

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Cameco Corporation

Subject Application for a Licence to Operate the McArthur
River Operation

Date November 7, 2001

RECORD OF PROCEEDINGS

Applicant: Cameco Corporation

Address/Location: 2121-11th Street West, Saskatoon, Saskatchewan S7M 1J3

Purpose: Application for a licence to operate the McArthur River Operation

Application received: March 12, 2001

Date(s) of hearing: **Day 1:** August 9, 2001 **Day 2:** October 4, 2001

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

Members present: L.J. Keen, Chair L.J. MacLachlan (Absent on August 9
C.R. Barnes and therefore did not participate in the decision)
A.R. Graham
Y.M. Giroux

Counsel: I.V. Gendron

Secretary: G.C. Jack

Recording Secretary: C.N. Taylor

Applicant Represented By	Document Number
<ul style="list-style-type: none">• B. Michel, Chair and Chief Executive Officer• J. Jarrell, Vice-President of Environment and Safety• B. Wakabayashi, General Manager of McArthur River and Key Lake• M. Wittrup, Director of Environment for Cameco	CMD 01-H21.1 CMD 01-21.1A
CNSC Staff	Document Number
<ul style="list-style-type: none">• K. Pereira• B. Howden• R. McCabe• P. Thompson	CMD 01-H21 CMD 01-H21.A
Intervenors	Document Number
<ul style="list-style-type: none">• M. Shiell• W.R. Adamson	CMD 01-H21.2 and CMD 01-H21.2A CMD 01-H21.3

Decision and Reasons:

Licence/Amendment: Issued: **X** Not Issued:

Date of Decision: October 4, 2001

1. Introduction

Cameco Resources (Cameco) of Saskatoon, Saskatchewan, has applied to the Canadian Nuclear Safety Commission (CNSC) for a 5-year Uranium Mine Operating Licence that would permit the continued operation of its McArthur River mine facility. The McArthur River Operation is currently licenced under licence AECB-MFOL-172-1.1.

The McArthur River Operation is located in northern Saskatchewan, approximately 620 kilometres north of Saskatoon and 80 kilometres northeast of the existing, and separately licensed, Cameco Key Lake Operation. The ore from the McArthur River mine is milled at the Key Lake Operation.

The McArthur River Operation consists of the following facilities:

- the mine, including the hoist, underground workings, underground ore grinding and processing, and slurry pumping;
- a refrigeration plant for ground freezing in active mining areas;
- a surface ore load-out facility (to load trucks for the transport of the ore slurry to Key Lake for milling);
- a clean waste rock pile;
- two acid generating waste rock piles (used in part as production raise backfilling);
- a special waste pile (low-grade mineralized rock used in part for mill feed dilution at the Key Lake mill);
- primary and secondary effluent treatment plants;
- ancillary facilities including for employee accommodations, water supply and treatment, electrical power, domestic and industrial waste disposal, sewage treatment, maintenance, warehousing, fire protection, health services and administration.

Cameco is requesting authorization to carry out the following activities at the above-listed facilities:

- mining Zone 1 and Zone 2 ore bodies;
- test mining of Zone 4 ore body;
- processing of uranium ore underground;
- packaging and transporting nuclear substances;

- operating the Mine Water Treatment Plant;
- storing waste rock;
- handling and storing hazardous materials and disposing of hazardous wastes associated with the operations; and
- possessing and using nuclear substances and devices.

2. Decision

The Canadian Nuclear Safety Commission, in making its decision, considered information presented at a public hearing held on August 9, 2001 and October 4, 2001 in Ottawa, Ontario.

Based on its consideration of the matter, as described in more detail in the following sections,

The Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, issues a Uranium Mine Operating Licence to Cameco Corporation, Saskatoon, Saskatchewan, for the McArthur River Operation. The licence, UMOL-MINE-McARTHUR.02/2004, is valid from November 1, 2001 to February 28, 2004, unless suspended, amended, revoked or replaced.

