



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Shield Source Inc.

Subject Application to Renew the Nuclear Substance
Processing Facility Operating Licence for the
Facility Located at the Peterborough Municipal
Airport

Public Hearing
Date June 10, 2009

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Introduction

1. Shield Source Inc. (SSI) has applied to the Canadian Nuclear Safety Commission¹ (CNSC) for the renewal of the Nuclear Substance Processing Facility Operating Licence for its facility located in a leased hangar building at the Peterborough Municipal Airport in Peterborough, Ontario. The current operating licence, NSPFOL-12.02/2009, expires on July 31, 2009. SSI has applied for the renewal of its licence for a period of five years.
2. SSI produces gaseous tritium light sources (GTLs) and manufactures devices containing the GTLs. SSI receives tritium gas which is used to fill glass tubes to produce the GLTs. SSI does not recycle or reclaim tritium from old or expired devices but transfers them to an authorized facility for disposal.

Issue

3. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*²:
 - a) if SSI is qualified to carry on the activity that the licence would authorize; and
 - b) if, in carrying on that activity, SSI 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

4. The Commission, in making its decision, considered information presented for a public hearing held on June 10, 2009 in Ottawa, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*³. During the hearing, the Commission considered written submissions and heard oral presentations from CNSC staff (CMD 09-H6, CMD 09-H6.A and CMD 09-H6.B) and SSI (CMD 09-H6.1, CMD 09-H6.1A and CMD 09-H6.1B). The Commission also considered oral and written submissions from four intervenors (see Appendix A for a detailed list of interventions).

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 S.C. 1997, c. 9.

³ S.O.R./2000-211.

Decision

5. 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 SSI is qualified to carry on the activity that the licence will authorize. The Commission is of the opinion that SSI, 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 Shield Source Inc.'s Nuclear Substance Processing Facility Operating Licence, NSPFOL-12.02/2009, for its facility located in Peterborough, Ontario. The renewed licence, NSPFOL-12.00/2012, is valid from August 1, 2009 to July 31, 2012.

6. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 09-H6.B.
7. With this decision, the Commission directs SSI to prepare a status report on the safety performance of its facility following the midpoint of the three-year licence term. The Commission requests that CNSC staff also prepare a report on the results of compliance activities carried out during the first half of the licence term and on the licensee's performance during that period. The report should also include detailed information on SSI's groundwater monitoring plan, environmental monitoring results and on technologies available for the reduction of tritium emissions. SSI and CNSC staff shall present their reports at a public proceeding of the Commission, in approximately January 2011. Furthermore, the Commission expects SSI to broaden its public information program to a wider audience, as recommended by CNSC staff.

Issues and Commission Findings

8. In making its licensing decision, the Commission considered a number of issues relating to SSI'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.

Radiation Protection

9. In evaluating the adequacy of provisions for protecting the health and safety of persons, the Commission considered the past performance and future plans of SSI in the area of radiation protection.

10. SSI stated that it has an effective radiation protection program in place and that all workers received radiation protection training.
11. CNSC staff stated that SSI's radiation protection program and its implementation meet requirements. CNSC staff noted that it provided SSI with comments regarding the updated radiation protection program in January 2009. CNSC staff further noted that although SSI underwent organizational changes during the licence period, including the Radiation Safety Officer (RSO) position, SSI has sufficient qualified staff on site.

Protection of Workers from Radiation

12. SSI provided information regarding the annual effective dose to workers and stated that no worker at SSI received an effective dose in excess of regulatory limits. SSI stated that the maximum effective dose received during the licence period of 2004 to 2008 was 2.51 millisieverts per year (mSv/y), which is 5.02% of the limit of 50 mSv/y for a nuclear energy worker. SSI noted that the maximum average effective dose was 0.45 mSv/y.
13. CNSC staff stated that SSI keeps its doses to workers ALARA (As Low As Reasonably Achievable). CNSC staff stated that three weekly action levels were exceeded during the licence period and that, at each time, CNSC staff was satisfied with SSI's response and follow-up (action levels, if reached, signify a potential loss of control in the radiation protection program).
14. The Commission inquired about SSI's involvement with the National Dose Registry. CNSC staff responded that SSI submits data on doses to workers to the National Dose Registry. CNSC staff explained that the National Dose Registry will monitor the data and inform the CNSC and the licensee if any dose exceeds regulatory limits.
15. The Commission is satisfied that the operation of the facility does not pose an unreasonable radiation risk to workers.

