stated that the results from the passive air samplers demonstrated that tritium levels in air were low, which is consistent with SRB's atmospheric emissions being well below the licence limits. These results also confirmed that public exposure to tritium was very low.
82. Some intervenors expressed concerns regarding unmonitored radiation emissions from air handling units other than the monitored stacks, as well as about unidentified sources of tritium contamination, which could cause contamination of other tenants occupying the building in which the SRB facility is located. The Commission asked about safeguard risks and the possibility of contamination of other tenants sharing the building with SRB. CNSC staff responded that SRB has a sophisticated monitoring program, that the tritium within the building is appropriately managed and controlled, and that there was no indication that tritium was moving to other parts of the building. CNSC staff added that they had measured tritium levels in and around the building and that the doses are much lower than those that might cause health effects. The SRB representative added that they have installed a passive air sampler directly in the neighbouring facility to confirm that the doses within that facility were negligible.
83. The Commission sought more information regarding unmonitored sources of tritium releases and asked if all releases go through the monitored stacks. The SRB representative responded that the three zones where radioactive material is processed are under negative pressure and that there are some small stacks and fume hoods in areas that do not process radioactive material. Due to this design and tritium release monitoring, only very small emissions are possible through unmonitored pathways. The SRB representative added that the only area in the facility with no ventilation is the shipping and receiving area. Although there is a small possibility that a source received from a shipment could be leaking, this leak would be identified quickly with the air monitors installed in the facility.

Groundwater Monitoring

84. SRB informed the Commission that groundwater samples were collected in 46 monitoring wells and that the highest tritium concentration had been found at well MW06-10. It had been restricted to a small area in the vicinity of SRB's stacks and represents past releases from the facility. Tritium concentrations rapidly decreased at monitoring locations further away from SRB. SRB presented charts with groundwater tritium concentrations contributing to the dose received by the public during the 2006-2014 period, as well as a chart with groundwater tritium concentrations found at well MW06-10 for the same period. SRB also presented a map with spatial distribution of the annual average tritium concentrations in groundwater in the area.
85. CNSC staff stated that their independent modeling assessment in 2010 had been in agreement with SRB's conclusion that the elevated tritium concentrations at MW06-10 were mainly caused by high tritium concentrations in the soil due to historical practices. CNSC's independent modeling and analysis of SRB's groundwater monitoring results are discussed in detail in the *Environmental Assessment Information Report* attached to CMD 15-H5. Results obtained by CNSC staff through this study led to the conclusion that the tritium inventory in the groundwater system around the facility has been decreasing since 2006.
86. The Lake Ontario Waterkeeper and Ottawa Riverkeeper and several individual intervenors expressed their concerns regarding groundwater contamination due to past operations at the facility, and that these adverse environmental impacts have continued to the present. The Commission asked SRB to explain what was different in SRB's operation now that could, compared to the previous period, assure the Commission and the public that future operations would be safer, despite the potential increase in production. The SRB representative responded that SRB's approach to operations had changed significantly from simply aiming to meeting the required emission limits to continuously trying to lower its emissions, well below limits. As a result of this approach, despite increasing production manyfold, SRB's emissions have been reduced significantly. To minimize the emissions further, more than five percent of the company's net profit would be dedicated to reducing emissions in future. The SRB representative stated that the emissions from the facility had always been within licence limits, and specified that their releases had corresponded to an annual public dose of 0.007 mSv, with only 3.13% of these releases attributed to organically bound tritium. The SRB representative added that, during the current licence period, the company had communicated more closely with the public. The SRB representative also stated that the company sees an advantage in sharing information with the public, resulting in a higher level of confidence amongst members of the public.
87. The Lake Ontario Waterkeeper and Ottawa Riverkeeper expressed concerns about a potential groundwater contamination impact on the Muskrat River and local aquatic biota, and that organically bound tritium can accumulate in ecosystems around the SRB facility. CNSC staff responded that the Muskrat River was monitored on a regular basis and that the values observed were between 3 Bq/L and 5 Bq/L. Since the effective

tritium exposure of aquatic biota is of the order of millions of Bq/kg of tissue to have an absorbable effect, there are no predictable impacts on aquatic biota in the Muskrat River from the operations of the SRB facility.

88. This conclusion was supported by the results obtained and presented by the intervenor Dr. Ulsh, who had conducted a study on biological effects of tritium released from the SRB facility on public health and on biota in the vicinity of the facility. The intervenor also discussed potential radioprotective effects of lower radiation doses. The Commission enquired about relative importance of different forms of tritium presence in the environment. The intervenor reiterated that tritium is present in the environment as gaseous tritium, tritiated water (tritium oxide), HTO, and organically bound tritium, and described their effects on living cells. The intervenor explained that, while gaseous tritium rapidly changes to other forms and HTO readily dilutes in the environment, organically bound tritium is cleared from the body at a much slower rate than HTO, thus having a higher biological effect per unit dose. Consequently, these differences must be taken into account when calculating the biological effects of radiation. CNSC staff provided a more in depth explanation of both radioprotective and harmful effects of radiation and discussed the issue from the perspective of health consequences to different age groups of the human population.
89. In its intervention, the Concerned Citizens of Renfrew County questioned the established regulatory limits and pointed to the differences between measured values of tritium concentration and values obtained by modelling done by CNSC staff. The Commission asked if a revision of predicted values obtained by modelling has to be done, since the measured values show a plateau that had not predicted. CNSC staff provided more details about the model, which was based on a 2006 soil profile with the purpose of investigating latent effects of contamination in groundwater and to verify if contamination was a legacy issue. CNSC staff added that the more recent data that would be needed to do modelling further into the future is not available. An improvement of the model would be possible through the analysis of additional core samples, or by evaluating air emissions and trying to find a correlation with measured values. The monitoring data could lead to more reliable conclusions, while the modelling may provide some answers to more theoretical questions. CNSC staff further added that the modelled trends showed an acceptable match with monitored results, and that observed variations in monitoring samples at a specific location could be related to fluctuations of releases in the air, precipitation, surface-water runoff, infiltration rates, and other factors.
90. The Commission asked whether there were any models that predicted the effects of suspending tritium processing during periods of precipitation. The SRB representative responded that, when the production suspension protocol was established several years ago, measurements were performed that showed that the concentration of tritium in the ground was two orders of magnitude lower if production was limited to days without precipitation. CNSC staff stated that they had proposed to the Commission a limit that over time would reduce the amount of tritium leaving the stack and being entrained through precipitation. Implementation of that limit and the improvements to emission

control methods performed at the SRB facility have resulted in decreases in levels of tritium in groundwater. CNSC staff explained that they had examined and validated the model by means of calculating concentrations around Canadian nuclear facilities and found that the model was conservatively over-estimating groundwater contamination.