The Commission includes in the licence the conditions of the previous licence for the McArthur River Operation, and the following additional conditions recommended by CNSC staff:

- G4. the licensee shall maintain a financial guarantee for decommissioning acceptable to the Commission or a person authorized by the Commission;
- G5. the licensee shall submit a Preliminary Decommissioning Plan and revised financial guarantee to the Commission or a person authorized by the Commission no later than October 1, 2002;
- G6. the licensee shall submit, by April 30, 2002, a proposal and schedule for the completion of a Quality Assurance Program, acceptable to the Commission or a person authorized by the Commission;
- EP2. the licensee shall notify the Commission or a person authorized by the Commission within 24 hours that an environmental protection Action Level specified in the Code of Practice has been reached;
- W1. the licensee shall notify the Commission or a person authorized by the Commission

within 24 hours that a radiation protection Action Level specified in the Code of Practice has been reached; and

- O3. prior to any mining or development of the Zone 4 ore body, the licensee shall provide the plans, schedules and procedures for the test mining activities, for written approval of the Commission or a person authorized by the Commission.

3. The Public Hearing Process

The public hearing, conducted under the *Nuclear Safety and Control Act* and the *Canadian Nuclear Safety Commission Rules of Procedure*, was held in Ottawa, Ontario over two days; August 9, 2001 and October 4, 2001. The Commission received written submissions and heard oral presentations from CNSC staff (CMD 01-H21 and CMD 01-H21.A) and Cameco Corporation (CMD 01-H21.1 and CMD 01-H21.1A). The Commission also considered written submissions from two intervenors: M. Shieff (CMD 01-H21.2 and CMD 01-H21.2A); and W.R. Adamson (CMD 01-H21.3).

4. Issues and Commission Findings

4.1 Radiation Protection, Safety and Environmental Protection

The Commission considered information on the managed systems and past performance of the McArthur River Operation to assess whether the licensee has demonstrated its ability to adequately provide for the protection of workers, the public and the environment.

4.1.1 Protection of Workers

On the matter of radiation protection of workers, the Commission examined Cameco's plan to reduce the intensity of worker dose monitoring in this high-grade ore mine. CNSC staff and Cameco explained that the initial use of the raise-boring mining method posed challenges in the control of worker radiation doses, resulting in more intensive monitoring. The Commission was informed, and is of the opinion that, those problems have since been overcome and the return to a less intensive dose monitoring regime is justified. The Commission noted that Cameco's radiation protection programs are flexible and able to adapt appropriately to changing conditions.

Based on the information provided, including summaries of the worker doses received, the Commission concludes that Cameco's radiation protection program is effective and meets all of the regulatory requirements.

On the matter of conventional health and safety, the Commission considered information on a

number of accidents and safety incidents at the McArthur River mine, including the opinion of Saskatchewan Labour who also investigated those incidents. Based on the information received, the Commission is of the opinion that Cameco has responded appropriately to help prevent similar accidents and incidents in the future. The Commission also notes Saskatchewan Labour's plan for enhanced surveillance of safety issues in the mine. The Commission is therefore satisfied that, for the planned licence term, Cameco has made adequate provisions for the protection of workers.

4.1.2 Protection of the Environment

Environmental Monitoring:

During the hearing, the Commission examined the existing and proposed environmental monitoring programs. Specifically, the Commission sought and received clarification from CNSC staff on the various program components, including: effluent monitoring; receiving water quality monitoring; environmental effects (or aquatic biota) monitoring; and the other federal and provincial standards and regulatory requirements integrated into the program.

The Commission also considered the views of intervenors who expressed concern that the environmental effects monitoring program is not yet formally approved, that sediment contamination is no longer being contemplated as a response threshold trigger, that radionuclides in biota are not being measured, and that in-field monitoring for the long-term effects of high-LET alpha radiation is not a part of the program.

In considering these concerns, the Commission noted that several of the concerns also relate to the monitoring of the effects at the Key Lake Operation, where the McArthur River ore is milled. The effects of the Key Lake Operation were also considered by the Commission in a separate hearing, held on the same dates. A separate *Record of Proceedings and Reasons for Decision* will be issued by the Commission for the Key Lake Operation.

