Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant	Cameco Corporation
Subject	Application for the Renewal of the Operating Licence for the McArthur River Uranium Mine
Date	October 25, 2004

RECORD OF PROCEEDINGS

Applicant:	Cameco Corporation
Address/Location:	2121-11th Street West, Saskatoon, Saskatchewan, S7M 1J3
Purpose:	Application for the renewal of the operating licence for the McArthur River uranium mine
Application received:	March 17, 2004
Date(s) of hearing:	July 7, 2004 September 15, 2004
Location:	Canadian Nuclear Safety Commission (CNSC) Public Hearing Room, 280 Slater St., 14th. Floor, Ottawa, Ontario
Members present:	L.J. Keen, Chair A.R. Graham C.R. Barnes M. J. McDill J.A. Dosman
General Counsel:	K. Moore / J. Lavoie
Secretary:	M.A. Leblanc
Recording Secretary:	S. Gingras

Applicant Represented By	Document Number
• T. Rogers, Chief Operating Officer • J. Jarrell, Vice President of Safety Health and Environment • W. Buck, General Manager • D. Bronkhorst, McArthur River's Mine Manager • S. Grant, Manager of Quality Management System, Environmental Management System and Regulatory Compliance • M. Seier, Senior Coordinator, Radiation Safety • Dr. P. Landine, Manager of Hydrology, Civil Engineering in Cameco's Safety, Health and Environment • S. Donald, Senior Hydrogeologist with Golder Associates	CMD 04-H17.1 CMD 04-H17.1A CMD 04-H17.1B
CNSC Staff	**Document Number**
• B. Howden • K. Scissons • F. Ashley	CMD 04-H17 CMD 04-H17.A
Intervenors	**Document Number**
See Appendix A	

Licence: Renewed
Date of Decision: September 15, 2004

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1. Introduction

Cameco Corporation (Cameco) has applied to the Canadian Nuclear Safety Commission (CNSC[1]) for the renewal of its operating licence for the McArthur River uranium mine in northern Saskatchewan. Cameco has requested a five-year licence term.

The current licence (expiring on October 31, 2004) authorizes Cameco to operate a uranium mine at the McArthur River mine site, including: the mining and processing of uranium ore; the maintenance of facilities necessary to support the mining operation; the transport of uranium ore slurry, mineralized waste rock and low grade uranium ore to Cameco's separately licensed Key Lake Operation; and the possession, storage, transfer, import, use, and disposal of nuclear substances and radiation devices.

Issues:

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

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

b) if, in carrying on that activity, Cameco 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:

The Commission, in making its decision, considered information presented for a public hearing held on July 7, 2004 and September 15, 2004 in Ottawa, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*. During the public hearing, the Commission received written submissions and heard oral presentations from Cameco (CMD 04-H17.1, CMD 04-H17.1A and CMD 04-H17.1B) and CNSC staff (CMD 04-H17 and CMD 04-H17.A). The Commission also considered oral and written submissions from intervenors. See Appendix A to this *Record of Proceedings* for a detailed list of the interventions.

2. Decision

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 Cameco is qualified to carry on the activity that the licence will authorize. The Commission is also satisfied that Cameco, in carrying on that activity, will make adequate provision for the protection of the environment, the

[1] In this *Record of Proceedings*, 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.

health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed. Therefore,

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the McArthur River Uranium Mine Operating Licence, held by Cameco Corporation, Saskatoon, Saskatchewan. The renewed licence (UMOL-MINE-McARTHUR.00/2008) is valid from November 1, 2004 to October 31, 2008, unless suspended, amended, revoked or replaced.

The Commission includes in the licence the conditions recommended by CNSC staff, as set out in the draft licence attached to CMD 04-H17.

With this decision, the Commission also requests CNSC staff to present to the Commission an interim status report on the performance of the facility. The status report is to be presented at a public proceeding of the Commission as soon as practical following the mid-point of the licence term (November 2006).

