

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant COGEMA Resources Inc.

Subject Application for the Renewal of the Operating Licence
for the Cluff Lake Mining Facility

Date December 28, 2001

1. Introduction

COGEMA Resources Inc. (CRI) of Saskatoon, Saskatchewan, has applied to the Canadian Nuclear Safety Commission (CNSC) for a two-year Uranium Mine Operating Licence that would permit the completion of the planned uranium mining and milling activities at CRI's Cluff Lake Project. The Cluff Lake Project, located in the Athabasca region of northern Saskatchewan, is currently operated under licence AECB-MFOL-143-7.1 issued by the former Atomic Energy Control Board (AECB). The current AECB licence expires on December 31, 2001.

The Cluff Lake Project consists of four mined-out open pits, one active and one closed underground mine, a mill, a surface tailings management facility, waste rock storage areas, an employee residence, and associated service facilities.

The specific activities proposed to be carried on at the Cluff Lake Project include:

- mining of the Dominique-Janine (DJ) underground ore body;
- processing uranium ore in the mill;
- packaging and transporting uranium ore concentrates;
- operating the Tailings Management Area (TMA) and associated effluent treatment plants;
- managing and storage of waste rock;
- disposal of contaminated waste rock and other waste materials in the Claude pit;
- management and storage of hazardous materials and disposal of hazardous wastes associated with the operations;
- possession and use of nuclear substances and devices; and
- performance of ongoing cleanup and reclamation.

2. Decision

The Canadian Nuclear Safety Commission (CNSC), in making its decision, considered the information presented at the public hearing held October 4, 2001 and December 13, 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 the Uranium Mine Operating Licence UMOL-MINEMILL-CLUFF.04/2004 to COGEMA Resources Inc., Saskatoon, Saskatchewan for the Cluff Lake Project. The licence is valid from December 31, 2001 to April 30, 2004, unless suspended, amended, revoked or replaced.

The Commission includes in the licence the conditions of the previous licence, adjusted to be consistent with the *Nuclear Safety and Control Act and Regulations*, as well as three new conditions recommended by CNSC staff. The three new conditions are as follows:

- 1.5 the licensee shall submit, by April 30, 2002, a plan with schedules and milestones, for the implementation of a revised Quality Assurance Program, acceptable to the Commission or a person authorized by the Commission;
- 5.2 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; and
- 6.1 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.

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; October 4 and December 13, 2001. The Commission received written submissions and heard oral presentations from CNSC Staff (CMD 01-H26 and CMD 01-H26.A) and CRI (CMD 01-H26.1 and 01-H26.1A). The Commission also considered a written submission from V. Lau (CMD 01-H26.2) and written and oral submissions from M. Shiell (CMD 01-H26.3).

4. Issues and Commission Findings

4.1 Radiation Protection

The Commission considered information on the past performance of CRI at the Cluff Lake Project to assess whether CRI has demonstrated the ability to adequately provide for the protection of workers and the public from exposures to radiation.

The Commission considered information on CRI's worker radiation protection program. During the hearing, CNSC staff expressed its satisfaction with CRI's radiation protection program and CRI's performance in implementing the program as evidenced by the recorded low radiation exposures. CNSC staff noted that although there were four minor reportable radiation events during the current licensing period, there were neither violations of the regulatory limits, nor of the terms of the Radiation

Code of Practice for the project. CNSC staff expressed its conclusion during the hearing that the radiation program is acceptable, and noted that the program continues to be subject to regular inspection by CNSC staff.

CRI explained to the Commission during the hearing how internal and external exposures to workers in this high-grade ore mine are controlled through the use of shotcrete and roadbed shielding material, dust control, high-efficiency ventilation, work place monitoring, and worker training. CRI illustrated for the Commission how the ratio between dose and production rates continues to decline despite the increasing average grades of ore being mined and milled. In response to questions on this trend from the Commission, CRI confirmed that this was achieved through rigorous application of radiation protection measures, rather than by high staff rotation or turnover.

The Commission also considered information on the licensee's control of radioactive emissions and effluents that could affect members of the public. The Commission is satisfied that those emissions and effluents do not pose a significant risk to the public.

Based on the information provided during the hearing, the Commission is satisfied that CRI is making, and will continue to make, adequate provisions at the Cluff Lake Project to protect the public and workers from radiation.

4.2 Conventional Health and Safety

The Commission considered information presented during the hearing on non-radiological health and safety at the Cluff Lake Project. The Commission noted the cooperative arrangements that exist between CNSC staff, Human Resources Development Canada (HRDC) and Saskatchewan Labour to evaluate health and safety on the site. During the hearing, the Commission heard the positive report of Saskatchewan Labour on the safety record of CRI at Cluff Lake. Despite the unfortunate death of an electrician and five minor reportable incidents, Saskatchewan Labour expressed the view that CRI has taken the appropriate investigative and corrective actions to prevent future reoccurrences, and that CRI, in recent years, has made significant improvements in safety at the Cluff Lake Project.