The Commission examined both Cameco and CNSC staff on the intervenor's concerns about the environmental monitoring program. The Commission was informed that the final technical details for the environmental effects response thresholds and reporting requirements are near resolution, and that formal approval of the environmental effects monitoring program is expected shortly. It was noted that the field sampling aspects of the monitoring program have been in place and operational for some time. The Commission concludes that the delays in reaching final agreement on the monitoring program have not significantly interfered with the effectiveness of the ongoing sampling programs and appear to have resulted in fruitful scientific discussion that will likely improve the overall program.

With regards to the use of sediment contamination as a threshold trigger in the environmental effects monitoring program, the Commission was informed that although sediment is typically

used as the tier-one threshold trigger, relatively high background levels and presence of historic contamination in the sediments limit the usefulness of this approach at the McArthur River Mine. CNSC staff explained that they now recommend moving the first tier threshold triggers up to the benthic invertebrate level. CNSC staff explained that, in the circumstances, the benthic data, together with the sediment and water contamination data, will provide more rapid and useful information. Based on this explanation, the Commission is satisfied that the proposed use of sediment contamination data in the monitoring program is appropriate.

The Commission also accepts CNSC staff's explanation that direct measurements of radionuclides in benthic organisms is not practical given the prohibitively large amount of biomass that must be collected for the laboratory analysis; other methods are used to estimate the effects of radiation on benthic communities.

The Commission questioned CNSC staff on the statistical robustness of the sampling program in the environmental effects monitoring program, noting that sampling is planned for a limited number of sites at three-year intervals. CNSC staff explained that the program is designed to detect effects in biota that are estimated to occur very slowly over long periods of time. CNSC staff further clarified that the baseline studies were subjected to considerable statistical rigour and that a number of matched control sites are in place. Based on this explanation, the Commission concludes that the sampling program is sufficiently rigorous to detect the expected effects.

The Commission sought clarification of the status of the *Metal Mining Liquid Effluent Regulations* (MMLERs) and the role of those regulations in the environmental protection and monitoring programs at the McArthur River Mine. CNSC staff explained that the requirements of the MMLERs are normally cited in the CNSC uranium mine and mill licences. The Commission is of the view that this is appropriate. CNSC staff further commented that the MMLERs are being revised by Environment Canada and that CNSC comments on the proposed revisions were recently provided to Environment Canada for consideration.

In summary, the Commission concludes that the environmental monitoring program, including the environmental effects monitoring program, is appropriate and will provide for early indication of the need for any further mitigative actions.

Environmental Protection:

Based on the information presented at the hearing, the Commission concludes that Cameco's environmental programs are comprehensive and effective, and include adequate provisions for the protection of the environment.

In considering the environmental protection programs, the Commission took account of the concerns expressed by intervenors about what they consider to be a general lack of certainty in how alpha radiation may cause long-term genetic and somatic effects. The intervenors cited a variety of scientific opinion that they consider supports this uncertainty, including the current

Priority Substance List assessments (PSL-2) undertaken by Environment Canada pursuant to the *Canadian Environmental Protection Act*. An intervenor suggested that, in light of such uncertainty, the Commission should adopt the “precautionary principle” and not allow continued mining at McArthur River. Based on the information provided on the observed and potential environmental effects of the McArthur River mine, the Commission concludes that the effects are limited in extent and are not likely to have long-term consequences on the populations of species.

4.2 Quality Assurance

The Commission noted during the hearing that Cameco has yet to put in place the required comprehensive corporate quality assurance program. The Commission also notes Cameco’s progress in various aspects of quality assurance at specific facilities, and its commitment to have a corporate program in place in the future. The Commission concludes, however, that greater assurances are needed of when an acceptable quality assurance program will be in place. The Commission therefore agrees with the CNSC staff’s proposed licence condition that will ensure a plan and schedule for completion of a Quality Assurance Program is submitted to the CNSC by April 30, 2002.

