Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant	Zircatec Precision Industries Inc.
Subject	Application to Amend the Class IB Nuclear Fuel Facility Operating Licence for SEU Fuel Production
Hearing Date	June 12, 2008

RECORD OF PROCEEDINGS

Applicant:	Zircatec Precision Industries Inc.
Address/Location:	200 Dorset Street East, Port Hope, Ontario L1A 3V4
Purpose:	Application to Amend the Class IB Nuclear Fuel Facility Operating Licence for SEU Fuel Production
Application received:	February 29, 2008
Date of hearing:	June 12, 2008
Location:	Canadian Nuclear Safety Commission (CNSC) Public Hearing Room, 280 Slater St., 14th. Floor, Ottawa, Ontario
Members present:	M. Binder, Chair A.R. Graham C.R. Barnes D.D. Tolgyesi R.J. Barriault M.J. McDill A. Harvey
Secretary:	M.A. Leblanc
Recording Secretary:	M. Young
General Counsel:	J. Lavoie

Applicant Represented By	**Document Number**
• T. Gitzel, Senior Vice President and Chief Operating Officer of Cameco Corporation • A. Oliver, Vice President of Cameco's Fuel Services Division • E. Ozberk, Vice President, Innovation and Technology Development • M. Longinov, Manager, Occupational Health and Radiation Safety • A. Pant, General Manager • M. Oosting, Radiation Safety Officer, Radiation Protection and Licensing	CMD 08-H15.1 CMD 08-H15.1A
CNSC staff	**Document Number**
• H. Rabski • D. Werry • K. Bundy • R. Lane • J. Jaferi	CMD 08-H15 CMD 08-H15.A
Intervenors	**Document Number**
See appendix A	

Licence: Amended
Date of Release of Decision: July 8, 2008

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Introduction

1. Zircatec Precision Industries Inc. (Zircatec) has applied to the Canadian Nuclear Safety Commission[1] (CNSC) for an amendment to its fuel facility operating licence (FFOL) to produce a new product, the SEU CANDU CANFLEX fuel bundle, containing approximately 1% Uranium-235 (U-235) slightly enriched uranium oxide (SEU) at its nuclear fuel facility located in Port Hope, Ontario. The current licence is FFOL-3641.0/2012.

2. The CANFLEX fuel bundle consists of 43 elements of two different diameters and contains SEU and natural uranium blended with dysprosium oxide, which is a non-toxic and non-radioactive material that absorbs neutrons. SEU powder and the blended dysprosium oxide/uranium oxide powder (BDU) will be supplied to Zircatec through Cameco Corporation (Cameco), and shipped directly from the supplier to Zircatec.

3. Zircatec applied for an amendment to construct and operate two new production lines for the SEU and BDU elements of the CANFLEX fuel bundle.

4. The proposed licence amendment follows a screening environmental assessment (EA) under the *Canadian Environmental Assessment Act*[2] (CEAA), which was carried out by CNSC staff, pursuant to section 18(1) of the CEAA. CNSC staff prepared a Screening Report, which was considered by the Commission at a public hearing on January 9, 2008. The Commission accepted the conclusions from the EA that the project, taking into account the mitigation measures identified in the Screening Report, was not likely to cause significant adverse environmental effects[3].

Issue

5. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*[4]:

   a) if Zircatec is qualified to carry on the activity that the amended licence would authorize; and

   b) if, in carrying on that activity, Zircatec 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.

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[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. 1992, c. 37.
[3] Refer to the Record of Proceedings on the *Environmental Assessment Screening for the Proposed SEU CANDU Fuel Production at Zircatec's Facility in Port Hope, Ontario*, hearing date January 9, 2008.
[4] S.C. 1997, c. 9.

Public Hearing

6. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission to review the application. The Commission, in making its decision, considered information presented for a public hearing held on June 12, 2008 in Ottawa, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*[5]. During the public hearing, the Commission considered written submissions and heard oral presentations from CNSC staff (CMD 08-H15 and CMD 08-H15.A) and Zircatec (CMD 08-H15.1 and CMD 08-H15.1A). The Commission also considered oral and written submissions from 9 intervenors (see Appendix A for a detailed list of interventions).

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 Zircatec is qualified to carry on the activity that the amended licence will authorize. The Commission is also satisfied that Zircatec, 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*, amends the fuel facility operating licence FFOL-3641.0/2012 issued to Zircatec Precision Industries Inc. for its nuclear fuel facility located in Port Hope, Ontario. The amended licence, FFOL-3641.1/2012, remains valid until February 29, 2012.

8. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 08-H15 and CMD 08-H15.A.