The Commission also considered the information provided by CRI during the hearing on its health and safety programs and record at the Cluff Lake Project. That information described the operation of an Occupational Health Committee and a comprehensive, ongoing safety program of prevention, promotion and response. CRI noted for the Commission that, at the time of the hearing, over 400 days has passed without a lost-time accident and that CRI had received the John T. Ryan Award for Safety Achievement.

In response to questions from the Commission, CRI's senior management confirmed its involvement in, and commitment to, continuously improving the safety culture at the Cluff Lake Project.

Also during the hearing, the Commission questioned CRI on a potential safety incident involving significant ground surface subsidence above a formerly mined-out area in March of 1999. CRI explained that the subsidence was due to the failure of a crown pillar at the north end of a stope that is located relatively near the surface. CRI further explained that the subsidence was remediated by tight-filling the undercuts and backfilling. The Commission is satisfied that the risk of ground subsidence at the Cluff Lake Project in the future is low, and that CRI has taken appropriate remedial action to maintain safety at the earlier problem site.

Based on the information provided during the hearing, the Commission is of the opinion that CRI has made, and will continue to make adequate provisions to protect workers from non-radiological hazards at the Cluff Lake Project site.

4.3 Environmental Protection and Monitoring

The Commission considered information presented by CNSC staff, CRI and intervenors on the protection of the environment at the Cluff Lake Project.

CNSC staff indicated to the Commission during the hearing that it finds CRI's environmental protection policies and programs to be comprehensive and effective. CNSC staff reported during the hearing that CRI has in place an appropriate program for monitoring of emissions and effluents; and for monitoring conditions in the surrounding surface water, groundwater, air, soil, vegetation, sediments and biota. CNSC staff noted that, during the present licensing period, effluent contamination levels have remained well within all regulatory limits and guideline levels. CNSC staff also pointed out during the hearing that reduction in water quality, and in the abundance and diversity of aquatic biota near the point of effluent discharge into Island Lake, had been predicted in the earlier pre-development environmental assessment and that this effect is anticipated to be reversible upon closure and decommissioning of the mine site.

CRI reiterated the above observations of CNSC staff during the hearing and provided further details on how mine water, ore, tailings, mill effluent and other waste waters are managed on the site to prevent adverse environmental effects. CRI also explained how the site is being progressively cleaned up and remediated in anticipation of the commencement of the formal decommissioning phase. CRI explained to the Commission that it is seeking certification of its Environmental Management System under the ISO 14001 standard.

Both CNSC staff and CRI referred the Commission to twelve minor spills that were reported during the current licencing period. CRI explained that the spills resulted primarily from pipe leaks, resulting in the release of from 0.3 to 30 cubic metres of contaminated water, and that the subject pipes are now visually inspected several times per day and are equipped with automatic, pressure-sensitive shutdown systems. The remaining spills were related to a frozen minewater line which resulted in the spill of 100

litres of sulphuric acid. CNSC staff expressed the view that the spills were of a minor nature, with no significant environmental effect, and that CRI has taken appropriate action to remediate the spill sites and prevent future incidents.

During the course of the hearing, CRI reported elevated levels of metals and polonium-210 in a small group of waterfowl that were residing in the Tailings Management Area. In response to questions from the Commission, both CRI and CNSC staff expressed the view that the contamination in the birds, although warranting corrective action, does not pose a significant risk to the public, or the population of ducks and geese in the area. The Commission learned during the hearing that mitigation measures will include the covering of the tailings with till (which is now partially complete), continued sampling of sediments, and the possible use of a floating net on the remaining pond area to discourage use by birds. CRI confirmed during the hearing that the source of the contamination in the birds was the TMA, rather than downstream water bodies where sediment sampling indicates near background levels of radionuclides.

An intervenor to the hearing challenged the above conclusions of CNSC staff and CRI with regard to the acceptable environmental effects of the project. The intervenor expressed concerns about the past operations of the Cluff Lake Project and the resulting environmental contamination. The intervenor believes that the legacy of radioactive contamination and past spills at the site has resulted in the contamination of soil, sediment, vegetation and animals in a way that will adversely affect the food chain and future generations. The intervenor expressed the view that important issues are not being addressed in the regulation of the site. For example, the intervenor believes that inadequate attention is being given to the latent genetic and sub-lethal effects of alpha radiation, and that the relative biological effectiveness (RBE) factor, used in assessing the risks to the environment of alpha radiation, is too low. The intervenor also expressed concern over the lack of scientific study of the long-term effects of alpha radiation on the communities of biota exposed at the Cluff Lake Operation. The intervenor also cited contamination incidents as examples of poor regulatory control by AECB/CNSC staff.

