



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

# Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant AREVA Resources Canada Inc.

Subject Application to Amend the Uranium Mine  
Operating Licence for the McClean Lake  
Operation

Public Hearing  
Date October 24, 2012

## RECORD OF PROCEEDINGS

Applicant: AREVA Resources Canada Inc.

Address/Location: 817 45<sup>th</sup> Street West, Saskatoon, SK, S7K 3X5

Purpose: Application to amend the Uranium Mine Operating Licence for the McClean Lake Operation

Application received: November 5, 2009 and June 28, 2011

Date of public hearing: October 24, 2012

Location: Canadian Nuclear Safety Commission (CNSC) Public Hearing Room, 280 Slater St., 14th. Floor, Ottawa, Ontario

Members present: M. Binder, Chair                      M. J. McDill  
A. Harvey    D.D. Tolgyesi  
R. Velshi

Secretary: M. Leblanc

Recording Secretary: S. Dimitrijevic

General Counsel: J. Lavoie

<b>Applicant Represented By</b>		<b>Document Number</b>
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<b>Intervenors</b>		
No Intervenors		

**Licence:** Amended

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## INTRODUCTION

1. AREVA Resources Canada Inc. (AREVA) has applied to the Canadian Nuclear Safety Commission<sup>1</sup> (CNSC) for an amendment to the Uranium Mine Operating Licence for its McClean Lake Operation located in northern Saskatchewan. The current licence, UMOL-MINEMILL-McCLEAN.00/2017, expires on June 30, 2017.
2. McClean Lake is located about 750 km north of Saskatoon, Saskatchewan. Construction of McClean Lake began in 1994. The sequential open-pit mining of five ore bodies (JEB, Sue C, Sue A, Sue E and Sue B) was completed in 2008. AREVA designed and constructed the JEB Mill with radiation protection features that would allow the processing of high-grade ore from the Cigar Lake Operation and lower grades of ore extracted from the McClean Lake ore bodies. The McClean Lake ores have been processed through the JEB Mill and mill tailings have been deposited in the JEB Tailings Management Facility (TMF) which was engineered from the mined out JEB open-pit mine. AREVA temporarily shut down the JEB Mill in July 2010 once it had milled most of the stockpiled ore. A core contingent of AREVA staff has continued to maintain critical systems and monitoring and inspection programs at the facility while it is shut down.
3. During the temporary shutdown, AREVA conducted maintenance and modified the existing mill circuits to prepare the JEB Mill for the processing of high-grade ore from the Cigar Lake Mine.
4. AREVA requested that the Commission amend UMOL-MINEMILL-McCLEAN.00/2017 to authorize the following:
  - the operation of the high grade ore slurry receiving circuit and high grade milling circuits;
  - the increase of the maximum annual production from 3,636,363 kg (8 million pounds) U<sub>3</sub>O<sub>8</sub> to 5,909,090 kg (13 million pounds) of U<sub>3</sub>O<sub>8</sub> per year; and
  - the receipt and processing of ore slurry from the McArthur River Mine.
5. The potential effects of the operation of the ore slurry receiving circuit and high grade milling circuits and the increased uranium production were evaluated in previous environmental assessments (EAs). Further, a screening level EA was carried out to consider the processing of McArthur River ore at the McClean Lake Operation and concluded that it was not likely to cause significant adverse environmental effects, given existing controls and ongoing mitigation measures. The EA report was accepted by the Commission in April 2012<sup>2</sup>.

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<sup>1</sup> 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.

<sup>2</sup> Refer to the *Record of Proceedings and Reasons for Decision* on “Environmental Assessment Screening Report for the receipt and processing of McArthur River Ore Slurry at the McClean Lake Operation”, hearing date April 19, 2012.

6. It was further requested that the Commission adopt the proposed new licence format and Licence Conditions Handbook for the McClean Lake Operation.

#### Issue

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

8. 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 October 24, 2012 in Ottawa, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*<sup>4</sup>. During the public hearing, the Commission considered written submissions and heard oral presentations from CNSC staff (CMD 12-H9) and AREVA (CMD 12-H9.1 and CMD 12-H9.1A). There were no interventions.

#### **DECISION**

9. 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 AREVA is qualified to carry on the activity that the amended licence will authorize. The Commission is of the opinion that AREVA, 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 Uranium Mine Operating Licence, UMOL-MINEMILL-McCLEAN.00/2017, issued to AREVA Resources Canada Inc. for its McClean Lake Operation located in northern Saskatchewan. The amended licence, UMOL-MINEMILL-McCLEAN.01/2017, remains valid until June 30, 2017.

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<sup>3</sup> Statutes of Canada (S.C.) 1997, chapter (c.) 9.

<sup>4</sup> Statutory Orders and Regulations (SOR)/2000-211.

10. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 12-H9.