91. The Commission invited CNSC staff to explain the adequacy of the established regulatory limits. CNSC staff responded that the limits had been established in the previous licence period as a means to ensure the protection of groundwater as a resource, and that they are still valid despite the recent increase in production.
92. Several intervenors expressed concerns over tritium in groundwater that they considered to be too high, alluding that the accepted tritium groundwater concentration limit was 20 Bq/L, and questioned the quality of the presented monitoring data. The Commission reminded all hearing participants that it is not acceptable to use false statements and incorrect data in submissions that are presented to the Commission and to the public. The Commission asked for evidence of tritium concentration in groundwater around SRB facility. CNSC staff reiterated that the current limit for drinking water was 7 000 Bq/L, and stated that concerns regarding elevated tritium groundwater concentrations were not substantiated by available data. CNSC staff noted that tritium concentrations in drinking water supplies close to all the operating nuclear power plants and in all Canadian locations where there may be an impact from a facility that releases tritium, including those in Pembroke and in Ottawa, are below 18 Bq/L. In Pembroke, the tritium concentration in drinking water approaches detection limits, which is between 5Bq/L to 7 Bq/L.
93. A number of intervenors mentioned years of false reporting on tritium emissions and that monitoring wells were not being properly reported on. The Commission asked if the false reporting was ever an issue. CNSC staff responded that they were not aware of any false reporting and that their own inspections and monitoring did not indicate differences between CNSC results and those reported by SRB. The SRB representative rejected accusations of false reporting and stated that a third party has been engaged for many years by SRB to verify tritium emissions from it facility, ensuring that they were in line with reported values.
94. Asked by the Commission to provide some evidence for the statement on false reporting, the intervenor was not able to produce any evidence and stated that, actually, some data were missing from SRB's compliance report.
95. Several intervenors raised issues regarding health effects of exposure to low and extremely low doses of tritium. In most of the cases the intervenors have based their arguments on the results of controversial studies or conclusions where a consensus has not been reached. The Commission recommends caution regarding the use of such arguments, noting that some are alarmist or unfounded. As a regulator, the Commission is basing its decisions on scientific results that are accepted and reflected in documents and recommendations of leading international organizations such as the IAEA, World Health Organization, etc.

96. The Commission enquired about the reliability of the collected monitoring data. The SRB representative reiterated that SRB has a very extensive monitoring program that covers the whole area with a large number of monitoring stations and sampling locations. The program also includes different types of measurements that could identify inconsistencies in collected data by comparing the obtained results. CNSC staff concurred and mentioned that their own extensive monitoring around the SRB site had helped them to develop a good understanding of the behaviour of tritium in the environment and its dispersion patterns.

Other Monitoring

97. SRB informed the Commission that, besides air and groundwater monitoring, they conduct monthly monitoring of precipitation, produce sampling during the harvest season, milk sampling three times annually, wine monitoring, and surface water sampling during months when the river is not frozen.
98. CNSC staff confirmed that, in addition to the principal monitoring of air and groundwater, SRB engages a qualified third party to perform monitoring and analysis of precipitation, runoff, surface water, produce, milk and wine. CNSC staff further reported that they had independently collected and analyzed a number of environmental samples in publicly accessible areas outside the perimeter of the facility during 20013 and 2014. The obtained results had been consistent with SRB's third party results and confirmed that the public and the environment in the vicinity of SRB were protected from the releases from the facility.
99. The Commission enquired if the expansion of the facility and planned construction could affect contamination of the area around the facility, including contamination of ground water. CNSC staff explained that the stack design and its functioning are evaluated on a periodic basis, and any changes to the facility footprint would be incorporated into these assessments. The SRB representative stated that two monitoring wells had been removed due to the construction; however, the well mentioned by some intervenors as being exposed to contamination from the facility was not affected.
100. Some intervenors stated that data on the contamination of vegetables around the facility were sporadic with indication of elevated radioactivity, citing that any level of radiation represents a risk for development of cancer. The Commission asked CNSC staff to provide more information regarding this issue. CNSC staff responded that the available data are not sporadic and that CNSC staff had done extensive measurements and performed years of monitoring around SRB, for regulatory purposes, but also for research purposes. Taking into consideration the highest measured values for organically bound tritium, HTO in a variety of food, measurements in air and drinking and well water, the doses to the most exposed individuals are still several hundred times smaller than the regulatory limit of 1 mSv/y. CNSC staff added that, although the cited "linear-no-threshold" model for ionizing radiation could be useful for setting regulatory limits, driving ALARA minimization, or pollution prevention, it is not a tool

to assess the number of cancers or the cancer risk for individuals, and its use to estimate a cancer risk based on microsievert amounts is totally inappropriate and unscientific.

101. One intervenor stated that a cucumber sample taken 4.8 km from SRB contained 117 Bq/L of organically bound tritium. The Commission asked how significant that number was. CNSC staff responded that the value cited by the intervenor originates from CNSC research conducted in 2008 and 2009 and has been published in the Environmental Fate of Tritium in Soil and Vegetation report. The calculated dose was 0.004 mSv, which is much lower than the dose limits that are known to have health effects.
102. Referring to concerns expressed by several intervenors, the Commission sought more details regarding consistency in produce monitoring results. CNSC staff stated that the results, obtained through the IEMP and a research project conducted by the University of Ottawa, indicate that the level of contamination of the produce examined in the vicinity of the SRB facility is five to six times lower than the reference level of 104 000 Bq/kg, obtained based on the CSA standard N288.1, *Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities*, which indicates what the average Canadian consumes in a year.

