ISSUES AND CONSIDERATIONS ON THE DEVELOPMENT OF AN INSTITUTIONAL CONTROLS POLICY FOR URANIUM MINES WITHIN NORTHERN SASKATCHEWAN

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Abstract.

Institutional control of a mine site is required to ensure long-term public safety and environmental protection once responsibility for a decommissioned uranium mine site reverts back to the Crown. During the exploration, development, operation and decommissioning phases of a uranium mine's life cycle, public safety and environmental protection are ensured through the Federal and Provincial Environmental Assessment Review process, regulatory permitting and compliance monitoring by the province. However, at present, there is no clear provincial policy with respect to a proponent’s application for release from a reclaimed and decommissioned site, and the resulting provincial responsibility for the long-term management and maintenance of the site once a release has been granted. Another policy issue has been identified with respect to the long-term institutional control of previously abandoned uranium mine sites. A number of issues are being considered by the Government of Saskatchewan in developing a policy which addresses the needs of the people of Saskatchewan and which is consistent with the intent of the commitments made by Canada through its ratification of the International Atomic Energy Agency’s (IAEA) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

1. Introduction

Current government policy related to the decommissioning and reclamation of northern uranium mine sites is consistent with the recommendations made by both the Cluff Lake Board of Inquiry (established in 1977) \cite{1-2} and more recently by the Joint Federal-Provincial Panel on Uranium Mining Developments in Northern Saskatchewan (established in 1991) \cite{3-9}. This, however, was not always the case. A number of sites, including the abandoned Gunnar uranium mine/mill site and Lorado mill site operated prior to existing legislation. Many of the concerns raised during the various inquiries resulted from a critical review of past practices and have been addressed by the province through an improved environmental assessment and regulatory system that more effectively protects the environment, the health and safety of workers and the public.

Federal and provincial legislation requires mining companies operating in the province to provide a detailed decommissioning plan as well as a financial assurance, or guarantee of sufficient value, to ensure the completion of decommissioning and reclamation activities for a specific mine site. It is important to note that the Province is the sole beneficiary of the
assurance fund and can access the fund in the event that a mining company is not able or willing to carry out its decommissioning and reclamation responsibilities in an appropriate manner or timeframe. Section 19(1) of provincial legislation (The Mineral Industry Environmental Protection Regulations, 1996) [10] provides the conditions for which a default respecting an assurance fund is deemed to have occurred.

Once decommissioning and reclamation of the mine, mill, tailings management area and all associated facilities have been completed according to the department-approved decommissioning and reclamation plan, the company is required to monitor the site to ensure that the activities carried out during the decommissioning and reclamation period meet current decommissioning standards and regulatory requirements. In many cases, post-decommissioning and reclamation monitoring is carried out for a number of years prior to a mining company making application to the department for release from further decommissioning and reclamation requirements for the site.

The period of time for which the company is expected to be responsible for monitoring the site is based on: the stability of the site, the nature of the contaminants and whether or not the contaminants and the site are behaving according to the models and projections previously reviewed and accepted by the department. Only after the decommissioning and reclamation activities have been carried out in an approved manner, with sufficient post-decommissioning and reclamation monitoring to confirm that the site is both chemically and physically stable, will the department consider the request by a company to be released from further decommissioning and reclamation requirements. The expectation of the Province is that, once a company has met all of the decommissioning objectives including the post-decommissioning monitoring and has demonstrated that the site is both chemically and physically stable, that a release would be granted from both further decommissioning and reclamation requirements and from ongoing financial assurance responsibility.

Although current government policy with respect to the exploration, development, operation, decommissioning and reclamation of mine sites in northern Saskatchewan is functioning effectively, there is a need for the province to clarify its position on institutional control of decommissioned and abandoned uranium mine sites in northern Saskatchewan. In addition to government clarifying its position on institutional controls, standards and guidelines should be updated to reflect the proposed policy direction. These updated standards and guidelines will be utilized not only by industry in developing their decommissioning and reclamation plans, but also by provincial regulators in assessing the quality of a company’s decommissioning and reclamation efforts.