## **ISSUES AND COMMISSION FINDINGS**

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

### **Management System**

12. The Management System covers the framework that establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives and fosters a healthy safety culture.
13. AREVA stated that activities at the McClean Lake Operation are described and facilitated through a comprehensive Integrated Quality Management System (IQMS), which is designed to meet the requirements of the International Organization for Standardization's (ISO) 14001:2004 and Occupational Health and Safety Assessment Series (OHSAS) 18001:2007 standards. AREVA noted that the IQMS for the McClean Lake Operation is comprehensive, including all activities of all employees. AREVA further noted that department heads are responsible for maintaining and improving quality in their respective departments, and that this approach establishes clear lines of accountability and responsibility with respect to quality.
14. AREVA stated that it developed a document to facilitate the commissioning and start-up of the JEB Mill. AREVA explained that this document identifies the requirements of commissioning and start-up, and identifies how the process will be controlled. Further, AREVA stated that it developed procedures for the ore slurry receiving circuit in the JEB Mill that will be used during the commissioning and start-up of the JEB Mill, as well as for the transportation and receipt of ore slurry from the Cigar Lake and McArthur River Operations.
15. Based on its consideration of the presented information, the Commission concludes that AREVA has appropriate organization and management structures in place to adequately carry out the activities under the proposed licence.

## **Human Performance Management**

16. Human Performance Management encompasses activities that enable effective human performance through the development and implementation of processes that ensure that there is a sufficient number of staff in all relevant job areas, and that they have the necessary training, procedures and tools in place to safely carry out their duties.

### *Staffing*

17. AREVA stated that it retained 27 Mill Operations Group employees during the mill shutdown. AREVA noted that fifteen of the Mill Operators were qualified to operate all of the mill circuits and perform Central Control Room Operator duties, and that the remaining 12 operators were qualified to operate various mill circuits on their own and to function as peer trainers for junior operators. AREVA further stated that Junior Mill Operators would be hired from a pool of candidates who have completed the Saskatchewan Indian Institute of Technology (SIIT) Mill Operator Training Program.
18. The Commission asked for more information about AREVA's staffing for junior mill operators. An AREVA representative responded that AREVA, in conjunction with SIIT, is conducting a mill operator training program for groups of 12 to 14 trainees at a time, which runs for five to six shift weeks on site. The AREVA representative noted that the trainees come from the local communities and that half of the most recent group were women. The AREVA representative stated that the best candidates from this training program are selected to become mill operators or may be offered positions elsewhere in the organization.
19. The Commission asked if AREVA was having any difficulties with recruitment. An AREVA representative responded that one challenge is that AREVA has to hire candidates from elsewhere in the province for more technical roles, as the required levels of education may not be available for people in the local communities.
20. The Commission enquired about the Saskatchewan Indian Institute of Technologies. CNSC staff responded that it is a First Nation-controlled post-secondary institute that provides academic career education and training to First Nations adults in Saskatchewan and is governed by the Federation of Saskatchewan Indian Nations Legislative Assembly.

### *Training*

21. AREVA stated that, during mill start-up, the most experienced operators would be in charge of the more complex mill circuits, and that all returning Mill Operators would undergo refresher training. AREVA noted that new junior operators would be placed with senior operators in less complex mill circuits for peer training, and also be trained by Mill Trainers as they progress through the circuit. AREVA stated that it would adhere to a Systematic Approach to Training (SAT).

22. AREVA stated that it plans to send experienced Mill Operators, Mill Trainers and Training Advisors to the Key Lake Operation for practical training in the operation of the Key Lake ore slurry receiving circuit. AREVA noted that the ore slurry receiving circuit at the McClean Lake Operation is similar to the ore slurry receiving circuit that has operated at the Key Lake Operation for several years. AREVA further stated that it would use this experience when commissioning the ore slurry receiving circuit at the McClean Lake Operation, including updating procedures, work instructions and other training materials as required.
23. CNSC staff stated that it was satisfied with the approach taken by AREVA and noted that this approach is reasonable and commensurate with CNSC requirements to minimize and mitigate risks. CNSC staff noted that it would verify the training program in the early stages of mill start-up to ensure that the implementation of the training program meets CNSC requirements.
24. The Commission enquired about the training for the junior mill operators. The AREVA representative responded that its mill operator training program includes safety, radiation protection and orientation into the mill site. The AREVA representative noted that the new operators are matched up in a mentoring program with the experienced operators.

#### *Conclusion on Human Performance Management*

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

#### **Operating Performance**

26. Operating Performance includes an overall review of the conduct of the licensed activities and the activities that enable effective performance at the McClean Lake Operation.
27. AREVA provided information concerning the shutdown of the JEB Mill in 2010. AREVA noted that it had cleaned the equipment taken out of service to minimize sources of radiation and to facilitate inspections. AREVA further noted that it conducted inspections during the shutdown to identify any necessary repair work that would be required before re-starting the mill.
28. CNSC staff stated that it was satisfied that AREVA had safely shut down the JEB Mill. CNSC staff noted that it had inspected the shut-down mill and verified that the mill circuits were in a safe state and that the control measures in place were effective.