3.9.4 Protection of the Public

103. CNSC staff stated that there were no releases of non-radiological hazardous substances to the environment from SRB that would pose a risk to the public or environment, and reiterated that the doses to the public stemming from radiological emissions were approximately 0.7% of the public dose limit.
104. Some intervenors questioned the models that were used to estimate health effects of tritium ingested and inhaled by members of the public and population around the SRB facility, and stated that these effects are minimized in the reports submitted in support of the licence renewal application. The Commission sought more information regarding this issue. CNSC staff discussed the reliability of conclusions derived from the monitoring data and the interpretation of discrepancies, pointed out by some intervenors, between the results of tritium release monitoring and the measurement of tritium concentration in human tissues and waste. The primary focus of this discussion was the results of the organically bound tritium monitoring, which the intervenors presented as mostly erroneous and underestimated. CNSC staff explained the method used to determine distribution of tritium in different components of sewage that was tested, and noted that CNSC staff had taken into account the formation of organic matter, lipids, carbohydrates and proteins with tritium that had become organically bound tritium. These metabolic processes were taken into consideration in calculating the doses and coming up with the proportion of organic matter in a human body. CNSC staff remarked that the main issue in this discussion, as well as from the regulatory perspective, was the association between the tritium intake and health effects, and that,

based on all existing experience, in order for health effects to be seen, doses of tritium in orders of magnitude larger than what has been measured would be required. CNSC staff added that the newest data obtained from Public Health Ontario showed that the incidence of cancer in the Renfrew County was similar to the rest of Ontario, with variations depending on the type of cancer. Data obtained from the Renfrew County and District Health Units' Medical Officer of Health, indicate that leading factors for chronic diseases and the main risk factors for chronic disease are not related to radiation exposure.

105. The Commission recognized the value of the discussion about different models and the data presented from different studies to shed more light on this important issue where some controversies still exist and a consensus has not yet been reached. The Commission noted, however, that, as a regulator, it has to rely on currently accepted standards, norms, guidelines from international bodies and recommended limits.
106. A number of intervenors suggested that, in order to protect the public, SRB should be relocated to a location either close to the Darlington tritium removal plant or in the vicinity of the CRL where the radioactive waste ends up. The Commission enquired about the potential benefits of the SRB facility being relocated. CNSC staff stated that, with the current radiation levels present, the environmental protection programs in place, the low exposure of the public and the environment, and extensive monitoring, advantages of relocating the SRB facility would not be easily identified, other than to reduce the fear or preoccupation that some of the facility's neighbours may have.

3.9.5 Conclusion on Environmental Protection

107. Based on the above information, the Commission is satisfied that, given the mitigation measures and safety programs that are in place to control hazards, SRB provides adequate protection to the health and safety of persons and the environment.
108. The Commission requested that CNSC staff include in its annual reports a chart with details regarding groundwater monitoring wells, flows, gradients contours towards the Muskrat River and other details. The maps should also indicate the position of new developments that are planned in the vicinity of the facility. CNSC staff stated that they will continue to upgrade the charts.

3.10 Emergency Management and Fire Protection

109. Emergency Management and Fire Protection cover SRB's provisions for preparedness and response capabilities which exist for emergencies and for non-routine conditions at the SRB facility. This includes nuclear emergency management, conventional emergency response, and fire protection and response. CNSC staff rated SRB's performance in this SCA as satisfactory.

3.10.1 Nuclear Emergency Preparedness and Response

110. SRB informed the Commission about the company's emergency planning and about results of conducted emergency exercises. SRB noted that, as a small company, it maintains an agreement with the Pembroke Fire Department as a primary responder in case of an emergency. Pembroke firefighters are routinely provided with familiarization tours of the facility and informed about the areas where nuclear substances are stored and used, while the key members of SRB management are available at all times to assist in the response to any emergency. Equipment that would be critical in establishing the potential radiological hazard during an emergency is stored and maintained off-site, in order to ensure that SRB has access to these tools should the facility not be accessible during the initial phases of an emergency.
111. CNSC staff reported that it had reviewed and found SRB's *Emergency Management and Response Plan* acceptable. This document was revised and updated in response to CNSC staff's request under subsection 12(2) of the *General Nuclear Safety and Control Regulations* made after the Fukushima Daiichi accident. CNSC staff added that SRB was completing its gap analysis, as part of an effort to align its emergency preparedness measures and program with the recently published CNSC Regulatory Document, REGDOC 2.10.1, *Nuclear Emergency Preparedness and Response*. The completion of this project is planned for the end of September 2015.
112. CNSC staff further reported that SRB's emergency plan, which relies on external response assistance from the Pembroke Fire Department to deal with an emergency at its facility, was acceptable. In February 2015, CNSC staff observed SRB's performance during a mutual aid emergency response exercise with the Pembroke Fire Department.

3.10.2 Fire Emergency Preparedness and Response

113. SRB informed the Commission about its fire protection program and procedures, as well as about activities of the company's Fire Protection Committee. SRB also informed the Commission about the maintenance of the sprinkler system, inspections by independent consultants and the Pembroke Fire Department, trainings and drills. SRB representatives stated that, during the current licence period, the *Fire Protection Program* was revised three times to ensure that the most up to date information was included. The revisions include improvements stemming from the new regulatory requirements based on the new CSA standard N393-13, *Fire protection for facilities that process, handle, or store nuclear substances*. It is expected that a new revision of SRB's *Fire Protection Program* will be issued by July 31, 2015.
114. CNSC staff reported that they required SRB to perform a gap analysis assessing its *Fire Protection Program* and associated reports and documents in comparison to the requirements specified in CSA N393-13. No major gaps were identified and CNSC staff found SRB's transition plan, implementation plan and target completion date of July 31, 2015 to be acceptable.

115. The Commission asked about SRB's overall experience with and the lessons learned from the fire drill conducted in February 2015. The SRB representative responded that they had met all regulatory requirements, but had identified 38 minor areas of improvement. CNSC staff stated that they had observed the event.
116. The Commission asked whether, and the extent to which, other tenants of the building where SRB is located had been included in the emergency or fire drills. The SRB representative responded that there was no involvement of the community members in the fire drills. The SRB representative further noted that, although the neighbouring facilities and individuals were informed about the emergency drill, they had not been asked to participate and/or evacuate their premises.
117. The Commission asked if there was a firewall between SRB and other tenants of the building. The SRB representative confirmed that there is a firewall in place.