The need for clarification and revision of the provincial policy, standards and guidelines related to institutional control of abandoned or decommissioned northern mines have become increasingly evident. This has become more evident by: Canada’s international commitments on the disposal of radioactive wastes, the recent enactment of the federal Nuclear Safety and Control Act (NSCA) [11], the anticipated decommissioning and reclamation of the Gunnar and Lorado properties, the request for release from responsibility for satellite properties at the decommissioned and reclaimed Beaverlodge uranium mine, and by the recent decision of COGEMA Resources Inc. to decommission its Cluff Lake Project uranium mine. Implications of these issues are discussed in detail in the following sections.
2. **Policy development issues**

2.1. **Canada’s international commitments**

On June 18, 2001, the IAEA’s “Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management” [12] came into force. Canada had originally shown support for this initiative by signing the Convention in 1998. Included in the Joint Convention are a number of articles related to the institutional control of radioactive waste management facilities, including those found at uranium mines. The Convention not only applies to currently operating facilities, but also to previously decommissioned or abandoned sites. Saskatchewan currently has five (5) operating uranium mines, one (1) uranium test mine, one (1) site in the post-decommissioning monitoring period and three (3) abandoned uranium sites (estimated) which may be subject to the Convention.

In July of 2000, (and prior to the requirements of the Joint Convention) Saskatchewan Environment initiated a three-year “Abandoned Mines Assessment Program for Northern Saskatchewan”. An earlier program to assess abandoned mines was originally undertaken by the Province between 1989-1990 and resulted in remedial measures being undertaken to reduce the level of public safety risk at approximately 10 sites in the Uranium City area of northern Saskatchewan.

The objective of the latest Abandoned Mines Assessment Program is to identify and rank the potential environmental and public health and safety risks associated with all previously abandoned mines sites (uranium, gold, base metal, etc.) in northern Saskatchewan. The identification of the potential risks associated with the abandoned sites assessed in the fall of 2000 are described in the Program’s first-year report entitled “An Assessment of Abandoned Mines in Northern Saskatchewan” [13]. The report determined that there are forty-two (42) abandoned uranium mines.

The field assessments for the second year of the Program have been conducted and the results will be presented in a report that should be available in the summer of 2002. The majority of the abandoned uranium mine sites in northern Saskatchewan have now been assessed, ranked, and remediation requirements documented.

2.2. **Canadian Nuclear Safety Commission (CNSC)**

In March, 1997 the Government of Canada repealed the antiquated Atomic Energy Control Act and in its place enacted the *Nuclear Safety and Control Act*. Included in the new Act were broad explicit powers with respect to protection of the environment. The new Act and regulations, specifically Section 4, 26 and 46 of the NSCA, Sections 4, 24 and 26 of the *General Nuclear Safety and Control Regulations* [14] and Section 8 of the *Uranium Mines and Mills Regulations* (UMMR) [15] could potentially impact not only sites that have been previously abandoned but also those that will be released in the future.

A formal notification was provided to Saskatchewan Environment of the CNSC’s intent to review all abandoned uranium mines in the province to determine whether licences for these facilities would be required. These licences would take the form of either a possession or decommissioning licence, depending upon the condition of the site and whether decommissioning activities will be required. The Province continues to discuss this issue with the CNSC to determine if sites other than Gunnar and Lorado properties will require licences for possession or to carry out additional decommissioning and reclamation.
2.3. **Gunnar and Lorado uranium mines**

The Gunnar mine site is located on the north shore of Lake Athabasca approximately 25 km southwest of Uranium City. The deposit was discovered in 1952 and open pit mining was initiated in 1953. Development of an underground mine was started approximately two years later. The ore body was mined out in 1963 and the mine was officially closed in 1964. There is one waste rock pile in two distinct sections, a tailings management area, several buildings including the mill and acid plant and a flooded open pit at the site. The buildings pose a public safety risk due to their deteriorating condition. In addition, a portion of the tailings area is blocking off a bay in Lake Athabasca.

The Lorado mill site is located 10 km, by road, from Uranium City on the west shore of Nero Lake (which discharges into Beaverlodge Lake and subsequently into Lake Athabasca via the Crackingstone River). The Lorado site was a custom milling operation, milling ore from an estimated six larger mining operations and an undetermined number of small-scale operations. The mill began operation in 1957 and ceased in 1960. Tailings were pumped from the Lorado mill to the shores of Nero Lake. The tailings have had a significant effect on the water quality in Nero Lake, which is now acidic and strongly saline.