29. AREVA also discussed its plans for re-starting and commissioning the mill. AREVA stated that it planned to complete maintenance activities and transitioning of mill equipment to operational condition, followed by commissioning with water, by April 2013. AREVA noted that it expected to begin commissioning with waste rock or low grade ore in May 2013 and to begin commissioning with high grade ore in July 2013. AREVA stated that it expected to transition into JEB Mill production by September 2013. AREVA also noted that the initial operating schedule for the mill would be one week operating followed by one week down.
30. CNSC staff stated that it reviewed AREVA's plan and found that it met CNSC requirements. CNSC staff noted that it would inspect and review commissioning activities and records to ensure that AREVA will meet the commitments laid out in its plan, and that workers and the environment would continue to be protected during the transition to high grade ore.
31. The Commission asked for more information concerning the commissioning of the JEB Mill. An AREVA representative stated that there were no technical issues associated with commissioning the mill. The AREVA representative explained that the majority of the plant had been commissioned initially and operated for 10 years, but noted that the majority of the circuits would have to be restarted. The AREVA representative explained that the process would be to run water, then waste rock, then low grade ore, and then ramp up the feed grade to the plant. The AREVA representative further stated that the small number of components to the expanded JEB Mill that had never operated with ore would have to undergo commissioning to the original requirements.
32. Based on its consideration of the presented information, the Commission concludes that the operating performance at the facility provides a positive indication of AREVA's ability to adequately carry out the activities under the proposed licence, and to provide adequate protection to the health and safety of persons and the environment.

### **Safety Analysis**

33. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.
34. AREVA stated that the JEB Mill, including tailings preparation and effluent treatment processes, was designed to provide operational flexibility in order to process a variety of potential ore bodies and blends, and produce environmentally acceptable tailings and final treated effluent. AREVA noted that, prior to processing ores from a particular ore body, AREVA carries out a study to determine the required operating parameters for successfully processing the potential ore source. AREVA stated that it determined that the McArthur River ore slurry can be processed at McClean Lake without causing significant adverse effects to human or ecological receptors. CNSC staff concurred with AREVA.

35. 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. The Commission is satisfied that the facility does not pose an unreasonable risk to the health and safety of persons or the environment.

### **Physical Design**

36. Physical Design relates to activities that impact the ability of structures, systems and components to meet and maintain their design basis, taking into account planned modifications and changes in the external environment over time.
37. AREVA stated that the mill design incorporates several engineered controls, such as increased shielding, remote operation, and localized ventilation to control and minimize worker exposures to radiation. AREVA noted that the tailings preparation and effluent treatment circuits were designed to accommodate a range of ore sources, and that the design of the JEB WTP includes a multi-stage process that can accommodate effluents containing contaminants of various concentrations. CNSC staff stated that it is satisfied that the design of the JEB Mill is adequate to safely process the McArthur River ore.
38. Further, AREVA noted that the design production rate of the JEB Mill in its current configuration for processing high grade ore is 5,443,200 kg (12 million pounds)  $U_3O_8$  per year, and with operational and technological efficiencies, it may be able to achieve a maximum of 5,909,090 kg (13 million pounds)  $U_3O_8$  per year. As such, AREVA requested that the authorized annual production limit be increased to 5,909,090 kg  $U_3O_8$  per year.
39. CNSC staff stated that it was satisfied that the JEB Mill in its current configuration could achieve an annual production rate of 5,909,090 kg  $U_3O_8$  per year without causing significant adverse environmental effects. CNSC staff noted that the potential environmental effects from these production rates were assessed during the EAs that were carried with respect to proposed activities at McClean Lake. CNSC staff explained that the EAs carried out in 1995, 1997 and 2005 evaluated the environmental effects from the operation of the JEB Mill at an annual production rate of 10,909,090 kg (24 million pounds) of  $U_3O_8$  from a variety of ore sources (JEB, Sue, McClean Lake, Cigar Lake and Midwest), and affirmed that a fully developed project, consisting of the JEB Mill capable of an annual production rate of 24 million pounds of uranium concentrate, was not likely to cause significant adverse environmental effects.
40. Regarding the JEB tailings management facility (TMF), AREVA stated that it currently has enough capacity to store the tailings generated by planned JEB Mill production at an annual production rate of up to 5,909,090 kg  $U_3O_8$  until 2019. AREVA noted that it was preparing an application to request a licence amendment to authorize the expansion of the JEB TMF sufficient to store the tailings produced over a period of 25 years.

41. The Commission enquired about ore grade used in the JEB Mill. An AREVA representative responded that AREVA had previously run the McClean Lake Operation up to an ore grade of three percent  $U_3O_8$ , which was limited by the grade of ore mined at the time, and noted that forecasted average grade for the Cigar Lake mine was between 18 and 20%  $U_3O_8$ , which is similar to that from the McArthur River mine.
42. The Commission asked for more information concerning the differences in processing between low-grade and high-grade ore. An AREVA representative responded that as the ore grade increases, there is a higher recovery of uranium, which results in less uranium in the tailings.
43. The Commission asked about the long-term plans for the JEB Mill. An AREVA representative responded that AREVA expects Cigar Lake to produce 8,181,692 kg per year, and noted that other sources of ore would include the McClean Lake Operation, and the future Midwest Project. AREVA's representative stated that the overall capacity for the plan could eventually reach the 10,909,090 kg that had previously been assessed.
44. On the basis of the information presented, the Commission concludes that the ability of systems, components and structures to maintain their design basis is adequate for the activities included in the proposed licence.