3.10.3 Conclusion on Emergency Management and Fire Protection

118. Based on the above information, the Commission concludes that the fire protection measures and emergency management preparedness programs in place, and that will be in place, at the facility are adequate to protect the health and safety of persons and the environment.

3.11 Waste Management

119. Waste management covers the licensee's site-wide waste management program. CNSC staff evaluated SRB's performance in this SCA and rated it as satisfactory.
120. SRB informed the Commission about its *Waste Management Program*, which governs the ways that the company manages all types of waste materials, including radioactive wastes. The program is overseen by SRB's Waste Management Committee that includes members of management, supervision, and workers, who meet on a regular basis to discuss and address issues with waste of all types. SRB representatives noted that the latest version of the *Waste Management Program*, which was revised to meet the newly published CSA standards N292.0-14, *General principles for the management of radioactive waste and irradiated fuel*, and N292.3-14, *Management of low- and intermediate-level radioactive waste*.
121. SRB representatives stated that the company generates very-low-level and low-level radioactive wastes, which require temporary storage on-site prior to disposal through approved pathways. During the current licence period, SRB had made 23 low-level waste consignments to licensed waste management facilities. The SRB representative added that the company works on recycling and reusing non-radioactive materials to minimize the amount of wastes, and that the Waste Management Committee

continually assesses work practices to determine if the philosophy of waste minimization is being effectively applied.

122. CNSC staff informed the Commission that they conduct routine compliance inspections to verify that SRB segregates, labels, handles and stores waste resulting from licensed activities. CNSC staff reported that all waste is packaged in approved containers and stored safely. Waste that does not meet the waste clearance criteria is transferred to licensed waste handling facilities as required. Solid non-radiological waste is disposed of in accordance with municipal requirements. SRB does not generate liquid hazardous waste since the modifications done during the previous licence period in 2009. CNSC staff stated that the procedures used by SRB to store, manage, process and dispose of radioactive waste are documented in SRB's *Waste Management Program*.
123. In its intervention, the Concerned Citizens of Renfrew County expressed concerns regarding shipments of crushed glass and expired gaseous tritium light sources, positing that these are mostly imported wastes from the U.S. The intervenor further suggested that this tritium disposal had been an important activity that had not been adequately addressed in the Environmental Assessment Report. The Commission asked SRB to comment on this statement. The SRB representative stated that this issue had been discussed with members of the Concerned Citizens of Renfrew County and The First Six Years during the 2008 licence renewal. The attempt to recycle and use gas from used light sources had not been profitable, but SRB had continued to receive used sources as an after-sale service for their customers. The received items are assessed against the existing codes and, depending on item's state, are reused or sources are taken out of them and sent to the licensed waste facility. The SRB representative added that about 40% of their production is collected after being used, and approximately 20 000 exit signs in each of 2013 and 2014 had been imported from various customers. All of these imports are well documented and reported.
124. The Commission referred to the statements of several intervenors indicating that waste disposal of signs is not allowed or not properly regulated, and asked CNSC staff to explain the rules of waste disposal and differences between the USA and Canadian rules. CNSC staff responded that in the USA purchasers have to keep an inventory, and if the sign is sold or given to another facility, they have to account for that and show tracking records. There are also requirements for disposal of the signs, which are not allowed to be sent directly to a landfill. In Canada, a manufacturer of the signs is under a licence and is required to dispose of signs at a proper disposal facility, as well as to provide a customer with a procedure for proper disposal of the sign and give options on sending the sign back to the manufacturer. There is no requirement on a customer with respect to disposal of the sign, and as such, customers are given the option to either return it to SRB or to dispose of it on their own. While individuals are allowed to dispose of devices that contain less than 925 GBq of tritium through regular garbage, there is a requirement to send bulk material to a CNSC licensed waste facility.
125. One intervenor expressed concerns regarding the expansion of the SRB facility and

stated that this expansion was related to a shift in SRB's main activity being a waste facility that stores tritium contaminated items mainly imported from the USA. The intervenor mentioned hidden emissions from the facility and alleged that parts of the facility inaccessible to the public. The Commission enquired about a possibility that some emissions from the facility are hidden. CNSC staff noted that there are different lines of evidence, including air monitoring, flow monitoring, precipitation monitoring, stack monitoring, produce monitoring, and others, that confirm that the reported values for the emissions from the facility are correct. Several studies conducted in this area also support the conclusion that there are no hidden emissions from the facility. The SRB representative added that a group of citizens, including the intervenor, had visited the facility, and specified that the entire facility had been shown and was accessible.

126. The SRB representative explained which zones of the facility are involved in production and exposed to tritium, and reiterated that all emissions from the facility are monitored. The SRB representative added that allegation that SRB is becoming a waste facility was false, since the only item that could be treated as waste were the expired products that were imported back from SRB's customers. The value of this activity represented only 9% of SRB's revenue in 2014. The SRB representative explained that the signs with radioactive sources that are received back from the customers are sorted, some of them are reused and the rest is sent to Canadian Nuclear Laboratories in Chalk River or another licensed waste facility. SRB is not a licensed waste facility.
127. The same intervenor mentioned a discrepancy between the imported amount of tritium containing products and the quantity of exported sources and devices. This intervenor further alleged that SRB has a trading partner that is involved in the disposal of imported waste containing tritium, specifically a large amount of exit signs from USA Walmart stores in 2007. The SRB representative stated that SRB had no knowledge of what had happened with the large number of signs from Walmart, and that SRB had not been involved in this event in any way. The SRB representative explained that the company, which was alleged to be their trading partner, Isolite, was associated with Shield Source Inc., and is only a customer of SRB.
128. Some intervenors stated that SRB had, on numerous occasions, imported more radioactive tritium waste from UK, Russia and the USA than was allowed. The Commission invited SRB to respond to this statement. The SRB representative responded that all imports from the UK, Russia and the USA were done with import licenses describing exactly what had been imported. The import from the UK contained expired SRB products that were replaced. The only item ever imported from Russia was a tritium container, and the import from the USA had never exceeded the limits established by import licences. CNSC staff confirmed that all the imports and exports are very carefully monitored and reported in CNSC annual reports.
129. The Commission enquired about the source of information circulating among some intervenors regarding unmonitored activities, hidden releases, large exceedances, shifting of main activities to a waste disposal facility, etc. In response, the SRB representative provided to the Commission a copy of a pamphlet that had been

distributed by one of intervenors to the community surrounding the SRB facility⁸. The data in the pamphlet were erroneous, and the pie-chart, which was used and represented in the pamphlet as “imported waste”, was in fact the amount of products that were exported by SRB. The intervenor that had signed her name on the pamphlet stated that the information was obtained from a Commission Member Document, but was not able to substantiate this statement.