3. Adequacy of the Hearing Process

The Commission considered the concerns expressed by an intervenor about the adequacy of the Commission's public hearing process.

In her intervention, M. Shiell described the Commission's hearing process as "not very democratic" and that the current process of inviting public comments is insufficient.

In response to this comment, the Commission is satisfied that the hearing was properly conducted in accordance with the CNSC *Rules of Procedure* and that the public and other stakeholders had sufficient time to express their views to the Commission. The Commission wishes to assure all intervenors and other stakeholders that it carefully considers all oral and written interventions when making its decisions.

4. Issues and Commission findings

In making its licensing decision under section 24 of the *Nuclear Safety and Control Act*, the Commission considered a number of issues relating to Cameco's qualifications 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. The Commission's findings on these issues are summarized in this section. A number of issues related to a sudden, unplanned inflow of groundwater to the mine in 2003. That event and the various related health, safety, environmental and operational aspects are discussed throughout this *Record of Proceedings* under the appropriate topic headings.

4.1 Radiation Protection

As part of its evaluation of the adequacy of the provisions for protecting the health and safety of persons, the Commission considered the past performance and future plans of Cameco in the area of radiation protection at the McArthur River mine site.

Cameco, in its submission, reported that, while radiation exposures remained in compliance with the regulatory limits, several ALARA (as low as reasonably achievable) initiatives have been taken in order to further reduce exposures. For example, Cameco reported that a job task analysis on the two highest exposed job groups was performed in 2002, and that the subsequent efforts to further reduce radiation exposures were successful. Cameco also reported a decrease in the number of reportable radiological incidents in 2003.

CNSC staff reported that it performed an evaluation of Cameco's radiation protection program in January 2004, and found the program meets all CNSC requirements. CNSC staff added that radiation doses to workers remained well below the regulatory limits during the licensing period. CNSC staff noted that the increase in doses observed in 2003 was primarily related to the mine-water inflow incident discussed further below. With respect to the two reported instances when the action level for exposure to radioactive dust was exceeded, CNSC staff reported that these incidents were investigated and that Cameco made appropriate changes to its processes and procedures to prevent recurrence.

Mine-water Inflow Incident (Radiological Aspects):

Beginning on April 6, 2003, a significant uncontrolled inflow of ground water to the mine occurred. The total mine inflow at the problem site peaked at approximately 1000 m^3/h which was added to the normal base-load inflow to the mine of approximately 250 m^3/h. Cameco temporarily ceased mining while it sealed the inflow location and installed additional pumping capacity and alternate water treatment to deal with the excess mine water. CNSC staff was notified of this event within 24 hours. CNSC staff reported the event during the April 2003 Commission Meeting, and provided updates to this event in Significant Development Reports presented to the Commission during the May and November 2003 Commission Meetings.

With respect to the radiological aspects of the mine-water inflow event that occurred in the mine in 2003, Cameco stated that it considers it took all necessary and appropriate measures to minimize the related increase in radiation exposures to the workers.

CNSC staff also reported that it conducted an evaluation of the radiation exposure estimates made during the inflow event and concluded that the calculation method used was appropriate and conservative. CNSC staff stated that, while it identified some concerns related to the control of radiation doses during the incident, CNSC staff considers it unlikely that there will be any negative effects on health of the workers as a result of the doses received during the event.

In response to the Commission's question on whether the workers at the mine believed the estimates of doses received following the incident, Cameco stated that it has found that the company had to enhance communications with the workers to address some initial concerns and skepticism on these estimates. CNSC staff agreed that more and earlier communication with the workers on the dose estimates radiation risks would have been beneficial. However, CNSC staff

expressed its satisfaction with the subsequent efforts made by Cameco in this regard. Cameco further noted that it is considering improvements to its radiation protection training for the employees to address the information needs that arose during the event.