In response to the intervenor's concerns, CNSC staff noted that, with respect to past spills on the site, CRI had cleaned the sites up to the level required at the time. CNSC staff further noted that these locations, and all other locations affected by the licensed activities, will be subject to further evaluation, including vegetation monitoring during the future decommissioning phase, and further remediation as required.

CRI explained during the hearing that radium, the primary alpha-emitting contaminant of concern, is removed from site effluents at an efficiency of 99.98% and that all potential sources of contaminated water are collected and transferred to the treatment system. CRI also pointed out to the Commission during the hearing that, after 20 years of operation, the levels of radium in the treated water and sediments of the receiving water bodies is only slightly elevated over the levels in the surrounding natural environment and, as such, does not pose a risk to the environment.

With respect to the intervenor's concern about the level of scientific knowledge on the environmental effects of alpha radiation, CNSC staff explained during the hearing that there have been many studies on the effects of alpha radiation on genetic endpoints, albeit largely on cell cultures in the laboratory as opposed to living animals in the field. CNSC staff noted that scientific studies done on living animals over the past 50 years have demonstrated the higher effectiveness of alpha radiation in terms of life-shortening and reproductive problems. CNSC staff indicated that, based on those studies, they support the use of an RBE of 40 in evaluating the risk of alpha radiation to the environment. However, CNSC staff also observed that the biological effects of the Cluff Lake Operation are as predicted, limited to a small area, and do not reflect community-level effects indicative of genetic or reproductive effects. CNSC staff concluded that radium from the Cluff Lake Operation has not posed a significant risk to the environment over the years of its operation.

CNSC staff noted during the hearing that, in anticipation of the decommissioning phase for the Cluff Lake Project, further environmental studies on specific water bodies will be important during the final years of mine operations. CNSC staff explained that this information is needed to improve and fill gaps in baseline data to be used in assessing decommissioning alternatives and activities. In response to questions from the Commission, CNSC staff clarified in supplementary information to the hearing (CMD 01-H26.A) that the study will form part of the environmental assessment currently underway for the proposed decommissioning of the Cluff Lake Project. CNSC staff explained that pertinent baseline environmental information will continue to be gathered after closure of the mill and during the decommissioning phase. CNSC staff therefore advised the Commission that it is not necessary to add to the proposed operating licence, a licence condition specific to the decommissioning baseline study. The Commission concurs that a licence condition on this matter is not required at this time.

Based on the information provided to the Commission during the hearing, the Commission concludes that CRI is making, and will continue to make, adequate provisions for the protection of the environment.

4.4 Qualifications of the Proponent

Before issuing a licence, the Commission must, among other things, be satisfied that CRI is qualified to carry out the proposed activities under the licence. In this regard, the Commission considered the positive recommendation of CNSC staff.

The Commission also considered the information presented by CRI during the hearing about its management team and its management processes for safety, environment, human resources, continuous improvement and quality. In its questioning during the hearing, the Commission confirmed that the Vice President for Operations, and the Vice President for Environmental Health and Safety both report directly to the Chief Executive Officer, thus ensuring the engagement of top-level management in these objectives.

Based on the CNSC staff recommendation, and the demonstrated improvements in CRI's management of the Cluff Lake Project in areas of safety and environmental performance, the Commission is satisfied that CRI is qualified to carry out the proposed licensed activities at the Cluff Lake Project.

4.5 Quality Assurance

The Commission acknowledged during the hearing that CRI needs to address the remaining CNSC requirements for quality assurance. CNSC staff noted during the hearing that CRI, although implementing an effective quality assurance program at the project site, had not yet adequately fulfilled the requirements for corporate commitment and oversight in the quality assurance program.

CRI explained to the Commission how they are actively building an Internal Quality Management System (QMS). This includes the pursuit of ISO 14001 certification of the Environmental Management System, the creation of a Quality Council of senior management to guide the process. CRI further explained that a Steering Committee of management will facilitate the regulatory compliance and integration of all the CRI operations under a Corporate QMS Manual.

In response to questioning at the hearing, CRI clarified that the Quality Council consists of the Chief Executive Officer, the Vice President of Operations and other senior managers. The Council meets in the fall of each year to set and follow-up on quality objectives for operations, including for safety and environmental protection.

Based on this information, the Commission is satisfied with CRI's commitment to quality assurance at the Cluff Lake Project. However, the Commission also concurs with the CNSC staff's recommendation to add a condition to the licence requiring that a plan and schedule for meeting all of the quality assurance requirements be submitted to the CNSC by April 30, 2002. Prior to the conclusion of the hearing, CRI confirmed for the Commission that CRI will be able to meet the submission date of April 30, 2002.