9. The Commission requests that CNSC staff update the Commission on the status of the project during the previously-requested mid-term report for the facility. The mid-term report will be presented at a public proceeding of the Commission in approximately October 2009.

Issues and Commission Findings

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

[5] S.O.R./2000-211.

Project Description

11. Zircatec presented the project information, including project components and structures, project activities, equipment activities, and labour requirements. Zircatec stated that the proposed changes will be carried out in accordance with the requirements of its existing framework, including the facility structure, current licensed activities, protective programs and production rates for total fuel bundles from uranium dioxide. Zircatec further stated that the proposed changes would not affect the existing environmental emission rates and action levels as detailed in current licensing documentation. In addition, Zircatec noted that all non-nuclear work activities currently undertaken at the Zircatec facility in Port Hope will be transferred to Zircatec's Cobourg tubing plant (a non-nuclear facility).

12. Zircatec stated that the SEU and BDU will be procured, purchased and imported into Canada by its parent company, Cameco Corporation (Cameco), with shipments directly from the supplier to Zircatec.

13. CNSC staff stated that the risks associated with licensed activities are mainly due to the radiological hazards of uranium dioxide and the potential for nuclear criticality in the case of the enriched uranium.

14. The Commission asked if a third party has been selected to report on the installation and commissioning of the SEU and BDU fuel production lines, in accordance with the proposed licence amendment. Zircatec responded that it has enlisted the assistance of Nuclear Safety Associates from the United States to act on behalf of any criticality evaluations. CNSC staff stated that it will be assessing the third party reports.

15. The Commission asked for clarification regarding the proposed licence conditions covering the uranium enrichment level. CNSC staff responded that the enrichment level is limited to 1.2% U-235 in the entire SEU fuel bundle production line.

16. The Commission asked Zircatec what its expected timeframe is for the two new production lines. Zircatec responded that it expects to be commissioning the equipment in the fall of 2009 with commercial production beginning in 2010. Zircatec noted that this timeframe is based on the need to complete construction, as well as hire and train employees, before it can begin to commission the equipment.

17. P. Lawson, in her intervention, expressed concerns regarding a previously proposed project from Cameco to blend the SEU at the Cameco Port Hope Uranium Conversion Facility. Zircatec stated that this project was stopped prior to an EA and represented a significantly different undertaking than the proposed project for the Zircatec facility. Zircatec noted that it was decided that the blending process, which had been the key area of concern for some members of the Port Hope community, would be done in the United States, and the materials would be shipped to Zircatec.

Radiation and Environmental Protection

18. CNSC staff stated that the doses to employees are below regulatory limits, and Zircatec has a program to keep doses ALARA (As Low As Reasonably Achievable) in place. CNSC staff further stated that uranium releases from the facility to the environment are being controlled in accordance with the conditions of the operating licence.

19. CNSC staff stated that releases of non-nuclear hazardous substances from the facility to the environment are controlled in accordance with the requirements prescribed in the Certificates of Approval issued by the Ontario Ministry of the Environment (MOE) and CNSC regulatory requirements.

20. Zircatec presented estimated doses to members of the public for the current and future production scenarios. Zircatec explained that the doses were estimated by the use of receptors located throughout the vicinity of the facility. Zircatec reported that in all cases, the estimated doses to the public were all below the CNSC dose limit of 1 millisievert per year (mSv/y).

21. The Commission inquired as to why the dose at receptor R2 was higher than those of receptors R1 and R3, despite their proximity. Zircatec responded that R2 has historically had slightly higher levels due to gamma radiation from the fuel storage building. Zircatec further stated that mitigation measures have been put in place to reduce the dose at R2 and, in the future, the dose at R2 will align with all the other receptors.

22. Zircatec stated that the new production lines will have a HEPA (high efficiency particulate air) filtration system to further reduce air emissions from the project. Zircatec further stated that the HEPA filters will significantly reduce fugitive emissions.

23. The Commission asked if the HEPA filtration system will cover the whole plant. Zircatec responded that the HEPA filtration system will be included in the new production line, but, due to the additional work that would be required to install the HEPA filtration system to the existing production lines, that has not been completed at this time. Zircatec stated that it remains committed to ensuring that the HEPA filtration system is in place for the entire facility.

24. J. Miller, in his intervention, expressed concerns related to the emissions from the facility in relation to the location of residential areas. The Commission asked for more information regarding the predicted annual average uranium in air concentration. Zircatec responded that the doses to the public related to the uranium concentrations presented are well within the public dose limit of 1 mSv/y.