130. The Commission requested that CNSC staff include in its annual reports more detailed information regarding, not only the number of shipments, but the volume of processed material as well as number of signs that had been received, and how much of that had been directed to waste. This information should shed more light to how much of the SRB business is waste as opposed to actual production.
131. The Commission recommends CNSC staff to compare the current Canadian regulations with other jurisdictions and international practices.
132. Based on the above information and considerations, the Commission is satisfied that SRB is safely managing waste at its facility.

3.12 Security

133. Security covers the programs required to implement and support the security requirements stipulated in the relevant regulations and the licence. This includes compliance with the applicable provisions of the *General Nuclear Safety and Control Regulations*⁹ and the *Nuclear Security Regulations*.¹⁰ CNSC staff rated SRB’s performance in this SCA as satisfactory for the current licence period.
134. SRB informed the Commission that, during the current licence period, several physical upgrades and security enhancements were made to improve nuclear security at the facility, and that maintenance of the entire security system was performed by an independent third party at least every six months. The SRB representative added that no security-related events occurred at the facility over the current licence period.
135. CNSC staff stated that SRB’s *Facility Security Program* that describes the security measures in place had been assessed by CNSC staff as satisfactory, and that SRB had demonstrated compliance in this program area through the provision of adequate physical barriers, procedures, systems and devices to meet its security program requirements. SRB had no reportable security-related events over the current licensing period. CNSC staff reported that the SRB facility is inspected for security on a biannual basis, and that all security alarms are field tested on a semi-annual basis, with records retained for verification by CNSC staff.

⁸ This document was added to the record.

⁹ SOR/2000-202

¹⁰ SOR/2000-209

136. The Commission asked if security of the facility had been inspected. CNSC staff responded that they had recently conducted a security inspection. CNSC staff added that an arrangement that had been made between SRB and the Pembroke local police is being transferred to the Ontario Provincial Police (OPP) due to organisational changes in the police forces. The SRB representative stated that they were in the process of finalizing an agreement with the OPP, and that many officers who were transferred to the OPP are already familiar with the SRB facility.
137. The Commission is satisfied that SRB's performance with respect to maintaining security at the facility has been acceptable.

3.13 Safeguards and Non-Proliferation

138. The CNSC's regulatory mandate includes ensuring conformity with measures required to implement Canada's international obligations under the Treaty on the Non-Proliferation of Nuclear Weapons. Pursuant to the Treaty, Canada has entered into safeguards agreements with the International Atomic Energy Agency (IAEA). The objective of these agreements is for the IAEA to provide credible assurance on an annual basis to Canada and to the international community that all declared nuclear material is in peaceful, non-explosive uses and that there is no undeclared nuclear material or activities in this country.
139. SRB informed the Commission that it stores and manages an extremely small quantity of depleted uranium, which is used as storage media for tritium gas, and is a controlled nuclear substance. The SRB representative added that, during the current licence term, the IAEA has not conducted any verification activities of their inventory of this material, nor requested any information on this matter.
140. CNSC staff confirmed that no safeguards activities have taken place at SRB since the last licence renewal. CNSC staff recommended the removal of the safeguards licence condition from the proposed operating licence on the basis that the import and export of controlled nuclear substances, equipment and information identified in the *Nuclear Non-proliferation Import and Export Control Regulations* achieve the same result by requiring separate authorization from the CNSC, consistent with subsection 3(2) of the *General Nuclear Safety and Control Regulations*.
141. Several intervenors expressed concerns that the same tritium gas used by SRB to make self-luminous devices plays a key role in nuclear weapons arsenal. The Commission asked CNSC staff to comment on this statement. CNSC staff stated that tritium, although not under the IAEA safeguards, is a controlled nuclear substance under CNSC regulations. Tritium is controlled and requires a licence for both export and import, because it could be used to boost the yield of nuclear weapons. CNSC staff explained that uranium, plutonium, and thorium are nuclear materials that can be used for nuclear weapons. The International Safeguards System is designed to control these three materials that must be used in order to develop a weapon. CNSC staff further explained

that tritium in the dispersed form, which is exported and imported by SRB, is not useable for nuclear weapons.

142. The Commission sought more information regarding CNSC staff's recommendation for the removal of the safeguards licence condition from the proposed operating licence. CNSC staff responded that this condition had been originally focused on the depleted uranium used at SRB. The existing amount of depleted uranium is very small and, should the IAEA wish to apply any safeguards measures to that small amount of depleted uranium, the CNSC has the regulatory capability to do that through the General Regulations. CNSC staff added that the existence of this specific licence condition is redundant, and the removal of that condition does not in any way affect the IAEA's ability to apply safeguards should it request those measures to that depleted uranium at this facility.
143. Some intervenors suggested that SRB's products that had been exported all over the world, including countries such as Iran, do not seem to be carefully tracked and accounted for. The Commission sought more information regarding this statement. The SRB representative responded that, a number of years ago, when a relationship between Canada and Iran existed, SRB had a licence to ship to Iran and some small lights had been shipped there for use in compasses. Since then, the licence had not been renewed and no further shipments to Iran were made. CNSC staff confirmed that, in 2005, the CNSC had issued to SRB a licence to export to Iran 70 000 lights containing, in total, less than 0.5 g of tritium in dispersed form that is not useable for nuclear weapons. CNSC staff added that they are monitoring and tracking every shipment from SRB. CNSC staff noted that, while a very complicated technology, which is still not in use, exists to purify dispersed tritium for use in nuclear weapons, the threshold of dispersed tritium for this technology is of the order of 3 g, while the total amount of tritium in exported devices was less than 0.5g.
144. The Commission enquired about SRB's post-export obligations and asked if there are restrictions with respect to export destination countries. The SRB representative responded that there is no obligation to receive back used sources. Regarding the export obligations, for every new customer, an export licence must be obtained to show the end use. CNSC staff stated that there are multiple guidelines for an export licence for tritium. One of those is the 1986 Tritium Export Guidelines published by the Government of Canada. They stipulate exports of tritium to any state as well as exports of tritium to a state party to the Non-Proliferation Treaty. CNSC staff added that there are other regulations within Canada, such as the *Special Economic Measures Act*, as well as UN regulations that may prohibit the export to certain countries.
145. Based on the above information the Commission is satisfied that SRB has made and will continue to make adequate provision in the areas of safeguards and non-proliferation at the facility.