Protection of the Public from Radiation

16. SSI stated that it calculates the effective dose to the public using environmental monitoring data and a conservative model. SSI explained that it models the critical receptor group, which are hypothetical members of the public (a one-year old infant, a ten-year old child and an adult) who are defined as living 200 m from the SSI stack and where half of the vegetable and animal consumption comes from the vicinity of the facility. SSI stated that the maximum annual effective dose to the critical receptor group was 0.053 mSv/y (for the infant), which was 5.3% of the allowable public dose limit of 1 mSv/y. SSI noted that the actual dose to the nearest residence to the SSI facility would be significantly lower.

17. Several intervenors expressed concerns regarding the effects of tritium on human health. CNSC staff stated that the dose to the public from SSI's facility is well below the public dose limit and does not pose a risk to human health. CNSC staff explained that the radio-toxicity of tritium is extremely low in comparison to other radioactive substances such as radium and radon. CNSC staff noted that for a member of the public to be exposed to 1 mSv, a person would need to take in about 50 million becquerels of tritium, and epidemiological health studies have shown an increased risk of cancer at acute doses only above 100 millisieverts, which is 100 times the public dose limit. CNSC staff noted that effects below this level may occur but they cannot be distinguished from the natural occurrence of diseases such as cancer.
18. Based on the information submitted, the Commission is satisfied that the health effects to the population from tritium released by the SSI facility are negligible.

Conclusion on Radiation Protection

19. The Commission concludes that the operation of the facility during the licence term has not posed an unreasonable radiation risk to workers or the public. The Commission is of the opinion that the continued operation of the facility with full implementation of the radiation protection program will not pose an unreasonable radiation risk to health and safety of persons or the environment.

Environmental Protection

20. To determine whether SSI will make adequate provisions to protect the environment while carrying out the proposed activities at the facility, the Commission considered the potential for the continued facility operations to adversely affect the environment.
21. SSI stated that its environmental protection program controls releases of tritium gas (HT) and tritium oxide (HTO) in order to keep releases as low as possible. SSI stated that it had developed and implemented an environmental monitoring program to measure the impact of tritium processing operations on the environment. SSI explained that its environmental monitoring program contains stack emission monitoring and effluent monitoring.
22. CNSC staff stated that SSI's environmental protection program and its implementation meet requirements. CNSC staff stated that SSI's environmental protection program complies with all applicable federal and provincial regulatory requirements. CNSC staff informed the Commission of its proposal to lower the atmospheric release limits in SSI's operating licence to levels below the derived release limit (DRL). CNSC staff noted that release of a quantity of tritium equivalent to a DRL would not result in a radiation dose in excess of the public dose limit of 1 mSv/y. CNSC staff explained that this change is in the interest of keeping releases ALARA.

23. During the hearing, CNSC staff presented information regarding the Ontario Drinking Water Advisory Council's recommendations to the Ontario Minister of the Environment concerning the Ontario drinking water standards for tritium. CNSC staff stated that the Ontario Drinking Water Advisory Council recommended that the standard for drinking water in Ontario be revised from Health Canada's guideline of 7,000 Bq/L to 20 Bq/L. CNSC staff stated that it will monitor the situation to see how the Minister of the Environment of Ontario responds to those recommendations. CNSC staff stated that it will consult with officials from the Ontario Ministry of the Environment to determine, if the government adopts this standard, how it would be applied in urban, semi-urban and rural areas, and to identify potential implications for CNSC licensees.
24. Several intervenors expressed concerns regarding the release limits for the facility. The Commission sought further information in this regard. CNSC staff stated that a licence limit does not automatically authorize a licensee to release to that limit, and that under CNSC regulations, a licensee is required to take all reasonable precautions to protect the environment and the health and safety of persons. Therefore, a licensee must strive to control the emissions at the source and the releases from the facility, as well as to reduce the impact to the surroundings.
25. Based on the information submitted, the Commission is satisfied that the release limits proposed by CNSC staff are acceptable. The Commission notes that the release limits are established using guidelines⁴ established by the Canadian Standards Association and are in keeping with the principle of ALARA.