25. P. Lawson, in her intervention, expressed concerns regarding fugitive emissions. The Commission sought further information in this regard. Zircatec responded that stack emissions amount to about 60 grams of uranium per year (g/y) and the fugitive emissions amount to about 600 g/y. Zircatec stated that these are very low levels, which would pose no significant risk to health or the environment.

26. Several intervenors, including The Port Hope Community Health Concerns Committee (PHCHCC), D. Rudka and Dr. G. Edwards, raised concerns about health effects related to uranium exposure.

27. The Commission sought further information regarding the toxicity of SEU compared to natural uranium. CNSC staff stated that, although there is a slight difference in toxicity, for all practical purposes natural uranium, depleted uranium and the 1% enriched SEU all have the same properties. Zircatec stated that mitigation measures are in place to ensure that emissions are well controlled.

28. The Commission sought further information from Zircatec regarding health tests for its employees. Zircatec responded that it monitors all of its employees biweekly for internal dosimetry using a urinalysis program. Zircatec stated that during the 2007 reporting year the maximum internal dose to an employee was 0.064 mSv, with an average of 0.05 mSv.

29. The Commission notes that many of the health issues raised by the PHCHCC were addressed at the public hearing for the consideration of the Screening Report[6]. For the matter of this licence amendment, the Commission is satisfied that sufficient scientific information is available to come to the conclusion that no further health studies are needed at this time.

Qualifications and Protection Measures

30. CNSC staff provided a summary of its rating of safety areas at the Zircatec fuel facility. The safety areas include Operations, Radiation Protection, Environmental Protection, Quality Assurance, Nuclear Criticality Safety, Emergency Management, Fire Protection, and Safeguards and Non-Proliferation. CNSC staff stated that it previously reviewed all of these safety areas when the operating licence for the facility was renewed on March 1, 2007[7]. CNSC staff stated that Zircatec continues to meet requirements for all of the safety areas in both the program and the implementation of the program. CNSC staff further stated that it expects Zircatec to perform at this level or better during the proposed term of the operating licence.

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[6] Refer to the Record of Proceedings on the *Environmental Assessment Screening for the Proposed SEU CANDU Fuel Production at Zircatec's Facility in Port Hope, Ontario*, hearing date January 9, 2008.

[7] Refer to the Record of Proceedings on the *Application to Renew the Class IB Nuclear Fuel Facility Operating Licence for the Nuclear Fuel Bundle Fabricating Facility located in Port Hope, Ontario*, hearing dates October 4, 2006 and November 30, 2006.

31. CNSC staff stated that conventional health and safety risks are managed in accordance with Part II of the *Canada Labour Code*[8].

32. The Commission inquired about Cameco and Zircatec's improvement plans going forward. Zircatec responded that it has put in place an accountability-based organizational structure, made changes regarding safety culture and made progress in implementing an integrated quality management system. CNSC staff stated that it has a comprehensive approach to overseeing the project and ensuring that the proper measures precautions are being implemented. CNSC further stated that it will conduct the necessary verifications and inspections.

33. The Commission sought further information concerning the adequacy of the existing financial guarantee and preliminary decommissioning plan for the facility. CNSC staff stated it is satisfied that the existing $18,000,000 cost estimate from 2007[9] represents the majority of the costs associated with a decommissioning should it need to occur. CNSC staff further stated that it expects that the PDP would be updated for the next licensing renewal, scheduled for 2012.

34. The Commission sought assurance that the quality management for the new production lines would meet requirements. Zircatec responded that it has a robust quality assurance program that has been implemented for many years. Zircatec noted that it recently completed a comprehensive analysis of its manufacturing process, as well as an extensive training for the operators.

35. The Commission asked if there would be any risk to the public when the completed SEU fuel bundles are transported to power reactor sites. CNSC staff stated that there would not be any risk posed to the public. CNSC staff noted that the nuclear fuel bundles that are transported to power reactor sites have to comply with the CNSC's *Packaging and Transport of Nuclear Substances Regulations*[10].

36. The Commission sought further information regarding emergency preparedness. Zircatec stated that the emergency procedures in place for the natural uranium production lines would be sufficient for the SEU and BDU production lines.

37. The Commission asked if Zircatec foresees any difficulty in implementing the latest National Fire Protection Association (NFPA) fire protection standard, as detailed in the proposed licence amendment. Zircatec responded that it has reviewed the changes between the 2003 version and the 2008 version of the *NFPA 801: Standard for Fire Protection for Facilities Handling Radioactive Materials* and has no issues.