In their intervention, the Canadian Nuclear Workers Council and the United Steel Workers of America (CNWC and the USWA) observed that, from their discussions with several of the workers involved in the event, the workers generally appeared to lack the necessary knowledge to properly interpret their dose reports and that this resulted in unnecessary stress and anxiety among the workers. Further in this regard, the CNWC and the USWA acknowledged Cameco's efforts to rectify this by providing the additional radiation awareness training noted above. The CNWC and the USWA also informed the Commission that they are satisfied that radiation levels during the water inflow event were appropriately minimized and within regulatory limits.

Further with respect to the radiological aspects of the mine-water inflow event, Keewatin Visions, in its intervention, stated that the miners expressed major concerns about the accuracy of the radiation recording and exposure estimates during the incident. According to Keewatin Visions, some miners feel that the relationship between CNSC staff and Cameco management may be too amiable. To reduce this kind of anxiety in future, Keewatin Visions recommended that the Commission add conditions to the licence that would require Cameco to immediately report all potentially high radiation exposure events, and that CNSC staff independently record radiation exposure levels at the site as soon as reasonably possible after the initiation of an event.

In response to the Commission's questions in respect of these concerns and recommendations by Keewatin Visions, CNSC staff stated that it did mobilize quickly after the water inflow incident was reported and that, while it was not physically on site immediately and continuously, it continued to follow the situation closely. CNSC staff reported that it was present at the site approximately six days after the incident began. CNSC staff acknowledged that this timing unfortunately may have led some workers to misinterpret the CNSC staff's level of concern about the event. Concerning the alleged inappropriate relationship between CNSC staff and Cameco management, the Commission received no evidence to support this assertion.

With respect to the specific licensing recommendation from Keewatin Visions, CNSC staff noted that such incident reporting requirements are already included in the draft licence attached to CMD 04-H17. CNSC staff also does not consider that a licence condition (as suggested by Keewatin Vision) concerning the CNSC's recording of radiation exposure levels as necessary since CNSC staff is committed to taking all appropriate regulatory actions during any significant incident. In addition, the Commission notes that such a licence condition would not be appropriate because licence conditions apply to the licensee and not to regulatory staff.

Further with respect to the water inflow event, Keewatin Visions expressed concern about what it characterized as the inadvertent use of a clean water line for "dirty" (i.e., radon-rich) mine water. Keewatin Visions reported that water from the affected line was used to clean floors in the refuge station, resulting in what Keewatin Visions described as high levels of radiation exposure to the workers. In response to the Commission's questions on this event, Cameco explained that, due to a temporary loss of water supply, it intentionally diverted water from one of the mine-water pipelines. Cameco noted that the situation was communicated to all employees in advance and that the plan was discussed with the Health and Safety Committee.

CNSC staff reported that the use of the water in the manner described did not result in a significant increase in the radiation dose to the workers.

Conclusion on Radiation Protection:

Based on this information, the Commission is satisfied that Cameco has made, and will continue to make, adequate provisions for the protection of persons from radiation while operating the McArthur River mine. The Commission is also satisfied that the additional licence condition recommended by Keewatin Visions is neither necessary nor appropriate.

4.2 Environmental Protection

To determine whether Cameco will take adequate measures to protect the environment during the operations of the McArthur River mine, the Commission considered the potential for the operating activities to adversely affect the environment.

Environmental Protection Program:

CNSC staff reported that Cameco developed an Environmental Protection Program during the current licence period. CNSC staff audited the program in March 2004 and found several deficiencies. Cameco responded to the audit findings in August 2004 and CNSC staff is of the view that Cameco is taking appropriate actions to address the identified deficiencies.

CNSC staff stated that it will continue to review the implementation of the required improvements as part of the CNSC compliance program.

Mine Effluent Quality:

With respect to the contaminants released to the environment in the mine effluent, Cameco reported that, except for a short-term radium-226 excursion in October 2003 (see the discussion on environmental incidents below in this section), contaminant levels have remained within acceptable limits. Cameco further reported that, while there was an increase in the amount of molybdenum discharged in the final effluent, the concentrations in the downstream sediments remain well below the aquatic life no-observed-effect-concentration for molybdenum in sediments. Cameco also noted that uranium concentrations in the near-field sediments have also increased. Cameco noted that enhanced monitoring of uranium and molybdenum will be performed as a result of these findings.