Effluent Monitoring

Air

26. SSI provided information regarding its HT and HTO emissions during the licence period. SSI stated that all emissions were below the DRL and action levels.
27. SSI stated that it completed its *Optimization Study of Tritium Handling and Ventilation Processes Report* in 2007. SSI explained that the study evaluated SSI's existing production processes and identified possible methods to reduce tritium emissions. SSI stated that it has seen a reduction in emissions in 2008, following the implementation of several improvements identified in the study. SSI further stated that it would be implementing further improvements, including increasing the exit velocity of the stack ventilation and increasing the stack height, with a planned completion date of October 12, 2009.

⁴ CSA N288.1, Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities

28. The Commission sought further information regarding the stack improvements. SSI responded that a third-party consultant calculated an optimal stack height and velocity. CNSC staff responded that the proposed stack height increase and velocity increase are acceptable to increase the dispersion of tritium and reduce the amount in the immediate vicinity of the facility. CNSC staff stated that the proposed changes are expected to result in a 43 percent decrease in ambient air concentrations of tritium at the location of the critical receptor. CNSC staff noted that this technology will also improve the ventilation in the facility, which is beneficial to the health of workers. SSI stated that although the stack improvements will disperse emissions, SSI's main focus is to reduce the total emissions in its operations.
29. The Concerned Citizens of Renfrew County (CCRC), in its intervention, expressed concerns regarding the stack improvement initiative. The CCRC expressed the view that the proposed method is ineffective for reducing tritium around the stack. The Commission asked whether CNSC staff's ongoing tritium study has provided any suggestions or alternatives to raising the stack height and velocity in order to reduce tritium emissions. CNSC staff responded that, although the report from the study is currently in draft form, the report identifies technologies in use in other countries that effectively control emissions of tritium more rigorously than the technologies used in existing CNSC-licensed facilities. CNSC staff noted that the report also covers alternate means of managing tritium, as well as parameters, including stack parameters, that are important for controlling and monitoring releases.
30. Based on the submitted information, the Commission is satisfied that the current air effluent releases from the facility are effectively controlled and do not pose an unreasonable risk to persons or the environment. The Commission is satisfied that the proposed improvements to the facility, including the stack improvement initiative, will further reduce airborne emissions and their impact on the environment.

Water

31. SSI stated that it monitors wastewater from decontamination processes released into the environment. SSI stated that its average annual effluent discharge over the licence period was approximately 2.6% of the licence limit. SSI stated that facility improvements have resulted in a reduction of effluent discharge in 2009.
32. The Commission is satisfied that water effluent releases from the facility are effectively controlled and do not pose an unreasonable risk to persons or the environment.

Environmental Monitoring

33. SSI stated that its environmental monitoring program operates continuously. SSI stated that it monitors stack emissions 24 hours a day, 7 days a week, and collects monthly and quarterly samples of ambient air, surface water, vegetation, soil and well water. SSI explained that the highest ambient air, surface water and well water results were found closest to the stack, which is the source of the emissions. SSI stated that its stack modification plan will reduce these values.