3.14 Packaging and Transport

146. Packaging and transport covers the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility. The licensee must adhere to the *Packaging and Transport of Nuclear Substances Regulations*¹¹ and Transport Canada's *Transportation of Dangerous Goods Regulations*¹² for all shipments leaving the facility. CNSC staff reviewed SRB's performance related to this SCA and rated it as satisfactory.
147. SRB informed the Commission about their import and export activities and stated that, in 2014, 1 122 shipments were made to 19 countries, and that approximately 90% of the shipments were destined for customers in the USA. No transport incidents have occurred during the current licence period.
148. CNSC staff reported that SRB had developed and implemented a packaging and transport program that ensures compliance with the above mentioned regulations, and that SRB's packaging and transport program covers elements of package design and maintenance as well as the registration for use of certified packages as required by the regulations. CNSC staff had conducted one packaging and transport inspection at SRB during the current licensing period, which resulted in no major findings. There were no events reported under the *Packaging and Transport of Nuclear Substances Regulations* for consignments transported from the facility during the current licence period. CNSC staff also reported that designated SRB workers had received the required training and possess current training certificates.
149. Based on the above information, the Commission is satisfied that SRB is meeting regulatory requirements regarding packaging and transport.

3.15 Aboriginal Engagement and Public Information

3.15.1 Aboriginal Engagement

150. The common law Duty to Consult with Aboriginal communities and organizations applies when the Crown contemplates actions that may adversely affect established or potential Aboriginal or treaty rights.
151. CNSC staff informed the Commission that the Algonquin of Ontario (Algonquins of Pikwakanagan), Kitigan Zibi Anishinabeg, Algonquin of Quebec (Algonquin Anishinabeg Tribal Council), and the Métis Nation of Ontario (MNO) had been identified as groups who may have an interest in this licence renewal. CNSC staff had informed the identified groups about the licence renewal application, the opportunity to apply for participant funding and details regarding the Commission's public hearing. Follow-up phone calls were conducted to ensure that the information had been received and to answer any questions. CNSC staff reported that they had not been made aware of any concerns related to the licence renewal from the identified First Nation and Métis

¹¹ SOR/2000-208

¹² SOR/2001-286

groups.

3.15.2 Public Information

152. A public information and disclosure program (PIDP) is a regulatory requirement for licence applicants with the primary goal to ensure that information related to the health, safety and security of persons and the environment, and other issues associated with the lifecycle of nuclear facilities are effectively communicated to the public. The program shall include a commitment to and protocol for ongoing, timely communication of information related to the licensed facility during the course of the licence period.
153. SRB provided information regarding its public information program and activities of the SRB Public Information Committee. SRB informed the Commission that the company actively engages with the public, responds to requests for information and offers facility tours. SRB also regularly updates its website with information, including public notifications and presentations, annual compliance reports, environmental monitoring data, and a tritium information page. SRB had also developed a Facebook page that is linked to the SRB website. SRB distributed information pamphlets to 10 000 residents, business and establishments in Pembroke and Laurentian Valley, and licence renewal information had been sent to various stakeholders and individuals living within 500m of the facility¹³. The individuals who received the pamphlets or who were contacted through a door-to-door campaign expressed very little to no concerns.
154. CNSC staff informed the Commission that SRB's PIDP had been reviewed and assessed against the regulatory document RD/GD-99.3, *Public Information and Disclosure*. CNSC staff stated that SRB's PIDP meets all expectations outlined in RD/GD-99.3, and noted that SRB had undertaken several improvements to its PIDP.
155. CNSC staff further informed the Commission that the CNSC had provided funding through its Participant Funding Program (PFP) to assist members of the public, Aboriginal groups, and other stakeholders in providing value-added information to the Commission through informed and topic-specific interventions. A Funding Review Committee, independent from the CNSC, had reviewed the applications received and made recommendations on the allocation of funding to eligible applicants. Based on these recommendations, the CNSC awarded a total of \$25,770 in participant funding to the following recipients:
 - The First Six Years Organization;
 - Dr. Richard Osborne;
 - Dr. Brant Ulsh; and
 - Lake Ontario Waterkeeper and Ottawa Riverkeeper.
156. Several intervenors including the Lake Ontario Waterkeeper and Ottawa Riverkeeper,

¹³ The copy of the pamphlet was added to the record.

suggested and recommended a number of improvements to SRB's Public Information Program and Public Disclosure Protocol. The Commission enquired about additional disclosure of SRB's environmental results, and the possibility for delivering machine-readable data. The SRB representative responded that about 90% of the emissions reporting and results of environmental monitoring are reported on SRB's website and separately in SRB's Annual Compliance Report, which is also posted on the website. The SRB representative added that they had had requests for PDF format and hard copies of the report and that they had responded to all of them. SRB had also responded to requests for data in Excel or Word formats. The SRB representative stated that they would look at the machine-readable data option, and were open to responding to specific requests and converting data into other formats.