### **Radiation Protection**

45. Radiation Protection covers the licensee's implementation of its radiation protection program in accordance with the *Radiation Protection Regulations*<sup>5</sup>. This program must ensure that radiation doses to persons and contamination are monitored and controlled to levels that are As Low As Reasonably Achievable (ALARA), social and economic factors being taken into account. The annual regulatory dose limits for nuclear energy workers are 50 millisieverts per year (mSv/y) and 100 mSv/5 years. The annual regulatory public dose limit is 1 mSv/y.
46. The radiological exposures to workers associated with the operation of the facility are due to alpha, beta and gamma radiation emitted by the material being processed, natural uranium compounds. AREVA has designated all employees at the McClean Lake Operation as Nuclear Energy Workers. Nuclear Energy Workers that have the potential to incur an effective dose in excess of 5 mSv are required to be monitored by a licensed dosimetry service, in accordance with the *Radiation Protection Regulations*.
47. AREVA described the elements of its radiation protection program, including dosimetry monitoring, radiological hazard area monitoring, bioassay sampling for uranium in urine, ventilation monitoring, management of radioisotopes, and personal protective respiratory equipment management. AREVA stated that its worker radiation dose objectives were to keep annual worker doses below 20 mSv/year, with routine

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<sup>5</sup> SOR/2000-203.

annual worker doses below 14 mSv/year, and to ensure that worker doses remain ALARA. AREVA noted that in order to meet the dose objectives, the following design objectives were used for the maximum radiological levels in routine workplaces at the JEB Mill:

- 5  $\mu\text{Sv/h}$  for gamma radiation
- 0.12  $\text{Bq/m}^3$  for uranium ore dust; and
- 0.03 working level (WL) for radon progeny levels.

48. AREVA stated that it designed and constructed the JEB Mill with engineered features to control radiation doses to workers from the processing of high grade (20 to 30%  $\text{U}_3\text{O}_8$ ) uranium ore. AREVA explained that high radiation sources would be isolated using physical barriers, shielding, containment and ventilation design features, and that contamination control zones would be in place to control the spread of contamination.
49. CNSC staff stated that AREVA has made adequate provisions to ensure that radiation doses to workers during the processing of high grade ore through the JEB Mill will be below radiation dose limits and ALARA.
50. The Commission asked for more information concerning AREVA's internal limit of 20 mSv/y. A representative from AREVA responded that the limit was based on the five-year limit of 100 mSv/5 years.
51. The Commission sought further information regarding the relationship between ore grade and radiation exposure and asked for more information concerning the predicated dose increase to workers as a result of the work with higher grades of ore. An AREVA representative responded that the relationship between gamma radiation exposure and ore grade is an empirical relationship that has been observed in the operation of the McClean Lake Operation. The AREVA representative noted that AREVA extrapolated exposure rates from its empirical data to develop its model for worker doses, which predicted a dose increase. AREVA indicated that once the mill begins to process high grade ore, the average dose to mill workers could increase from 1 mSv/y to 4 mSv/y, and that the maximum radiation dose under routine conditions may increase from 4 mSv/y to 13 mSv/y. AREVA noted that it would validate the predictions and ensure that it keeps doses ALARA during the start-up of the JEB Mill. CNSC staff concurred with the AREVA representative and added that the basic principles of radiation protection include exposure time, shielding and distance from the radioactive sources. CNSC staff stated that all three must be managed appropriately to keep doses ALARA. CNSC staff added that the increase was modelled using conservative assumptions, and that CNSC staff expects AREVA to put protective measures in place to keep doses to workers ALARA.
52. The Commission asked for more information concerning the protective measures in place to keep doses to workers ALARA. AREVA responded that the protective measures would include shielding and ventilation, and noted the importance of managing work activities to limit exposures.

53. The Commission is satisfied that the implementation of the radiation protection program and ALARA requirements ensure that the doses received by workers and members of the public are well below the regulatory limits. Based on this information, the Commission is of the opinion that, given the mitigation measures and radiation protection programs that are in place to control hazards, AREVA will provide adequate protection to the health and safety of persons and the environment.