34. SSI stated that the facility is constructed on a former landfill site, and as such, SSI expects the site to contain unknown and unidentified contaminants. SSI stated that although there is currently no evidence of groundwater migration toward critical receptors, it will continue to monitor the groundwater to confirm that this is the case.
35. CNSC staff stated that it receives monitoring information from SSI through reports and inspections. CNSC staff stated that the results of SSI's ambient air and surface water monitoring are consistent with predicted models and that all measurements are below levels considered to pose a risk.
36. SSI provided groundwater monitoring data. CNSC staff stated that the results from a well used as non-potable service water located 230 m from the facility have not exceeded the detection limits. CNSC staff further stated that the results from the tap water at the critical receptor location exceeded the detection limit on three occasions since the year 2000, and that follow-up sampling found results below the detection limit. CNSC staff noted that the results found at monitoring wells, which have been on the order of several thousand becquerels per litre (Bq/L) with a maximum of 18,000 Bq/L, have been consistent with surface loadings.
37. SSI also provided data from its monitoring of vegetation and water samples outside the facility. SSI stated that milk samples collected from the nearest dairy farm, 2.8 km from the SSI facility have had no samples reported above the limit of detection (50 Bq/L). SSI further stated that crab apples located at the critical receptor location have been found to have a tritium concentration of 4430 Bq/L. CNSC staff stated that this value is inconsistent with observations and predictions but that it is not considered to pose a risk to human health. CNSC staff noted that the elevated levels may be the result of historical contamination, and requested that SSI address the discrepancies.
38. The Commission sought further information regarding the tritium levels in vegetation. SSI responded that the levels in the crab apples may be attributed to the deposition of tritium in a pond near the crab apple tree. SSI stated that it will conduct a study and collect additional data in order to improve its understanding of the surrounding area and the impact of the facility on the environment.
39. The Commission asked if SSI has any additional sampling locations far from the facility, aside from the one 16 kilometres from the facility. SSI responded that it does not.
40. CNSC staff stated that SSI must ensure that tritium migration in groundwater will not pose a significant risk. CNSC staff stated that it has requested SSI to develop a further plan to understand the extent and movement of tritium contamination in groundwater, especially in the vicinity of the critical receptor location. CNSC staff further stated that it has requested SSI to develop a contingency plan in the event that monitoring data shows that the tritium starts increasing towards levels of potential concern. SSI committed to develop a proposal for its groundwater monitoring plan by June 17, 2009.

41. Safe and Green Energy (SAGE), in its intervention, expressed concerns about the frequency of soil monitoring by SSI. The Commission sought further information in this regard. CNSC staff stated that soil samples are occasionally taken to verify the amount of tritium near the stack. CNSC staff explained that soil monitoring is not part of the environmental monitoring program because soil is not a contributing factor to the assessment of levels for the critical receptor. CNSC staff noted that the tritium found in soil will either end up in the air or in water, which are monitored.
42. The Commission asked if SSI verifies that its stack monitoring provides accurate results. SSI stated that it has third-party reviews conducted for this purpose. CNSC staff stated that it conducts its own verifications to ensure that the monitoring data is reliable and that the monitoring program in place is acceptable.
43. The Commission is satisfied that SSI has an effective environmental monitoring program in place, and that the frequency of soil monitoring is acceptable. The Commission expects that SSI will implement its groundwater monitoring plan as expeditiously as possible.

Conclusion on Environmental Protection

44. Based on the above information, the Commission is satisfied that facility operations are effectively controlled with the Environmental Protection Program and mitigation measures in place, and that they do not pose an unreasonable risk to the health and safety of persons or the environment. The Commission stresses the importance of groundwater monitoring to ensure that contamination levels do not reach levels of concern, and expects that SSI will implement its groundwater monitoring plan as expeditiously as possible.
45. The Commission is also satisfied that the release limits proposed by CNSC staff, as well as the effluent releases and the environmental monitoring program in place, are acceptable.

Operating Performance

46. The Commission examined SSI's operational performance in order to establish the adequacy and effectiveness of SSI's approach to safe operation at its facility.

Organization and Plant Management

47. CNSC staff stated that although there has been a recent change of staff at the facility regarding the position of RSO, CNSC staff is satisfied that there is sufficient qualified staff, including management oversight. CNSC staff stated that it has requested that SSI carry out an organizational study by October 1, 2009.