CNSC staff explained that, although the volume of effluent discharged increased in 2003, the uranium and molybdenum concentrations in the effluent did not significantly increase. However, CNSC staff confirmed the above-noted significant increase in uranium and molybdenum concentrations in the near-field sediments since 2000. As a result, CNSC staff has requested Cameco to provide, by November 30, 2004, an action plan for a further review of this sediment contamination issue.

Further with respect to the radiological characteristics of the treated effluent, CNSC staff reported that, from September to October 2003, seven (8-hour) composite treated effluent

samples exceeded the discharge limits for radium set out in the licence and the *Metal Mining Effluent Regulations*. CNSC staff noted, however, that the monthly mean radium-226 values met the licence requirements and that corrective actions taken by Cameco to prevent recurrence of this problem are satisfactory.

With respect to the non-radioactive contaminant selenium, Cameco reported that all selenium concentrations in the effluent remain well below the effluent quality limit. CNSC staff reported that, while it agrees selenium does not currently pose a significant risk to biota in the vicinity, it has requested Cameco to include selenium in the fish tissue analyses to be carried out in the fall of 2004 as part of the environmental effects monitoring program.

Waste Rock Effluent Quality:

Cameco explained that potential leakage from the waste rock pad area is monitored by groundwater monitoring piezometers. According to Cameco, historical monitoring results collected since 1993 have not indicated any significant contamination issues. Cameco explained that the dominant flow path is downward (likely induced by mine shaft column inflow leakage). Cameco further noted that newly installed monitoring wells will allow for more detailed examination of these vertical patterns and will help determine the requirements for expanding the network of monitoring wells outside of the footprint of the mine surface facilities.

Benthic Macro Invertebrate Studies:

Cameco reported that it recently performed a comparison between the latest (2003) and the historic benthic invertebrate data. From this analysis, Cameco has discovered that some sensitive species within Boomerang Lake have responded to environmental changes; however, it is unclear if the changes were due to natural variation or other factors.

CNSC staff explained that, as a result of some inadequacies in the 2003 study design, follow-up benthic macro-invertebrate analyses will be conducted as part of the environmental effects monitoring program in the fall of 2004.

M. Shiell, in her intervention, expressed the view that it is not possible to make adequate provision for the long-term protection of the environment when mining ore at 24.4% uranium. M. Shiell contends that the scientific community does not understand well enough the long-term consequences of alpha radiation on biota. M. Shiell therefore requested that a licence condition be added, requiring Cameco to perform studies on the reproductive effects of alpha radiation on exposed biota.

The Commission considered the information presented by M. Shiell, together with that presented by Cameco and CNSC staff on the same topic. The Commission is satisfied that acceptable precautions are being taken to protect non-human biota at the McArthur River mine from the effects of radiation. The Commission is also satisfied that appropriate studies and environmental effects monitoring are being carried out to confirm this and further reduce the related scientific uncertainty. As such the Commission does not consider that a further licence condition in this regard is necessary at this time.

Environmental Incidents:

CNSC staff reported that five reportable spills occurred in 2003, but that none resulted in significant consequences to the environment. This compares with one such incident in 2001 and none in 2002. Cameco stated that reducing the number of reportable spills is a focus area in their Environmental Management System.

Mine-water Inflow Incident (Environmental Aspects):

Cameco stated that, based on the results of environmental effects monitoring carried out immediately following the mine-water inflow event in 2003, it has determined that the event did not result in any significant impacts to the treatment facilities or to the environment. CNSC staff concurred with Cameco in this regard.

The Commission questioned an intervenor, the Northern Saskatchewan Environmental Quality Committee (EQC) - Athabasca Subcommittee, on whether it was satisfied with the measures taken by Cameco to mitigate impacts of the incident on the environment. In response, the EQC stated that, according to their observations on the site, reasonable precautions were taken by Cameco to protect the environment.