### **Environmental Protection**

54. The CNSC requires that every licensee take all reasonable precautions to protect the environment and control the release of nuclear and hazardous substances into the environment.
55. AREVA described the Environmental Management System (EMS) for the McClean Lake Operation. AREVA explained that the EMS is designed to meet the requirements of the CNSC, Saskatchewan Ministry of Environment and Environment Canada, as well as the ISO 14001:2004 standard and internal requirements. AREVA noted that the two integral components of the EMS are the Environmental Monitoring Program and the Environmental Code of Practice.
56. AREVA stated that Environmental Code of Practice describes administrative and action levels for environmental protection pertaining to routine operational and environmental monitoring, including tailings preparation and water treatment. AREVA noted that the final treated mill effluent released to the environment at the final point of control for the facility must meet the effluent discharge limits stipulated in its operating licence, and is subject to Environment Canada's *Metal Mining Effluent Regulations*<sup>6</sup>. AREVA further noted that the Environmental Code of Practice identifies short term action and administrative levels on tailings and final treated effluent quality that will trigger investigations and if necessary the implementation of mitigation measures.
57. AREVA stated that the Environmental Monitoring Program is a comprehensive program that was designed to verify controlled releases, i.e., effluent discharges, and to evaluate potential effects due to contaminant loading in the receiving water bodies downstream of the effluent discharges. AREVA noted that monitoring data is compiled and presented in quarterly environmental reports, as well as the McClean Lake Operation annual report.
58. CNSC staff stated that the existing effluent quality limits are protective of the receiving environment. CNSC staff further stated that it was satisfied that AREVA's Environmental Monitoring Program would continue to provide protection for the environment.

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<sup>6</sup> SOR /2002-222.

59. The Commission asked if any changes to the environment were anticipated as a result of the increased production and use of higher grade ore. CNSC staff responded that it did not anticipate any change to the environment as a result of the requested activities, but noted that it would review environmental monitoring data and respond should any increasing trends be identified.
60. The Commission is of the opinion that, given the mitigation measures and safety programs that will be in place to control hazards, AREVA will provide adequate protection to the environment.

### **Emergency Management and Fire Protection**

61. AREVA stated that it conducts emergency response planning to ensure that emergency situations are responded to quickly and efficiently to protect the safety of personnel and the public, and to minimize the impact to the environment and facilities. AREVA noted that it has an Emergency Response Team (ERT) that is trained to respond to emergencies. AREVA further noted that the ERT receives routine, weekly training, as well as specialized training.
62. The Commission asked for more information concerning the mutual aid agreement in place for other mine and mill operators in northern Saskatchewan. A representative from AREVA confirmed that an agreement exists with AREVA, Cameco Corporation and other operators in northern Saskatchewan. The AREVA representative explained that the agreement is so that the other operators are able to make equipment and responders available to assist in the event of an emergency. The AREVA representative noted that a certain number of staff will remain on all of AREVA's operating sites to ensure that they would still be able to respond to a concurrent emergency.
63. The Commission, noting the earthquake and tsunami event in Fukushima, Japan, enquired about natural hazards at the site. An AREVA representative responded that AREVA looked at all credible natural hazards that could arise at the site, and noted that the McClean Lake Operation is located in a zone with very little seismic activity. The AREVA representative explained that wild fires and flooding were more likely events that could affect the site. The AREVA representative stated that its ERT is trained to fight forest fires, and noted that it has worked with the government of Saskatchewan in past forest fire events.
64. The Commission sought further information regarding an emergency scenario where multiple system failures occur simultaneously. An AREVA representative responded that, as part of its emergency training, AREVA has conducted drills simulating combined emergencies such as power failures, spills and injuries. The AREVA representative noted that improvements were made as a result, including the addition of backup power supplies and improved communications. CNSC staff stated that, due to the remote location of the Northern Saskatchewan uranium mines and mills, many

emergency drills are conducted under the assumption that there will be a loss of on-site power. CNSC staff noted that the protection of the environment would be maintained through power outages because the mill would shut down and the treated effluent would remain in process tanks and treatment ponds.

65. Based on the above information, the Commission concludes that the fire protection measures and emergency management program at the McClean Lake Operation are adequate. The Commission is of the opinion that AREVA will provide adequate protection to the health and safety of persons, the environment and national security in cases of emergency and unplanned events.

### **Packaging and Transport**

66. Packaging and Transport covers the safe packaging and transport of nuclear substances and radiation devices to and from the McClean Lake Operation. AREVA must adhere to the *Packaging and Transport of Nuclear Substances Regulations*<sup>7</sup> and Transport Canada's *Transportation of Dangerous Goods Regulations*<sup>8</sup> for all shipments leaving the site. The *Packaging and Transport of Nuclear Substances Regulations* apply to the packaging and transport of nuclear substances, including the design, production, use, inspection, maintenance and repair of packages, and the preparation, consigning, handling, loading, carriage and unloading of packages.
67. AREVA stated that, when the JEB Mill resumes operation, McClean Lake Operation will begin receiving uranium ore slurry shipments transported over public highways from off-site suppliers such as McArthur River and Cigar Lake. AREVA noted that the ore slurry would be transported in containers designed for the transport of ore slurry, and that these containers must meet the regulatory requirements for industrial packages as defined in the *Packaging and Transport of Nuclear Substances Regulations*.
68. AREVA explained that its packaging and transport program was revised to include procedures for the receipt of ore slurry containers, as well as the decontamination and labelling of containers being returned to suppliers. CNSC staff noted that it would verify that AREVA's implementation of the processes and procedures for transport of ore slurry containers meets regulatory requirements.
69. The *Transportation of Dangerous Goods Regulations*, administered by Transport Canada, require that AREVA develop an Emergency Response Assistance Plan (ERAP) for emergencies arising during transport. AREVA stated that it revised its ERAP to include processes and procedures for the response to emergencies that could arise during the transport of uranium ore slurry. AREVA noted that its revised ERAP was approved by and registered with Transport Canada and includes the transport of ore slurry and the return of empty ore slurry containers from both McArthur River and Cigar Lake. CNSC staff stated that AREVA has made adequate provisions to respond to emergencies arising from the transport of ore slurry.