48. The Commission sought further information regarding the organization of the facility and the RSO position. SSI responded that it has an organization chart in its quality management documentation. SSI also provided information regarding the two RSOs who left the company. SSI stated that it currently has an acting RSO, as well as three other employees who are qualified to fulfill those duties, if required.
49. Based on the information submitted, the Commission is satisfied that SSI has appropriate organization and management structures in place

Conduct of Operations

50. CNSC staff stated that SSI's operational performance program and implementation meet requirements. CNSC staff explained that SSI is carrying out its licensed activities in accordance with its programs and procedures. CNSC staff stated that SSI continues to report events in accordance with its licence, and CNSC staff is satisfied with SSI's response and follow-up to any events.
51. The Commission asked if SSI has a system in place to obtain expired signs in order to have them properly disposed. SSI responded that it actively solicits its clients to return used signs and estimated that 10 to 20 percent return them.
52. Lynn Jones, an intervenor, expressed concerns that GTLSs that are not properly disposed of may result in contaminated landfills. The Commission requested further information in this regard. SSI stated that many of its unreturned devices are not thrown out, but rather left installed beyond their intended lifespan as they may still work. CNSC staff stated that GTLSs are controlled by the *Nuclear Substance and Radiation Devices Regulations*⁵ and have explicit disposal requirements. CNSC staff noted that after the lifespan of the GTLS, the GTLS would contain measurable radioactivity, but would not require any regulatory approval by the CNSC to be disposed, according to applicable regulations.
53. Based on the information submitted, the Commission is satisfied that the GTLSs are appropriately controlled, and that the processes in place for their eventual disposal are acceptable. The Commission is also satisfied that the operation of the facility does not pose an unreasonable risk to the health and safety of workers or the public.

Conventional Health and Safety

54. CNSC staff stated that there were no lost time accidents from 2005 to 2008. CNSC staff noted that a minor injury in 2008 required health care.

⁵ S.O.R./2000-207

55. CNSC staff stated that SSI follows the *Canada Labour Code, Part II*⁶ regulations. CNSC staff further stated that safety training is provided to all employees. CNSC staff noted that SSI is currently finalizing a Health and Safety Policies and Procedures Manual.
56. The Commission is satisfied that the SSI is compliant with regulations regarding the health and safety of workers.

Conclusion on Operating Performance

57. The Commission is satisfied that the operation of the facility during the licence period has not posed an unreasonable risk to the health and safety of workers or the public. The Commission is also of the opinion that the continued operation of the facility will not pose an unreasonable risk to the health and safety of persons.
58. Based on its consideration of the presented information, the Commission concludes that SSI has appropriate organization and management structures in place and that the operating performance at the facility provides a positive indication of SSI's ability to adequately carry out the activities under the proposed licence.

Emergency Preparedness

59. The Commission examined the capabilities of SSI to respond to an emergency situation at the facility.
60. CNSC staff stated that SSI's facility is a low-risk facility and that the current emergency preparedness program meets CNSC requirements. CNSC staff stated that it is satisfied with SSI's emergency plan, which was updated in February 2009 and aligned with CNSC guidance.
61. CNSC staff stated that SSI updated its emergency preparedness program in May 2009, and that CNSC staff was satisfied with the revision. CNSC staff further stated that it received confirmation that the Peterborough Fire Department will respond in the event of an emergency.
62. The Commission inquired about the accident scenarios related to the location of the facility at the Peterborough Municipal Airport. CNSC staff responded that SSI conducted an analysis of credible accidents that could occur at the facility, and the amount of tritium it could process safely in relation to the accident scenarios.

⁶ R.S., 1985, c. L-2.

63. Based on the above information, the Commission is of the opinion that facility operations with the emergency management program in place will not pose an unreasonable risk to the health and safety of persons or the environment, in consideration of the CNSC's mandate and jurisdiction with respect to safety from the nuclear activities as defined by the NSCA.