Conclusions on Environmental Protection:

Based on the above information, the Commission is satisfied that Cameco has made, and will continue to make, adequate provision for the protection of the environment during the proposed continued operation of the McArthur River mine.

4.3 Conventional Health and Safety

As part of its evaluation of the adequacy of provisions for protecting the health and safety of persons, the Commission considered the past performance and future plans of Cameco in the area of conventional (non-radiological) health and safety at the McArthur River mine.

With respect to the number of lost-time injuries to employees (including contractors) that have occurred at the site over time, Cameco reported that there were four such injuries in 2002, six in 2003 and, none to date in 2004. From its review of the reported accidents, CNSC staff reported its satisfaction with corrective actions taken by Cameco. Cameco considers that there is an improved attitude regarding safety at the site.

With respect to the mine-water inflow event in 2003, Cameco reported that no significant conventional health and safety issues arose, and that no lost-time incidents resulted during the event.

Cameco noted that it implemented a revision of its safety program in 2002 and 2003. CNSC staff stated that Cameco's Operational Health and Safety Program was evaluated by Saskatchewan Labour and was found to be satisfactory. CNSC staff also stated that Saskatchewan Labour evaluated Cameco's Occupational Health and Safety Committee and considered it adequate.

Based on this information, the Commission is satisfied that Cameco has made, and will continue to make, adequate provision for the protection of persons from conventional (non-radiological) hazards during the operation at the McArthur River mine.

4.4 Operations

The Commission considered the current and past operating performance as a further indication of Cameco's qualifications to continue operating the facility and, in doing so, provide for the protection of the environment, persons, national security and international obligations.

CNSC staff reported that some deficiencies had been identified regarding program implementation. In particular, after an evaluation of the mine-water inflow incident in 2003, CNSC staff identified significant deficiencies in the mine risk assessment process and development engineering process. As elaborated below, CNSC staff considers that improvements in performance are required to address the identified weaknesses.

CNSC staff reported that, from November 2001 to May 2004, it conducted 15 inspections at this site. All 19 action items identified during those inspections have been addressed in a manner satisfactory to CNSC staff.

The CNWC and the USWA, in their interventions, stated that they consider Cameco has demonstrated a capability to operate the project in a safe and competent manner.

Mine-water Inflow Incident (Operational Aspects):

Cameco reported that work to seal off the inflow was almost complete, and that several corrective actions had been taken to prevent the recurrence of such an event. Cameco indicated that changes had been made to the mine-water handling and treatment facilities to ensure there is adequate pump-and-treat capacity in the event that a similar event occurs in the future. In addition, Cameco stated that additional high-head pumping capacity had been installed underground to mitigate current and future potential inflows.

The Commission enquired about inspection schedules for these new pumps. In response, Cameco stated that the pumps are inspected regularly, and those that are not used routinely are tested weekly.
The Commission observed that the normal volume of operational mine water requiring management has continued to increase with time as the mine develops. With respect to this trend, the Commission asked Cameco whether it will continue to increase its normal operating pumping capacity in step with the mine development such that the contingency pumping capacity for unplanned events would be continuously maintained. In response, Cameco explained that it will continually reassess its mine-water management requirements as the mine develops. Cameco expressed confidence that it will be able to continuously maintain a pump-and-treat capacity equal to the maximum expected event.

In response to follow-up questions from the Commission on this topic, Cameco explained that it currently has the capacity to pump 1,300 cubic meters of water per hour from the mine (the same that was required during the inflow event in 2003) and that it will not mine again close to the

geological unconformity where the risk of inflow is greatest until it has installed the capability to pump and treat 1,500 cubic meters of water per hour. Cameco added that it expects to complete the installation of the underground pumping system in the first quarter of 2005, but if another incident were to occur, the same temporary system as was used during the incident in 2003 could be made available.