4.6 Security and Safeguards

CNSC staff raised no concerns about security of the site during the hearing. CNSC staff noted that the site was assessed by staff as part of Phase 2 of the CNSC security review of all facilities following the terrorist events in the United States on September 11, 2001; COGEMA's response to the security order is expected on December 15, 2001, as required by the Order. The Commission also considered during the hearing the concerns of an intervenor about the possible use of Canadian uranium in weapons of war. Based on the CNSC staff's assessment, the Commission is satisfied that CRI has made, and will continue to make, adequate provisions for the security of the Cluff Lake Project and for meeting Canada's international obligations concerning the control of nuclear substances.

4.7 Emergency Preparedness and Response

The Commission received information from CRI on its Emergency Response Manual for on-site emergencies and on the Emergency Response Assistance Plan that was prepared for off-site transportation emergencies. CRI explained that the off-site plan involves mutual assistance agreements with Cameco Corporation, the other uranium mining company in the area, and that the training and drills on the plan will be completed in early 2002.

During the hearing, the CNSC staff noted that the emergency response plans address all of the regulatory requirements and that a full assessment of the plans will be carried out by CNSC staff during the proposed licensing period.

4.8 Public Information

CNSC staff expressed during the hearing its satisfaction with CRI's public information program. The Commission learned from CRI during the hearing that the *West Side Environmental Quality Committee* plays a central role in involving the public in the development and modification of environmental monitoring programs, including the activities of the *Cumulative Effects Monitoring Group* organized by Saskatchewan Environment and Resources Management (SERM). CRI further explained that it also issues weekly, monthly and quarterly newsletters, maintains a website and toll-free telephone line, and engages in regular, informal face-to-face meetings with northerners.

During the hearing, the Commission encouraged CRI to take further steps to ensure that people in the southern regions of the province are also being adequately informed and involved. On the second day of the hearing, CRI reported that it has taken steps to address this recommendation of the Commission, including having distributed project information and contact information to five environmental organizations that represent public interests from other regions. CRI indicated that it is prepared to undertake further consultations in southern regions depending on the levels of interest shown by these organizations.

The Commission is satisfied that CRI has an adequate public information program.

4.9 Decommissioning and Financial Guarantees

The Commission was informed by CNSC staff during the hearing that an acceptable Preliminary Decommissioning Plan and financial guarantee of \$33.6 million remains in place for the Cluff Lake

Project.

The Commission questioned both CRI and CNSC staff during the hearing on the adequacy of the financial guarantee, and whether it will be reduced in light of the site clean-up and remediation work ongoing and planned for the proposed final operational period. CRI confirmed that although funds are being spent on the remediation work, the amount of the guarantee will not be adjusted until the CNSC staff accepts the Detailed Decommissioning Plan, now in development, and until the environmental assessment for the decommissioning program is complete. CNSC staff confirmed that \$33.6 million is adequate to cover current decommissioning liabilities.

The Commission is therefore satisfied that acceptable decommissioning plans and financial guarantees for decommissioning are being maintained.

4.10 Canadian Environmental Assessment Act

The CNSC staff, during the hearing, presented the Commission with the staff's interpretation of the application of the *Canadian Environmental Assessment Act* (CEAA) to the current licence application. The Commission agrees with the CNSC staff's interpretation and thus concludes that a further environmental assessment under the CEAA is not required for the current licensing action. This is due to the fact that the proposed activities are the same as those previously assessed under the federal environmental assessment process and that the mitigation measures have, and continue to be substantially implemented. The provisions of the CEAA *Exclusion List Regulations* therefore apply (specifically section 2 of Part I, Schedule I of those Regulations).

The Commission notes that a Comprehensive Study under the CEAA is currently being prepared for the decommissioning phase of the Cluff Lake Project. The Commission further notes that the application for a decommissioning licence by CRI will be subject to the completion of that environmental assessment and a subsequent hearing before the Commission.

4.11 Licence Term

The Commission considered the two-year licence term proposed by CRI in its application, and CNSC staff's recommendation for a 28 month licence term. During the hearing, CRI indicated its agreement with CNSC staff's recommendation.

The Commission is satisfied with the 28 month term proposed by staff. The Commission agrees that the longer time frame will allow CRI to complete the mining of the ore reserves, the environmental assessment for decommissioning, the planned pre-decommissioning site clean-up and rehabilitation activities, and the Detailed Decommissioning Plans required in support of a decommissioning licence

application.

5. Conclusion

The Commission has considered the information and submissions of CNSC staff and of 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 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-MINEMILL-CLUFF.04/2004 to COGEMA Resources Inc. The licence will be valid from December 31, 2001 to April 30, 2004, unless suspended, amended, revoked or replaced.

Marc A. Leblanc
Secretary,
Canadian Nuclear Safety Commission

Date of decision: December 13, 2001

Date of release of Reasons for Decision: December 28, 2001