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<sup>7</sup> SOR/2000-208.

<sup>8</sup> SOR/2001-286.

70. The Commission sought more information concerning the route used to ship the ore from the McArthur River Mine to the McClean Lake Operation. A representative from AREVA responded that the EA for the processing of ore from the McArthur River mine looked at the full 980-kilometre (km) road route between the McArthur River Mine and the McClean Lake Operation using the existing highway. The AREVA representative noted that an EA is underway for a 60-km road between the McArthur River Mine and the Cigar Lake Mine that would significantly reduce the total of distance that that ore would have to travel.
71. Based on the above information and considerations, the Commission is satisfied that AREVA is meeting regulatory requirements regarding packaging and transport.

### **Application of the *Canadian Environmental Assessment Act***

72. Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act, 2012*<sup>9</sup> (CEAA 2012) have been fulfilled.
73. AREVA requested an amendment to their current licence to allow for the following activities at the McClean Lake Operation:
- operation of the high grade ore slurry receiving area and high grade milling circuits;
  - increase the maximum annual production from 3,629,300 kg (8 million pounds) to 5,909,090 kg (13 million pounds) U<sub>3</sub>O<sub>8</sub>; and
  - process ore slurry from the McArthur River Mine.
74. CNSC staff reported that the first two requests fell within the parameters of previous projects assessed under the old *Canadian Environmental Assessment Act*<sup>10</sup> (CEAA). CNSC staff explained that the 1995 Cigar Lake EA<sup>11</sup> included the construction and operation of the ore slurry receiving facilities at McClean Lake's JEB Mill, and that was reviewed by a Joint Federal-Provincial Panel on Uranium Developments in Northern Saskatchewan in 1997. CNSC staff noted that this EA also considered an annual production of 10,909,090 kg of U<sub>3</sub>O<sub>8</sub> at the McClean Lake Operation. CNSC staff further noted that the 2010 EA for the Caribou Project<sup>12</sup> also assessed the annual production at the McClean Lake Operation at 10,909,090 kg of U<sub>3</sub>O<sub>8</sub>.

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<sup>9</sup> S.C. 2012, c. 19, s. 52.

<sup>10</sup> S.C. 1992, c. 37.

<sup>11</sup> Cigar Lake Mining Corporation, Cigar Lake Project Environmental Statement, 1995.

<sup>12</sup> Refer to the Record of Proceedings and Reasons for Decision on "Environmental Assessment Screening Report for the Proposed Caribou Project at McClean Lake", hearing date April 7, 2010.



75. Regarding the processing of ore slurry from the McArthur River Mine, CNSC staff stated that a federal EA was required, pursuant to paragraph 5 (1)(d) of the CEAA. Further, CNSC staff stated that AREVA was required to seek approval for the Project and to complete an Environmental Impact Assessment (EIA) of the Project, and prepare and submit an EIS to the Saskatchewan Minister of Environment, pursuant to section 16(2)(c) of the *Saskatchewan Environmental Assessment Act*<sup>13</sup>. A joint Federal-Provincial screening level EA was carried out, subject to public and Aboriginal review concurrently with the provincial technical review. CNSC staff reported that the Commission reviewed the final Screening Report at a hearing held on April 19, 2012 and concluded that the project, taking into account the appropriate mitigation measures identified in the Screening Report, was not likely to cause significant adverse environmental effects<sup>14</sup>.
76. CNSC staff noted that the CEAA 2012 came into force on July 6, 2012, and as the proposed amendments were assessed under the old CEAA, there were no further EA requirements pursuant to the CEAA 2012.
77. The Commission asked if AREVA had implemented the mitigation measures required by the EAs for the McClean Lake Operation. CNSC staff responded that the mitigation measures, such as requirements for water treatment facilities and effluent and tailings management, had been implemented.
78. Based upon the above assessment, the Commission is satisfied that the requirements of the CEAA 2012 have been met.

### **Cost Recovery**

79. Uranium mine and mills licensed facilities are subject to the requirements of Part 2 of the CNSC *Cost Recovery Fees Regulations*<sup>15</sup>. Fees are normally charged on an annual basis and are paid by the licensee on a quarterly basis. AREVA is in good standing with the CNSC in regards to licensing fee payment for the McClean Lake Operation.

### **Decommissioning Plan and Financial Guarantee**

80. In order to ensure that adequate resources are available for a safe and secure future decommissioning of the facility, the Commission requires that an adequate financial guarantee for realization of the planned activities be in place and maintained in a form acceptable to the Commission throughout the licence period. The financial guarantee must meet the criteria of CNSC Regulatory Guide G-206<sup>16</sup>.

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<sup>13</sup> Chapter E-10.1 of the Statutes of Saskatchewan 1979-80 (effective August 25, 1980) as amended by the Statutes of Saskatchewan, 1983 c.77; 1988-89 c.42 and c.55; 1996 c.F-19.1; 2002, c.C-11.1; and 2010, c.11.