With respect to a dam that was constructed on the surface during the event to provide emergency mine-water storage capacity and ensure no untreated water would be released to the environment, Cameco explained that the dam and additional storage pond were ultimately not used during the event. Cameco noted that it will soon decide whether to seek approval to retain the dam for its intended emergency use, or to remove the structure. Cameco noted that an environmental assessment of the dam would likely be required if it is to be retained. The Commission questioned whether Cameco, in the absence of the contingency pond, would have adequate capacity to manage excess mine water on the surface during another major inflow event. In response, CNSC staff and Cameco stated that the requirements for contingency water management will be re-evaluated prior to any future mining in proximity to the geological unconformity where the risk of higher inflows exists. CNSC staff stated that it will continue to closely examine all aspects of Cameco's water retention and handling capabilities.

Noting that the above-noted provisions are aimed at responding to, rather than preventing another inflow event, the Commission questioned Cameco and CNSC staff on the provisions that are in place to predict and prevent such events from occurring. In this regard, the Commission questioned whether the number and location of the piezometers in the surrounding geologic formations were sufficient for Cameco to monitor and predict the threat of another incident. In response, CNSC staff stated that the piezometer network and hydrogeological models used by Cameco are designed to predict what the likely maximum inflows could be so that adequate contingency measures can be put in place; they are not intended to provide the fine level of detail that would be required for day-to-day mine development decisions.

CNSC staff explained that the root cause of the incident was not due to a misunderstanding of the regional hydrogeology, but rather to an inadequate characterization and management of risk in applying the ground probing and grouting methods in the mine and possibly on an over-reliance on those technologies. As a result of this finding, Cameco has submitted a report on its risk analysis and design review process which now includes a third-party specialist assessment of the geotechnical and hydrogeological risks of future mining. Further in this regard, CNSC staff recommended that the Commission add a condition to the licence (2.3) that would require Cameco to submit the results of the mine development risk analysis for the approval of the Commission or a person authorized by the Commission, prior to the development of any new mining area.

Keewatin Visions, in its intervention, similarly requested that the Commission include a condition in the licence that would require Cameco to prepare contingency plans that are reviewed by a qualified engineer before the development of any new mining areas. In response to this recommendation, CNSC staff confirmed that, pursuant to the above-recommended licence condition 2.3, such contingency plans would be required prior to obtaining approval to develop new areas of the mine.

Further with respect to Cameco's root-cause analysis of the mine-water inflow event, CNSC staff reported that it has identified deficiencies in the analysis which Cameco is in the process of addressing. CNSC staff reported that Cameco has committed to conduct a further independent assessment of the root causes in October 2004. CNSC staff indicated that it will review that analysis as part of its ongoing compliance program.

Packaging and Transport:

CNSC staff indicated that it conducted two packaging and transport audits during the period of the current licence. CNSC staff reported that Cameco has taken appropriate actions to correct the deficiencies identified during the audit.

In response to a question from the Commission on what Cameco did to correct the problems identified, Cameco stated that it revised procedures, provided appropriate training to the workers, including training on transport of dangerous goods (nuclear materials), and revised the maintenance program for slurry containers.

Conclusion on Operations:

Based on the above information and considerations, the Commission concludes that the past operating performance at the McArthur River mine provides a positive indication of Cameco's ability to adequately carry out the proposed activities under the operating licence. The Commission accepts CNSC staff's recommendation to add the proposed condition 2.3 to the licence that would require Cameco to submit the results of the mine development risk analysis for the approval of the Commission or a person authorized by the Commission, prior to the development of any new mining area.

4.5 Quality Assurance and Training

In its assessment of Cameco's ability to sustain acceptable performance, the Commission considered Cameco work planning, quality assurance and training programs for the operation of the McArthur River mine.
Environmental Management System:

With respect to environmental quality assurance, Cameco reported that the Environmental Management System (EMS) for the McArthur River mine is registered to the ISO 14001 international standard. Noting that CNSC staff had identified management issues in its audit of the EMS, the Commission sought further information from Cameco on how it has responded to those findings. In response, Cameco stated that it has reorganized its management structure to address the comments raised by CNSC staff. In response to follow-up questions to CNSC staff on this topic, CNSC staff stated that it has observed improvements in the EMS and considers Cameco to be moving in the right direction. However, CNSC staff's review is not yet complete. CNSC staff will continue to provide Cameco with further comments as necessary.