4.3 Emergency Preparedness

Commission noted that emergency preparedness for the site is not yet documented in a manner that fully complies with the regulatory requirements. Based on the information provided by CNSC staff, the Commission is satisfied that the existing *ad hoc* arrangements with off-site authorities will provide for adequate emergency response. The Commission is also satisfied that the specific arrangements with off-site authorities will be formally documented in accordance with the regulations during the next licensing period.

4.4 Financial Guarantees for Decommissioning

The Commission was informed that the revisions to the amount of the financial guarantee for decommissioning will be done concurrently with a review of the decommissioning plan for the site.

The Commission explored and confirmed during the hearing the importance of waste rock management in the estimates of the decommissioning liabilities at the site.

The Commission is satisfied with the approach and progress being made to revise the decommissioning plans and financial guarantees for the McArthur River Operation. Conditions have been added to the licence to require maintenance of an acceptable financial guarantee for decommissioning and the submission of a revised Preliminary Decommissioning Plan by October 1, 2002.

4.5 Public Consultation

The Commission considered information describing Cameco's efforts to involve local communities in the McArthur River Operation, recognizing that the population around the facility is relatively sparse and widely dispersed. The Commission was informed that the applicant is involved in working groups, together with two other licensed uranium mine operators, whose purpose is to involve the various communities in the Athabasca region in discussions concerning environmental protection, worker health and safety, training programs and employment opportunities. Organizations, including the Athabasca Working Group, the South Central Environmental Quality Committees, the Environmental Quality Committees and the Mudjatik Commission-Management Board, were highlighted in the hearing documentation. In addition, the Commission was informed of newsletters produced by the applicant and of various other initiatives, such as informal communications and public meetings in both northern and southern Saskatchewan that are aimed at ensuring public information exchanges. Based on the information provided, the Commission is satisfied that the applicant has an acceptable public consultation program.

4.6 Licence Term

The Commission considered Cameco's application for a 5-year licence term, together with the advice of CNSC staff for a shorter 28 month term. The Commission agrees with CNSC staff's rationale for the shorter licence term. The Commission considers that the number of significant issues relating to longer-term worker dose monitoring, conventional mine safety, protection of the aquatic environment and corporate quality assurance do not warrant a longer licence term in this case. In addition, the Commission considers it logical to align the licence term with that of the Key Lake Operation (i.e., where the McArthur River ore is milled). The Commission has decided that, although it considers these issues to be acceptable in the short term, a detailed review of the performance of the McArthur River Operation must come before the Commission for reconsideration after a period of 28 months.

4.7 Security

The Commission considered and accepts the CNSC staff finding that Cameco has made adequate provisions for the maintenance of security at the McArthur River Operation.

4.8 Canadian Environmental Assessment Act

On the basis of the information provided at the hearing, the Commission concludes that pursuant to section 3 of the *Exclusion List Regulations* and section 2 of Schedule I, Part I of the *Exclusion*

List Regulations, an environmental assessment of this project pursuant to the *Canadian Environmental Assessment Act* is not required.

5. Conclusion

The Commission has considered the information and submissions of Commission staff and all participants as set out in the material available for reference on the record, as well as the oral and written submissions provided or made by the participants at the hearing. The Commission accepts the information set out in CMDs 01-H21 and 01-H21.A prepared by CNSC staff and the submissions, statements of law, conclusions and recommendations set out in these documents.

The Commission is of the opinion that the applicant satisfies the requirements of subsection 24 (4) of the *Nuclear Safety and Control Act*.

The Commission therefore issues, pursuant to section 24 of the *Nuclear Safety and Control Act*, licence UMOL-MINE-McARTHUR.02/2004 to Cameco Corporation. The licence will be valid from November 1, 2001 to February 28, 2004, unless suspended, amended, revoked or replaced.

George C. Jack
Secretary,
Canadian Nuclear Safety Commission

Date of decision: October 4, 2001

Date of release of Reasons for Decision: November 7, 2001