Fire Protection

64. The Commission examined the capabilities of SSI to respond to an emergency fire situation at the facility.
65. SSI stated that its existing fire safety plan is being revised to meet the *National Fire Code of Canada*⁷. SSI stated that it is developing a pre-fire plan to aid emergency personnel by providing comprehensive descriptions of the installed fire protection and life safety system device locations, locations of hazardous materials and other issues that may affect fire-fighting tactics.
66. CNSC staff stated that SSI's fire protection program and its implementation meet requirements. CNSC staff stated that the Peterborough fire service marshal has performed annual inspections of the facility and reported that the general fire safety provisions are satisfactory.
67. CNSC staff stated that a third-party review report submitted in February 2009 identified several non-compliances with the *National Fire Code of Canada*, with a focus on fire separation between the facility and the connected building. CNSC staff stated that SSI has committed to completing the fire separation improvements by September 30, 2009. CNSC staff stated that completion of the fire separation should bring SSI into compliance with the fire code.
68. CNSC staff recommended that the National Fire Protection Association NFPA 801⁸ standard be included in the licence. CNSC staff stated that it has reviewed SSI's Fire Hazard Analysis, which is a requirement of the NFPA 801 standard, and noted that further improvements can be made. CNSC staff stated that SSI is encouraged to make improvements to the Fire Hazard Analysis and develop an implementation plan for these improvements.
69. CNSC staff stated that SSI has an overall acceptable fire protection program that will be strengthened by including the requirements of NFPA 801. CNSC staff recommended that the licence conditions regarding fire protection be updated to reflect the current edition of the *National Building Code of Canada*⁹, the *National Fire Code of Canada* and NFPA 801. CNSC staff recommended that SSI be given a period of one year to implement NFPA 801.

⁷ National Fire Code of Canada 2005.

⁸ National Fire Protection Association NFPA 801, Standard for Facilities Handling Radioactive Material, 2008 edition.

⁹ National Building Code of Canada 2005.

70. The Commission inquired about the involvement of the Peterborough Fire Department with SSI. SSI responded that the Peterborough Fire Department has visited the facility and provided training to SSI's employees. SSI further stated that the Peterborough fire service marshal has been appointed head of the airport facility and that he is familiar with the SSI's facility.
71. Based on the above information, the Commission is of the opinion that facility operations with the fire protection measures in place will not pose an unreasonable risk to the health and safety of persons or the environment, in consideration of the CNSC mandate and jurisdiction with respect to safety from the nuclear activities as defined by the NSCA.

Quality Management

72. The Commission examined SSI's quality management program to ensure that facility operations are adequately monitored and controlled and do not pose an unreasonable risk to the health and safety of persons or the environment.
73. SSI stated that it has developed and implemented a set of quality management programs that define its quality assurance, environmental monitoring and radiation protection programs. SSI stated that its quality management programs ensure that operations are carried out safely, without unreasonable risk to persons or the environment.
74. CNSC staff stated that SSI's quality management program and its implementation meet requirements. CNSC staff noted that, during the licence period, SSI updated the Quality Management Program Manual, which includes qualifications and training requirements, non-conformance and corrective action procedures for investigations, and a process for temporary changes in the change control program. CNSC staff proposed that the revised quality management program documents be referenced in the licence appendices.
75. Based on the above information, the Commission concludes that SSI has in place the necessary programs in the areas of quality management and training to assure continued adequate performance at the facility.

Public Information Program

76. The Commission considered information regarding SSI's public information program and its effectiveness as set out in CNSC Regulatory Guide G-217¹⁰.

¹⁰ Canadian Nuclear Safety Commission Regulatory Guide G-217, *Licensee Public Information Programs*, January 2004

77. SSI stated that its public information program has a target audience of persons living and working within a one-kilometre radius of the facility, approximately 30 residents and 160 workers, as well as local, provincial and federal elected officials. SSI staff stated that the public information program also includes a pamphlet and information posted on the SSI Web site. SSI stated that it encourages public feedback.
78. CNSC staff stated that the public information program addresses health and safety issues, including the results of SSI's environmental monitoring program, which are posted to the SSI Web site. CNSC staff stated that SSI's public information program meets the expectations and criteria set out in CNSC Regulatory Guide G-217.
79. SAGE, in its intervention, expressed the view that that the public information program is ineffective and that the one-kilometre radius results in less public awareness of the facility and its operations. The Commission sought further information in this regard. SSI responded that the one-kilometre radius has been determined as the limit at which the emissions from SSI's facility can be measured. SSI noted that its emissions are minimal outside this radius. CNSC staff noted that it has asked SSI to broaden the target audience to the community of Peterborough. The Commission concurred that SSI needs to incorporate a larger audience in its public information program.
80. The Commission inquired as to how SSI interacts with the public. SSI responded that its public information pamphlet is distributed to local residences but that there is low public interest in SSI's facility. SSI noted that it has not held any public meetings and that its interaction with the general populace had been limited. CNSC staff stated that, based on the facility's location and the low amount of public interest that SSI and CNSC staff have received regarding the facility, the public information program is acceptable.
81. Based on this information, the Commission is satisfied that SSI's public information program meets regulatory requirements and is effective in keeping the public informed on the facility operations. However, the Commission expects SSI to broaden its public information program to a wider audience.