Operational Quality Assurance:

Concerning improvements to other aspects of the quality assurance program at the McArthur River mine, Cameco stated that this has been a major undertaking during the current licensing period. CNSC staff reported that Cameco has submitted a Quality Management System Development and Implementation Plan and that, to date, as required by a condition in the current licence, Cameco has met the scheduled deliverable dates specified in the implementation plan.

CNSC staff added that, in August 2004, Cameco provided responses to the findings of a CNSC audit of the McArthur River mine quality assurance program. CNSC staff reported its satisfaction with the corrective actions being taken by Cameco in this regard. CNSC staff will, as part of its compliance program, continue to review the implementation of the quality assurance program improvements.

Based on the above information, the Commission is satisfied that the quality assurance measures for the operations of Cameco's McArthur River mine are satisfactory. The Commission encourages Cameco and the unions to continue working together on implementing changes at the facility.

Training:

CNSC staff reported that Cameco is also taking appropriate action to respond to the deficiencies in an earlier CNSC audit of Cameco's training at the McArthur River mine. In its response to the CNSC staff's findings, Cameco also provided action plans for preparing more detailed responses and to meet the required objectives. CNSC staff will continue to review the implementation of the required actions as part of the compliance program. The Commission finds this acceptable.

4.6 Emergency Preparedness

With respect to the protection of persons and the environment during emergencies that could arise at the McArthur River mine site, Cameco indicated that the emergency response plan was revised in response to an evaluation by CNSC staff. Cameco further reported that there were two emergency simulation exercises conducted in 2002, and that training for individuals with specific responsibilities in an emergency was initiated in 2003.

CNSC staff reported that Cameco has addressed deficiencies in the emergency preparedness program, and that CNSC staff will verify through compliance activities the implementation and training of employees and procedure revisions. CNSC staff is planning to perform a formal audit of the Emergency Preparedness and Response Program, including Cameco's emergency exercises, during the next licence term.

CNSC staff considers that the implementation of Emergency Preparedness measures during the water inflow incident was satisfactory.

Based on this information, the Commission is satisfied that, for the operations of the McArthur River mine, Cameco will be adequately prepared for emergencies that could arise.

4.7 Security

With regard to the maintenance of security at the project site during the proposed activities, CNSC staff noted that the security program for the McArthur River operation is fully documented in the Mining Facility Program Manual. CNSC staff also indicated that Cameco submitted a *Vulnerability Analysis and Threat Risk Assessment* in April 2002. CNSC staff reviewed this document and considers it acceptable.

Based on this information, the Commission is satisfied that Cameco will continue to make adequate provision for maintaining security at the McArthur River mine site.

4.8 Decommissioning Plan and Financial Guarantee

With respect to the decommissioning plans and related financial guarantees for the McArthur River mine site, CNSC staff reported that financial guarantees are in place in the form of irrevocable letters of credit for the total sum of $8.6 million, and that the letters of credit are in good standing with an annual self-renewal date. CNSC staff further explained that this financial guarantee was based on costs estimated in the accepted Preliminary Decommissioning Plan, dated April 2003.

Based on this information, the Commission is satisfied that an acceptable Preliminary Decommissioning Plan and related financial guarantee are in place for the purpose of the application.

4.9 Public Information

With respect to the CNSC's requirement that licensees maintain acceptable public information programs, Cameco explained that it had developed diverse ways of communicating with the public, including meetings with stakeholder groups, community visits, site visits and written communications. CNSC staff is of the opinion that Cameco's communication program is adequate to reach all of their target audiences.