<sup>14</sup> Refer to the *Record of Proceedings and Reasons for Decision* on “Environmental Assessment Screening Report for the receipt and processing of McArthur River Ore Slurry at the McClean Lake Operation”, hearing date April 19, 2012.

<sup>15</sup> SOR/2003-212.

<sup>16</sup> CNSC Regulatory Guide G-206, “Financial Guarantees for the Decommissioning of Licensed Activities”, 2000.

81. AREVA stated that its 2010 decommissioning plan and financial guarantee encompassed the expanded JEB Mill and that no changes were required as a result of the proposed licence amendment. In its draft Licence Conditions Handbook, CNSC staff indicated that the 2010 revision of the decommissioning plan and financial guarantee in place were sufficient and noted that, at a minimum, the decommissioning plan and the value of the financial guarantee must be reassessed every five years.
82. Based on this information, the Commission is satisfied that the preliminary decommissioning plan and related financial guarantee are acceptable for the purpose of the current application for a licence amendment.

### **Public Information Program and Aboriginal Consultation**

#### *Public Information Program*

83. As outlined in CNSC regulatory document RD/GD-99.3<sup>17</sup>, a Public Information and Disclosure Program (PIDP) is a regulatory requirement for licensed operators of uranium mines and mills. The primary goal of the Public Information and Disclosure Program, as it relates to the licensed activities, is 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. Where the public has indicated an interest to know, 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.
84. AREVA stated that it organized a number of meetings with communities and stakeholders to provide information about the requested licence amendment and to take into consideration key issues that were raised in these meetings that could be addressed during the EA and licensing process. AREVA noted that the public showed the most interest in the following areas:
  - conditions of public highways;
  - logistics and safety of transportation activities;
  - contingency and emergency response assistance planning;
  - alternatives to the project, in particular, the potential road linkage between McArthur River Mine and Cigar Lake Mine, which is currently undergoing an EA by the province of Saskatchewan.
85. AREVA stated that it was transitioning from the requirements of Regulatory Guide G-217, Licensee Public Information Programs, and was in the process of developing a public information program and disclosure protocol that meets the requirements of RD/GD-99.3. AREVA provided information regarding its Aboriginal and Public Information Program (APIP). AREVA explained that the APIP outlines various forms of communication to ensure the public is adequately informed of AREVA's activities,

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<sup>17</sup> CNSC RD/GD-99.3, "Public Information and Disclosure", March 2012.

and guides the development of information and engagement activities for ongoing operations, projects under environmental assessment, and licensing. AREVA noted that the objectives of the APIP include information sharing, communicating business decisions, and responding to comments, issues or concerns from Aboriginal people or members of the public regarding AREVA's activities.

86. CNSC staff reported that AREVA's APIP met some of the requirements of RD/GD-99.3, but noted that other components were incomplete and required more work. AREVA stated that it would update the APIP during the next year, and CNSC staff stated that it would continue to monitor AREVA's compliance with the requirements of RD/GD-99.3.
87. CNSC staff stated that while improvements are necessary to comply with RD/GD-99.3, it was satisfied that AREVA provides open and transparent means and access for interested parties to obtain operational, environmental and safety information about the McClean Lake Operation and future projects and activities.
88. The Commission asked for more information concerning AREVA's deficiencies in meeting RD/GD-99.3. CNSC staff responded that AREVA's deficiencies were mostly around describing community and public views, opinions and concerns in relation to its licensed activities, and the means utilized to obtain them. CNSC staff noted that AREVA will be expected to expand on its existing public disclosure protocol by consulting with public stakeholders and interest groups with a focus on the local community to determine what types of information would be of public interest, and to make its public disclosure protocol available to the public. CNSC staff noted that this would include posting the protocol on the AREVA Web site, as well as, providing the CNSC with any revisions made to the protocol, indicating the changes made and feedback received from members of the public. CNSC staff noted that, overall, AREVA's public information program is extensive and effective, and that these new requirements would strengthen the program.

#### *Aboriginal Consultation*

89. CNSC staff stated that, as an agent of the Crown and as Canada's nuclear regulator, the CNSC recognizes and understands the importance of consulting and building relationships with Canada's Aboriginal peoples. The CNSC ensures that all its licensing decisions under the NSCA and decisions pertaining to environmental assessments under the CEAA uphold the honour of the Crown and consider Aboriginal peoples' potential or established Aboriginal or treaty rights pursuant to section 35 of the *Constitution Act, 1982*.<sup>18</sup>
90. CNSC staff provided information concerning the aboriginal consultation carried out for the EAs for the three requested licence amendments. CNSC staff noted that the EAs included public and Aboriginal engagement and concluded that the proposed activities would not cause adverse impacts to the environment.

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<sup>18</sup> *The Constitution Act, 1982*, being Schedule B to the Canada Act 1982 (U.K.), 1982, c. 11.