157. The Commission noted that several intervenors also asked for real time reporting as opposed to waiting for the Annual Compliance Report, and asked if SRB updates the results presented on its website in a timely manner. The SRB representative responded that SRB submits to the CNSC quarterly reports, which are posted on its website within a few days. Groundwater monitoring data are collected monthly and are posted a few days after SRB receives the data from the third party. The SRB representative stated that they would consider more frequent updates.
158. The Commission asked about the possibility for an advance warning of any unusual emissions, which was recommended by the Lake Ontario Waterkeeper and Ottawa Riverkeeper, in their intervention. The SRB representative responded that, typically, there are no planned releases. One planned release of liquid effluent had been made during the last two licence periods to examine the effect of a discharge into the sewer system. The SRB representative stated that any future planned releases would be announced on the company's website.
159. The Commission asked if SRB considered doing any opinion surveys and how the company measures the efficacy of its PIDP. The SRB representative responded that, so far, they did not have sufficient information to evaluate the impact of SRB's PIDP, since, until this hearing, they had received only two enquiries from members of the public. The SRB representative noted that SRB had recently conducted a survey that included individuals living within 500 metres of the facility, and that the company intends to continue with similar surveys. The SRB representative offered to include the interested intervenors in future surveys. The SRB representative noted that most of the submitted interventions came from outside of the neighbouring community, and added that SRB realize that the public outside of Pembroke needs to be included and addressed in SRB's PIDP.
160. The representative from Lake Ontario Waterkeeper and Ottawa Riverkeeper pointed out that the PIDP is designed in such a way that it facilitates one-way communication and that it is exclusively public hearings that allow for a two-way communication. The SRB representative stated that the company has always been very open with the public, providing all of the information that is requested, and has been open to requests for reviewing their operations throughout the licence period. The SRB representative

reiterated that they had mailed out 10,000 pamphlets to members of the public, done door-to-door activities, spoke to the individuals in the local community, and wrote to the Aboriginal groups and to a number of stakeholders. The SRB representative stated that little to no concern has been shown by the public during these outreach activities.

3.15.3 Conclusion on Aboriginal Engagement Public Information

161. Based on this information, the Commission is satisfied that SRB's public information program meets regulatory requirements and is effective in keeping Aboriginal communities and the public informed of facility plans and operations. The Commission encourages SRB to continue to maintain and improve its dialogue with the neighbouring communities.
162. The Commission acknowledges the efforts made by CNSC staff in terms of Aboriginal engagement. The Commission is satisfied that the proposed licence renewal will not cause any adverse impact to any potential or established Aboriginal or treaty rights and that the activities undertaken for this licence renewal were adequate, given that no changes to the licensed activities have been requested¹⁴.

3.16 Decommissioning Strategy and Financial Guarantee

163. The Commission requires that licensees have operational plans for decommissioning and long-term management of waste produced during the life-span of the facility. In order to ensure that adequate resources are available for safe and secure future decommissioning of the SRB facility, the Commission requires that an adequate financial guarantee for realization of the planned activities is put in place and maintained in a form acceptable to the Commission throughout the licence period. The licensee is to report annually that the financial guarantee remains valid, in effect and adequate to fund the future decommissioning of the facility, as per the criteria documented in the proposed LCH.
164. CNSC staff stated that Decommissioning Plans (DP) are reviewed and updated in five-year cycles, and informed the Commission that, in November 2014, SRB had provided a revised and updated DP that meets the applicable regulatory requirements and provides an acceptable basis for decommissioning costs. SRB had re-estimated the costs for decommissioning of its facility in 2014 dollars and updated its financial guarantee to be \$652,488.00. As a financial guarantee instrument, SRB proposes to continue to use a revised escrow agreement and a revised security and access agreement providing CNSC access to the funds. To fund the increase of \$102,012.00 from the previous cost estimate, SRB proposed to make six equal installments of \$17,002.00 to the escrow account over a three year period. CNSC staff reviewed the proposed financial guarantee against the requirements of Regulatory Document G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*, and found it to meet regulatory requirements.

¹⁴ *Rio Tinto Alcan v. Carrier Sekani Tribal Council*, 2010 SCC 43, [2010] 2 S.C.R. 650 at paras 45 and 49.

165. The Commission asked if the management of groundwater contamination monitoring that is planned to continue for a number of years was taken into account while establishing the financial guarantee amount. CNSC staff responded that reclamation of tritium in the groundwater had not been considered in the cost estimate, but decommissioning of all of the wells had been taken into account.
166. The Commission asked if the available amount of money in the decommissioning fund was sufficient to cover decommissioning costs. CNSC staff responded that the amount of money that is currently accessible was sufficient to put the facility into safe state and to restore it.
167. The Commission asked if the fact that the company operates in a leased facility creates any licensing or regulatory issues. CNSC staff responded that this fact does not raise a concern with CNSC staff since many licensees lease their facilities. Should a company leave a leased facility, the CNSC has powers of order to ensure responsible clean-up. The SRB representative added that, in its case, the landlords are well aware of their responsibilities and have been intimately involved with SRB licensing. The SRB representative noted that the landlords had submitted a letter of support for the licence hearing by way of written intervention.
168. Based on this information, the Commission considers that the decommissioning strategy and related financial guarantee are acceptable for the purpose of the current application for licence renewal.

3.17 Cost Recovery

169. CNSC staff noted that, at operating licence renewal in 2010, the Commission had exempted SRB temporarily and conditionally¹⁵ from subsection 24(2) of the NSCA and Part 2 of the *CNSC Cost Recovery Fees Regulations*¹⁶. CNSC staff stated that SRB had complied with the conditions and is now in good standing with respect to *CNSC Cost Recovery Fees Regulations* requirements.

3.18 Licence Length and Conditions

170. SRB requested the renewal of the current operating licence for a period of ten years, and CNSC staff supported this request. CNSC staff also recommended that annual reports on the facility would be provided for consideration by the Commission at public meetings as part of the Annual Regulatory Oversight Report on Nuclear Substance Processing Facilities in Canada.
171. Several intervenors expressed concerns over a ten-year licence period and

¹⁵ See licence condition 16.1 of the current operating licence NSPFOL-13.00/2015.

¹⁶ S.O.R./2003-212

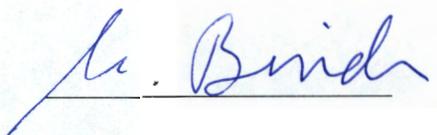
recommended shorter licence periods, ranging between two and five years. The Lake Ontario Waterkeeper and Ottawa Riverkeeper pointed out the importance of licensing process and public hearings for an active public engagement and stated that more frequent hearings are necessary for introduction of regulatory changes. The Commission asked CNSC staff to comment on the impact of licence length on the level of public engagement. CNSC staff responded that in the past, when licence periods were commonly two or five years, engagement of the public with the Commission coincided with licence renewal hearings. With longer licence periods and changes in reporting, the public has the opportunity to participate and intervene at proceedings of the Commission that consider not only licence renewals, but also licence amendments, annual reports, etc. The public also has the opportunity to engage with CSNC on numerous occasions including activities related to preparation of the Commission proceedings, such as “CNSC 101” meetings organized in interested communities.