Security, Non-Proliferation and Safeguards

82. With respect to site security issues, the Commission was provided with separate, protected CMDs.
83. SAGE, in its intervention, expressed concerns that the public may have access to the soil in the area around the facility's stack. The Commission sought further information regarding public access to this area. SSI responded that, although the area is accessible from the airport runway, there is an enclosure around the airport.

84. Regarding non-proliferation and safeguards, CNSC staff stated that SSI's facility is not subject to safeguards reporting requirements or verification activities carried out by the International Atomic Energy Agency. CNSC staff noted that SSI is required to obtain separate import and export licences pursuant to the *Nuclear-Non Proliferation Import and Export Regulations*¹¹.
85. The Commission concludes that SSI has made adequate provisions for ensuring the physical security of the facility, and is of the opinion that SSI will continue to make necessary provisions regarding security and non-proliferation for maintaining national security and measures necessary for implementing international agreements to which Canada has agreed.

Decommissioning Plans and Financial Guarantee

86. The Commission requires that SSI has 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 a safe and secure future decommissioning of the facility site, the Commission requires that an adequate financial guarantee is put in place and maintained in a form acceptable to the Commission throughout the licence period.
87. CNSC staff stated that SSI's current financial guarantee, an escrow agreement valued at \$365,798.80, was based on a Preliminary Decommissioning Plan (PDP) and cost estimate from February 2007 and approved by the Commission in April 2007¹². SSI stated that it currently has a balance of \$246,281.00 in the escrow account and is making regular payments according to its payment schedule.
88. SSI stated that it provided CNSC staff with a revised PDP in April 2009 with a cost estimate of \$517,068.75. SSI further stated that, based on its current payment schedule, the full amount for this cost estimate will be accumulated by December 31, 2012.
89. CNSC staff stated that the current financial guarantee of \$365,798.80 remains in effect until the revised PDP and cost estimate are accepted by the Commission. CNSC staff stated that it is currently reviewing the revised PDP and cost estimate and noted that it has proposed licence conditions to ensure that a revised financial guarantee is in place by June 2010.
90. Based on this information, the Commission considers that the PDP and related financial guarantee are acceptable for the purpose of the current application for licence renewal.

¹¹ S.O.R./2000-210.

¹² Refer to the Record of Proceedings on *Financial Guarantee for the Future Decommissioning of the Class IB Nuclear Substance Processing Facility Located in Peterborough, Ontario*, hearing date April 12, 2007.

Cost Recovery

91. CNSC staff reported to the Commission that SSI is in good standing with the Canadian Nuclear Safety Commission's *Cost Recovery Fees Regulations*¹³.

Application of the *Canadian Environmental Assessment Act*

92. Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act*¹⁴ (CEAA) have been fulfilled.
93. CNSC staff indicated that the application to renew the licence for the facility under subsection 24(2) of the NSCA is not prescribed for the purposes of paragraph 5(1)(d) of the CEAA in the *Law List Regulations*¹⁵. Since there are no other CEAA triggers for this project that involve the CNSC, CNSC staff stated that an environmental assessment under CEAA is not required.
94. Based upon the above assessment, the Commission is satisfied that an environmental assessment under the CEAA is not required for SSI's application for licence renewal.