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[8] R.S.C. 1985, c. L-2.
[9] Refer to the Record of Proceedings on the *Financial Guarantee for the Future Decommissioning of the Class IB Nuclear Fuel Facility Located in Port Hope, Ontario*, hearing date September 13, 2007.
[10] S.O.R./2000-208.

38. In its intervention, the Municipality of Port Hope stated that that prior to the new production lines becoming operational, a new or revised agreement with the Port Hope fire department will be required, with an emphasis on enhanced training for the emergency response team. The Commission asked Zircatec if it anticipates any difficulties in meeting this requirement. Zircatec stated that it does not.

39. The Commission asked about the likelihood and impact of a criticality event. Zircatec responded that the likelihood of an event is less than one in a million years, and the process is designed such that the criticality would be mitigated in such an event.

40. D. Rudka, in his intervention, expressed dissatisfaction with the level of assistance he has received from CNSC staff following the November 2006 public hearing regarding the licence renewal of the Zircatec facility.

41. The Commission asked CNSC staff to review the transcript of that hearing and follow up if any commitment was made to hold a meeting with the intervenor. CNSC staff noted that in the past, Mr. Rudka has been provided with information regarding his inquiries to CNSC staff[11].

Access to Public Information

42. Certain intervenors expressed concerns regarding the availability of public information.

43. T. Lawson expressed the concern that over 100 interventions regarding the previous Cameco proposal may have been discarded. The Commission sought further information on this issue. CNSC staff stated that these submissions are available as part of the record for that particular matter.

44. The Commission asked whether information regarding the Zircatec facility is available to the public. Zircatec responded that quarterly and annual health physics compliance reports are made available to the public.

45. Dr. Edwards expressed the opinion that the CNSC needs to improve its means of dissemination of information.

46. The Commission notes that dissemination of information is a priority of the CNSC, and information on EAs and all other hearing documents are available through the CNSC Web site[12].

[11] Following the hearing on June 12, 2008 and further to the Commission's request, CNSC staff has confirmed that all relevant information has been provided to Mr. Rudka. CNSC staff will follow up with additional requests from Mr. Rudka, if any, within the mandate of the CNSC.
[12] http://www.nuclearsafety.gc.ca/

Application of the *Canadian Environmental Assessment Act*

47. Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the CEAA have been fulfilled.

48. Pursuant to section 18(1) of the CEAA, the CNSC was required to ensure an EA screening of the proposed project was carried out.

49. The EA screening was performed and the resulting Screening Report was considered by a Panel of the Commission at a hearing held on January 9, 2008. The Commission accepted the conclusions from the EA that the project, taking into account the mitigation measures identified in the Screening Report, was not likely to cause significant adverse environmental effects[13].

50. CNSC staff noted that there was no further requirement for an EA pursuant to subsection 5(1) of the CEAA.

51. Therefore, the Commission is satisfied that all applicable requirements of the CEAA have been fulfilled.

Conclusion

52. The Commission has considered the information and submissions of Zircatec and CNSC staff as presented in the material available for reference on the record.

53. 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 Zircatec is qualified to carry on the activity that the amended licence will authorize and that it 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.

54. The Commission therefore amends, pursuant to section 24 of the *Nuclear Safety and Control Act*, the fuel facility operating licence FFOL-3641.0/2012 issued to Zircatec Precision Industries Inc. for its nuclear fuel facility located in Port Hope, Ontario. The amended licence, FFOL-3641.1/2012, remains valid until February 29, 2012.

55. The Commission includes in the licence the recommendations made by CNSC staff in CMD 08-H15 and CMD 08-H15.A.

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[13] Refer to the Record of Proceedings on the *Environmental Assessment Screening for the Proposed SEU CANDU Fuel Production at Zircatec's Facility in Port Hope, Ontario*, hearing date January 9, 2008.

56. The Commission requests that CNSC staff update the Commission on the status of the project during the previously-requested mid-term report for the facility.

for Michael Binder,
President
Canadian Nuclear Safety Commission

Date of Release of Decision: July 8, 2008

Appendix A – Intervenors

Intervenors	Document Number
Municipality of Port Hope, represented by J. Lees	CMD 08-H15.2
Dan Rudka	CMD 08-H15.3
John Miller	CMD 08-H15.4 CMD 08-H15.4A
Patricia Lawson	CMD 08-H15.5
Tom Lawson	CMD 08-H15.6
Port Community Health Concerns Committee, represented by F. More	CMD 08-H15.7 CMD 08-H15.7A
Holly Blefgen and Steve Khan	CMD 08-H15.8
Sanford and Helen Anne Haskill	CMD 08-H15.9
Canadian Coalition for Nuclear Responsibility, represented by G. Edwards	CMD 08-H15.10