172. The Commission asked if the licence renewal was the only opportunity to integrate new regulatory requirements. CNSC staff responded that, if updated standards, regulatory documents are published during the licence period, the changes would be implemented by issuing a letter to the licensee with information about implementation. There could be a transition period and changes could be implemented by way of the LCH, so that there is not necessarily a need to wait until the licence renewal hearing for the implementation of regulatory changes.
173. The Commission enquired about the amount of work that SRB is committing to the licence renewal process. The SRB representative responded that, for a small company like SRB, the effort is significant, since several persons of different profiles need to be engaged in the preparation of required documents, and that the amount of work amounts to several hundred hours.
174. Based on the above information received during the course of this hearing, the Commission is satisfied that a seven-year licence is appropriate. The decision to extend the licence duration beyond five years reflects the Commission’s appreciation of SRB’s good record during the current licence period and successful implementation of improvements that have led to reduced emissions despite the expanded operation. However, the Commission is of the opinion that, in the light of SRB’s previous history, a ten-year licence period would not contribute to improving public confidence. At this point, a seven-year licence with annual reporting in public proceedings would allow SRB to continue with safe operation and further improvement of its performance, while maintaining transparency of operation, public engagement and adequate oversight by CNSC staff.

4.0 CONCLUSION

175. The Commission has considered the information and submissions of CNSC staff, the applicant and all participants as set out in the material available for reference on the record, as well as the oral and written submissions provided or made by the participants at the hearing.

176. The Commission notes that the NSCA provides a strong regulatory framework for environmental protection. Whether an environmental assessment is required or not under CEAA 2012, the CNSC regulatory system ensures that adequate measures are in place to protect the environment and human health in accordance with the NSCA and its Regulations.
177. The Commission is satisfied that the applicant meets the requirements of subsection 24(4) of the *Nuclear Safety and Control Act*. That is, the Commission is of the opinion that the applicant is qualified to carry on the activity that the proposed licence will authorize and that the applicant will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.
178. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews SRB Technologies (Canada) Inc. the Nuclear Substance Processing Facility Operating Licence for its gaseous tritium light source manufacturing facility located in Pembroke, Ontario. The renewed licence, NSPFOL-13.00/2022, is valid from July 1, 2015 until June 30, 2022.
179. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 15-H5, with the following change:
- “Licence condition 12.2 is changed to: the licensee shall implement and maintain a decommissioning strategy.”
180. The Commission accepts the revised financial guarantee as proposed in CMD 15-H5.
181. The Commission directs CNSC staff to provide annual reports on the performance of the SRB facility, as part of the Directorate of Nuclear Cycle and Facilities Regulation Annual Regulatory Oversight Report on Nuclear Substance Processing Facilities in Canada. CNSC staff shall present these reports at public proceedings of the Commission.



Michael Binder
President,
Canadian Nuclear Safety Commission

JUN 29 2015

Date

Appendix A – Intervenors

Lake Ontario Waterkeeper and Ottawa Riverkeeper, represented by P. Feinstein	CMD 15-H5.2
Brant Ulsh	CMD 15-H5.3
Concerned Citizens of Renfrew County, represented by O. Hendrickson	CMD 15-H5.4 CMD 15-H5.4A CMD 15-H5.4B
Zach Ruitter	CMD 15-H5.5
Jeff Brackett	CMD 15-H5.6
Prevent Cancer Now, represented by M. Sears	CMD 15-H5.7
First Six Years, represented by J. Castrilli, I. Fairlie and O. Hendrickson	CMD 15-H5.8 CMD 15-H5.8A
Janet McNeill	CMD 15-H5.9 CMD 15-H5.9A
Kelly O’Grady	CMD 15-H5.10 CMD 15-H5.10A CMD 15-H5.10B
Canadian Coalition for Nuclear Responsibility, represented by G. Edwards	CMD 15-H5.11
Science for Peace	CMD 15-H5.12
Cheryl Gallant, M.P., Renfrew-Nipissing-Pembroke	CMD 15-H5.13
Terry Lapierre, Chief Administrative Officer, City of Pembroke	CMD 15-H5.14
Michael LeMay, Mayor, City of Pembroke	CMD 15-H5.15
The Security Company	CMD 15-H5.16
Algonquin College	CMD 15-H5.17
Dolleen Soriol, Planning & Building Departments, City of Pembroke	CMD 15-H5.18
Josef Allen	CMD 15-H5.19
Pembroke Fire Department	CMD 15-H5.20
Isolite	CMD 15-H5.21
Main Street Community Services	CMD 15-H5.22
Peter Emon, Warden of the County of Renfrew	CMD 15-H5.23
Ron Gervais, Deputy Mayor, City of Pembroke	CMD 15-H5.24
John Yakabuski, M.P.P., Renfrew-Nipissing-Pembroke	CMD 15-H5.25
Harrington Mechanical Ltd.	CMD 15-H5.26

A. Bucholtz	CMD 15-H5.27
Garry Amyotte	CMD 15-H5.28
Steel Fire Equipment	CMD 15-H5.29
Monika Schaefer	CMD 15-H5.30
International Physicians for the Prevention of Nuclear War	CMD 15-H5.31
Ken Collier	CMD 15-H5.32
James Deutsch	CMD 15-H5.33
Coalition for a Nuclear Free Great Lakes	CMD 15-H5.34
Kelly and Roger Goldberg	CMD 15-H5.35
Community Living Upper Ottawa Valley	CMD 15-H5.36
Darlene Buckingham	CMD 15-H5.37
Canadian Nuclear Association	CMD 15-H5.38
Seiler Instrument & Mfg Co., Inc.	CMD 15-H5.39
James Penna	CMD 15-H5.40
Ed Jacyno	CMD 15-H5.41
BETALIGHT B.V.	CMD 15-H5.42
Gilles Provost	CMD 15-H5.43
Dorothy Goldin Rosenberg	CMD 15-H5.44
Seigfried (Ziggy) Kleinau	CMD 15-H5.45
Jo Hayward-Haines	CMD 15-H5.46