91. CNSC staff stated that, in addition to engagement activities conducted during the EA reviews and engagement activities conducted by AREVA that discussed the proposed licence amendments, CNSC staff sent a letter to each of the potentially interested First Nation and Métis communities identified during the EA for the Receipt and Processing of McArthur River Ore Slurry advising of the approval of the EA and that AREVA's application for the licence amendment would be heard by the Commission at a public hearing in October 2012. CNSC staff stated that it encouraged the First Nation and Métis communities and organizations to participate in the public hearing to advise the Commission directly of any concerns they may have in relation to this decision.
92. CNSC staff stated that, based on the information reviewed and received to date in relation to the previously approved EAs and the requested licence amendments, CNSC staff are of the opinion that these proposed activities will not cause adverse impacts to any potential or established Aboriginal or treaty rights.
93. The Commission noted that no Aboriginal groups presented information for the public hearing and asked AREVA to comment on this matter. The AREVA representative responded that AREVA has a long history of working in northern Saskatchewan and has established a good working relationship and understanding with the northern communities. The AREVA representative noted that generally the communities are satisfied with the protection of health and safety of people and the environment.

*Conclusion on Public Information Program and Aboriginal Consultation*

94. Based on this information, the Commission is satisfied that AREVA's public information program meets regulatory requirements and is effective in keeping the public informed on the facility operations. The Commission is satisfied that AREVA has adequately consulted with the public, Aboriginal persons and other stakeholders. The Commission is also satisfied that its hearing process accords with the Commission's duty to conduct itself in a way to uphold the honour of the Crown.

**Licence Amendment and Conditions**

95. AREVA has applied to the CNSC for a licence amendment for the following activities:
  - the operation of the high grade ore slurry receiving circuit and high grade milling circuits;
  - the increase of the maximum annual production from 3,636,363 kg (8 million pounds) U<sub>3</sub>O<sub>8</sub> to 5,909,090 kg (13 million pounds) of U<sub>3</sub>O<sub>8</sub> per year; and
  - the receipt and processing of ore slurry from the McArthur River Mine.

96. CNSC staff recommended that the Commission accept and grant the proposed amended licence. CNSC staff stated that AREVA is qualified to carry on the activities authorized by the amended licence, and will, in carrying out those activities, 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.
97. CNSC staff also proposed a new licence format for the operating licence. CNSC staff explained that the new licence format incorporates the use of a Licence Conditions Handbook (LCH) and is meant to strengthen regulatory oversight, increase regulatory effectiveness and efficiency, and reduce administrative efforts.
98. CNSC staff explained that the new licence incorporates a risk-informed approach, eliminates cascading references to changing working-level licensee documentation and establishes compliance verification criteria to be used by the licensee for self-compliance verification and by CNSC staff for a regulatory focus on risk-significant items. CNSC staff further explained that the proposed licence conditions refer to well-defined policies or programs, specific requirements in accepted standards and regulatory documents, and tables of numerical limits which define the limits of authorization issued by the Commission. CNSC staff noted that the new licence format has been implemented for other licensees, including nuclear fuel facility operating licences and power reactor operating licences.
99. In addition to the licence, CNSC staff provided information regarding the Licence Conditions Handbook. CNSC staff explained that the Licence Conditions Handbook consolidates compliance verification criteria, provides interpretations and clarifies how the licensee must be in compliance with the licence. CNSC staff further explained that the Licence Conditions Handbook is specific to each individual facility.
100. The Commission sought clarification regarding the possibility for AREVA to increase its production in the future, noting that the licence amendment request was for 5,909,090 kg but the McClean Lake Operation had been assessed for up to 10,909,090 kg in previous environmental assessments. An AREVA representative responded that the 5,909,090 kg production was based on its forecasted operating production limit for the remainder of the licence period. CNSC staff stated that despite the conclusions of the EA allowing up to 10,909,090 kg of production, the licensing basis for the facility would also have to be maintained in order for the production limit to be increased beyond the requested 5,909,090 kg. CNSC staff noted that the licensing basis for the facility includes the physical design of the facility, as well as all of AREVA's safety programs. CNSC staff further noted that if there are any changes to the licensing basis, AREVA would have to apply for a new licence amendment from the Commission.

101. Based on the provided information and above considerations, the Commission is satisfied that AREVA is qualified to carry on the activities authorized by the amended licence. The Commission accepts the licence format, licence conditions and LCH as recommended by CNSC staff. The Commission also accepts CNSC staff's recommendation regarding the delegation of authority in the LCH. The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.

### CONCLUSION

102. The Commission has considered the information and submissions of AREVA and CNSC staff as presented in the material available for reference on the record.
103. 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 AREVA 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.
104. The Commission therefore amends, pursuant to section 24 of the *Nuclear Safety and Control Act*, the Uranium Mine Operating Licence, UMOL-MINEMILL-McCLEAN.00/2017, issued to AREVA Resources Canada Inc. for its McClean Lake Operation located in northern Saskatchewan. The amended licence, UMOL-MINEMILL-McCLEAN.01/2017, remains valid until June 30, 2017.
105. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 12-H9.



Michael Binder  
President,  
Canadian Nuclear Safety Commission

DEC 19 2012

Date