A draft Memorandum of Agreement (MOA) between the federal department of Natural Resources Canada (NRCan) and the Province of Saskatchewan for the clean-up of the abandoned Gunnar mine and Lorado mill site has been negotiated. The draft MOA agrees to a 50/50 cost sharing agreement up to a maximum of $12.5 million per party over a twenty-year period. Further action on this MOA has been stalled pending the Federal Government’s commitment of resources and the now complete corporate searches of the past owners/operators.

2.4. **Cluff Lake project decommissioning**

The Cluff Lake Project will be the first active uranium mine to be decommissioned under the current regulatory regime. The Cluff Lake Project ceased mining in the spring of 2002 and will cease milling operations at the end of 2002. The proposed conceptual decommissioning plans for the site are being reviewed under the federal assessment process (Canadian Environmental Assessment Act) for which Saskatchewan Environment and other provincial agencies are participating. Subject to assessment and regulatory approval, the site is scheduled to start active decommissioning early in 2003.

Most decommissioning activities are expected to be completed in late 2004. A five-year post closure monitoring phase and ten-year observational monitoring phase are also proposed. Saskatchewan Environment will require that the site be monitored until (and if) a release is granted.

2.5. **Beaverlodge (Eldorado Nuclear) property – release of satellite properties**

The Beaverlodge Property is comprised of several small properties (referred to as satellites) and the main underground mine. There are four underground mines and twelve open pits associated with the satellite properties. In 1999, Cameco Corporation submitted a document in support of their initiative to have a group of six decommissioned satellite mines from the Eagle and Ace areas released from the CNSC’s license and the Provincial Surface Lease. In October 2002, a second document was submitted in response to federal and provincial comments. Subject to all outstanding issues being resolved, Cameco has requested release from the satellite properties by the end of 2002.
As part of the release process, both Cameco and the CNSC have requested that the Province clarify its Institutional Control Policy for these sites. In order to facilitate the release of the sites from the CNSC license, Saskatchewan Environment will need to provide commitments regarding institutional control of the properties by the summer of 2002.

Regulations issued pursuant to the federal NSCA provide no clear process by which to abandon a property or to release a licensee from all or part of a decommissioning license. However, for the Beaverlodge property it has been proposed that Cameco be granted a CNSC release and at the same time the province be exempted from CNSC licensing. In order for an exemption to be granted, the CNSC may require provincial commitments regarding land use control and site monitoring (Institutional Control).

3. Other considerations

Concerns of residents of northern communities.

Residents of northern communities living near abandoned or currently operating mines have long expressed concerns regarding the potential for harmful effects resulting from mining activities. Included in these concerns is the issue of long-term safety and environmental stability of abandoned or decommissioned mines.

Many of the concerns expressed by northern residents over the years have been addressed through improved provincial legislation (assessment and regulatory), standards and guidelines. The cleanup of the abandoned uranium mines and the issue of long-term institutional control of abandoned or decommissioned mine sites have not yet been fully addressed.

4. Conclusions

Saskatchewan Government policy on the exploration, development, operation, decommissioning and reclamation of uranium mines in northern Saskatchewan has improved significantly over the past 25 years and are effectively ensuring that uranium mining is carried out in an environmentally responsible manner. There is, however, a need to clarify provincial policy in the area of institutional control of those sites abandoned prior to existing legislation and those sites being decommissioned today and in the future.

In developing its Institutional Controls Policy, the Province is carefully evaluating the issues and considerations described in this paper. An improved policy on Institutional Controls should not only meet the requirements of applicable federal and provincial laws, but should also endeavour to satisfy the needs of industry and the public. Industry could benefit from improved policy direction through a better understanding of the Government’s expectations with respect to decommissioning, reclamation and post-decommissioning monitoring. This in turn will aid industry in developing long-term operational and decommissioning strategies that allow for a release from further responsibility for an environmentally stable site in a reasonable timeframe. Increased public confidence would also result from an improved institutional controls policy, which ensures that uranium mining in northern Saskatchewan will continue to be carried out in an environmentally responsible manner, and as such, will not result in a significant financial or environmental burden on future generations.
References