Licence Length and Conditions

95. SSI requested, and CNSC staff recommended, that the licence be renewed for a period of five years. CNSC staff noted that the proposed licence length meets the criteria of CMD 02-M12¹⁶. CNSC staff further recommended that an update be provided to the Commission following the mid-point of the licence term.
96. CNSC staff provided information regarding the proposed changes to the licence. CNSC staff explained that the licence would no longer authorize the importation of tritium as SSI holds other licences that serve this purpose. CNSC staff further explained that the proposed changes to the licence would modify requirements regarding documentation and appendices, clarify responsibilities described in appendices, specify and clarify reporting requirements, implement updated building and fire codes, and specify PDP and financial guarantee requirements.
97. The Commission sought clarification regarding the licence to import tritium. CNSC staff responded that SSI applies for separate licences to import tritium, rather than has a general ability to import tritium in its operating licence. CNSC staff noted that although the licensed importation limit quantity exceeds the possession limit quantity, SSI is required to ensure that it is not in contravention of the possession limit at any given time. SSI stated that any request to import tritium goes through a specific licence application and is handled separately from the operating licence.

¹³ S.O.R./2003-212.

¹⁴ S.C. 1992, c. 37.

¹⁵ S.O.R./94-636.

¹⁶ Commission Member Document CMD 02-M12, *New Staff Approach Used to Recommending Licence Period*.

98. The CCRC, in its intervention, questioned why the proposed SSI operating licence is different from that of a similar licensed facility. CNSC staff explained that each facility is different and that CNSC staff takes the licensee's programs, documentation and performance into consideration when it proposes a licence to the Commission.
99. In its intervention, SAGE recommended that the Commission renew the licence for one year to allow SSI to reduce its emissions. Another intervenor, Lynn Jones, recommended that the licence be renewed for one year to allow SSI to change its facility to a non-nuclear facility. The Canadian Coalition for Nuclear Responsibility recommended that the Commission reject SSI's licence renewal.
100. Based on the above information and considerations, the Commission is of the view that a three-year licence with a mid-term report is appropriate. The Commission accepts the licence conditions as recommended by CNSC staff.
101. The Commission believes that a three-year licence term will allow SSI time to develop and implement its groundwater monitoring plan, as well as implement its stack improvement initiative. The Commission expects that SSI will substantially reduce its emissions in keeping with the principle of ALARA. The Commission further expects SSI to broaden its public information program to a wider audience.
102. The Commission understands that operating licences between similar facilities can be different; however, the Commission expects as much consistency and similarity as possible for like facilities.

Conclusion

103. The Commission has considered the information and submissions of the applicant, CNSC staff and all intervenors as set out in the material available for reference on the record.
104. The Commission concludes that an environmental assessment of the proposed continued operation of the facility, pursuant to the *Canadian Environmental Assessment Act*, is not required.
105. 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.

106. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews Shield Source Inc.'s Nuclear Substance Processing Facility Operating Licence for its facility located in Peterborough, Ontario. The renewed licence, NSPFOL-12.00/2012, is valid from August 1, 2009 to July 31, 2012.
107. The Commission includes in the licence the recommendations made by CNSC staff in CMD 09-H6.B.
108. With this decision, the Commission directs SSI to prepare a status report on the safety performance of its facility following the midpoint of the three-year licence term. The Commission requests that CNSC staff also prepare a report on the results of compliance activities carried out during the first half of the licence term and on the licensee's performance during that period. The report should also include detailed information on SSI's groundwater monitoring plan, environmental monitoring results and on technologies available for the reduction of tritium emissions. SSI and CNSC staff shall present their reports at a public proceeding of the Commission, in approximately January 2011. Furthermore, the Commission expects SSI to broaden its public information program to a wider audience.



JUL 1 6 2009

Michael Binder
President,
Canadian Nuclear Safety Commission

Date

Appendix A – Intervenors

Intervenors	Document Number
Concerned Citizens of Renfrew County, represented by O. Hendrickson	CMD 09-H6.2 CMD 09H6.2A
Safe and Green Energy (SAGE), represented by J. Brackett	CMD 09-H6.3
Lynn Jones	CMD 09-H6.4 CMD 09-H6.4A
Canadian Coalition for Nuclear Responsibility, represented by G. Edwards	CMD 09-H6.5