CNSC staff indicated that Cameco, as part of its Emergency Preparedness and Response Programs, provided during the mine-water inflow incident, regular media statements and established processes to respond to enquiries.

The Commission asked an intervenor, the EQC, whether it is satisfied with information it receives from Cameco. The EQC noted that it meets with Cameco approximately six times a year, and has regular tours of the site. The EQC considers that it is receiving sufficient information from Cameco.

Based on the above information, the Commission is satisfied that Cameco has an adequate public information program in place for the McArthur River mine site.

4.10 Safeguards and Non-Proliferation

Concerning the matter of whether Cameco will make adequate provision to ensure maintenance of Canada's international obligations for safeguards and non-proliferation, CNSC staff reported that the McArthur River mine site is not subject to routine safeguards inspections. However, the International Atomic Energy Agency (IAEA) has the right to request complementary access to a location under the additional Protocol. CNSC staff reviewed Cameco's procedures for facilitating prompt access to IAEA inspectors, and considers them to meet requirements. To date, the IAEA has not exercised its right to access the site.

Based on this information, the Commission is satisfied that Cameco has made, and will continue to make, adequate provisions in the areas of safeguards and non-proliferation at the McArthur River mine that are necessary for maintaining national security and measures necessary for implementing international agreements to which Canada has agreed.

4.11 Canadian Environmental Assessment Act

Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act* (CEAA) have been fulfilled. CNSC staff stated that no environmental assessment is required under the CEAA because the renewal of the operating licence is not a trigger for such an assessment.

The Commission accepts this recommendation and is satisfied that no environmental assessment is required prior to the Commission making a decision on the application for renewal of the licence.

4.12 Licence Length

Cameco, in its submission, requested that the operating licence for the McArthur River mine site be renewed for five years. CNSC staff recommended a licence length of three years and eight months, on the basis of weaknesses in some programs and their implementation, and to address issues related to the CNSC's regulatory workload. CNSC staff proposed to submit, at the approximate mid-point of the licence term, a status report covering the relevant information on the operating performance of the facility.

M. Shiell, in her intervention, expressed the view that, until the scientific community has a better understanding of the long-term reproductive effects of alpha radiation, only very short licences should be granted for the mining of ore from very high grade uranium mines. M. Shiell recommended that only a two-year licence be considered.

Based on the above information and considerations, the Commission agrees with CNSC staff that a five-year licence would not be appropriate. However, the Commission considers a four-year licence to be acceptable for this facility. The Commission also requests CNSC staff to provide a status report as soon as practical following the November 2006 mid-point of the licence.

5. Conclusion

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

The Commission is satisfied that Cameco is qualified to carry the activity that the licence authorizes. The Commission is also satisfied that Cameco, 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.

The Commission therefore renews, pursuant to section 24 of the *Nuclear Safety and Control Act*, Uranium Mine Operating Licence for the McArthur River Operation. The licence (UMOL-MINE-McARTHUR.00/2008) is valid from November 1, 2004 to October 31, 2008, unless suspended, amended, revoked or replaced.

The Commission includes in the licence the conditions recommended by CNSC staff, as set out in the draft licence attached to CMD 04-H17.

With this decision, the Commission requests CNSC staff to present an interim status report on the facility to the Commission following the November 2006 mid-point of the licence term. The status report will be presented at a public proceeding of the Commission.

Marc A. Leblanc
Secretary,
Canadian Nuclear Safety Commission

Date of decision: September 15, 2004
Date of release of Reasons for Decision: October 25, 2004

Appendix A – Intervenors

Intervenors	Document Number
Canadian Nuclear Workers Council and the United Steel Workers of America, Local 8914, represented by D. Shier	CMD 04-H17.2 CMD 04-H17.2A
Northern Saskatchewan Environmental Quality Committee, Athabasca Subcommittee, represented by F. McDonald	CMD 04-H17.3 CMD 04-H17.3A
M. Shiell	CMD 04-H17.4 CMD 04-H17.4A
Keewatin Visions	CMD 04-H17.5