

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Atomic Energy of Canada Limited

Subject Application for a licence to decommission
Whiteshell Laboratories

Date December 19, 2002

1. Introduction

Background:

Atomic Energy of Canada Limited (AECL) has applied to the Canadian Nuclear Safety Commission (CNSC) for a licence to decommission AECL's Whiteshell Laboratories.

The Whiteshell Laboratories is a nuclear research and test establishment located in Manitoba on the east bank of the Winnipeg River about 100 km northeast of Winnipeg and about 10 km west of Pinawa. The facility is comprised of a number of nuclear and non-nuclear facilities and activities, including the WR-1 Reactor, the Shielded Facilities, various research laboratories, and the liquid and solid radioactive waste management facilities. The facility is currently licensed under Nuclear Research and Test Establishment Operating Licence (NRTEOL-2.01/2002) which expires December 31, 2002. In 1998, AECL decided to close Whiteshell Laboratories and many of the facilities and activities have since ceased active operation.

AECL has requested a six-year decommissioning licence which would cover approximately the first of a planned three-phase decommissioning program for the site. The activities proposed to be carried out under the initial decommissioning licence include:

- continuing research programs unrelated to decommissioning, including the Safety Thermohydraulics Testing, the Reactor Safety Hydrogen Combustion Program, and the Waste Technology Business Unit;
- completing the shutdown of other operations in order to place the remaining nuclear facilities in a secure state of storage-with-surveillance;
- maintaining the site infrastructure and radioactive liquid waste treatment centre to support decommissioning and ongoing research activities;
- completing the dismantling and removal of the Van de Graaff Accelerator and Neutron Generator;
- demolishing redundant non-nuclear buildings;
- continuing the storage, at the on-site Waste Management Facility (WMF), of radioactive wastes from past operations and limited decommissioning activities;
- identifying and planning remediation projects that will be needed at the WMF to enable the safe interim storage of the waste during subsequent phases of the decommissioning project; and
- continuing the facility characterization and environmental monitoring programs to support compliance verification and future decommissioning project planning.

Issues:

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

- a) AECL is qualified to carry on the activity that the licence would authorize; and

- b) if, in carrying on that activity, AECL 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 Canadian Nuclear Safety Commission, in making its decision, considered information presented for a public hearing held on September 12 and November 14, 2002 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 Atomic Energy of Canada Limited (CMD 02-H19.1, CMD 02-H19.1A, CMD 02-H19.1B and CMD 02-H19.1C) and CNSC staff (CMD 02-H19 and CMD 02-H19.A). The Commission also considered oral and written submissions from intervenors as listed in Appendix A of this *Record of Proceedings*.

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 concluded that AECL is qualified to carry on the activity that the licence will authorize. The Commission also determined that AECL, in carrying on that activity, will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, issues Nuclear Research and Test Establishment Decommissioning Licence NRTEDL-02.00/2008 to Atomic Energy of Canada Limited, Mississauga, Ontario, for the Whiteshell Laboratories. The licence is valid from January 1, 2003, to December 31, 2008, unless suspended, amended, revoked or replaced.

The Commission includes in the licence the conditions recommended by CNSC staff in the draft licence attached to CMD 02-H19.A, with one modification to condition 8.5. The modification was recommended by CNSC staff following the submission of CMD 02-H19.A. Condition 8.5 will read as follows:

If any action level set out in Attachments 1, 4 and 5 to the March 19, 2002, letter titled Action Levels, from R.P. Lambert of AECL to W. Glenn Martin of the CNSC, is reached or exceeded, the licensee shall, within seven days of becoming aware of the matter, notify the Commission and shall file a final written report within 45 working days of becoming aware of the matter.

For clarity, the Commission was not requested to, nor did it make decisions concerning AECL's planned future phases of the decommissioning project. Separate applications for future decommissioning activities will be the subject of future applications to, and decisions of, the Commission. With its decision to issue a six-year Decommissioning Licence for the first phase

of the project, the Commission is not constrained in any way with respect to the decisions it may make concerning the future decommissioning activities. The Commission is satisfied that the activities to be carried out under the initial Decommissioning Licence would have to be carried out over the next six years, regardless of how, and at what rate, the remainder of the decommissioning project at Whiteshell Laboratories unfolds. Many of the approved activities to be carried out under the initial licence will result in the safe shutdown of facilities and the gathering of information necessary for the planning, preparation and assessment of future decommissioning steps. As such, the Commission is also satisfied that its approval of the Phase-1 decommissioning activities does not limit the potential options available to AECL for carrying out the remainder of the decommissioning, including the future timing of those activities.

Recognizing both the high level of public interest in the project, and the important exploratory aspects of the activities to be carried out under the initial decommissioning licence, the Commission requests CNSC staff to present interim reports to the Commission during the term of the license. The interim reports will address matters of compliance and performance during Phase 1 and any significant developments regarding anticipated subsequent phases. The interim reports will be presented at public proceedings of the Commission approximately every two years during the term of the licence (i.e., approximately in December 2004 and December 2006).

3. Adequacy of the Public Hearing Process

Before considering the facts of the application, the Commission considered the concerns expressed by intervenors with respect to the adequacy of the Commission's public hearing process and whether the issues could prevent the Commission from proceeding with a decision.

3.1 Location of the CNSC Public Hearing

Three intervenors (Local Government District of Pinawa, Manitoba Conservation, and the Manitoba Technical Advisory Committee) expressed concern that the public hearing on this application was held in Ottawa, rather than in Manitoba. These intervenors are of the view that the location of the hearing constitutes an obstacle to the meaningful participation of Manitobans and therefore requested that hearings be held in Manitoba.

The Commission notes that the public notices for the public hearing clearly state that intervenors may participate in the proceedings of the Commission by either oral or written submission. The Commission gives equal consideration to oral and written submissions. Furthermore, the Commission is aware that the Local Government District of Pinawa was informed of the option of participating in the hearing via video conferencing. No intervenors chose to use this option.

Based on these considerations, the Commission decided that a change of the hearing venue to Manitoba was not warranted.

3.2 Limited Length of Oral Submissions

The Local Government District of Pinawa and Manitoba Conservation also expressed concern about the Commission applying its guideline of limiting oral submissions to 10 minutes. These intervenors are of the view that more public hearing time was warranted in light of the potential 200 year duration of the project. These intervenors also referred to the earlier decision of the federal Minister of the Environment to not refer the related environmental assessment (completed pursuant to the *Canadian Environmental Assessment Act* (CEAA)), to a public review panel.

With respect to these comments, the Commission notes that the application was for a licence to carry out only the first phase of the overall project. The Commission is satisfied that there will be further opportunities for the public to participate in future public hearings of the Commission on the future stages of the decommissioning project. The Commission also gives equal consideration to written submissions and there are no guidelines or limits concerning the length of those submissions.

Concerning the Minister of Environment's decision to not refer the project to a review panel under the CEAA, the Commission notes that the current public hearing is part of the decision-making process for licensing under the *Nuclear Safety and Control Act* (NSCA). It is not for the purpose of appealing, reconsidering or extending the process under the CEAA.

For these reasons, the Commission decided to apply the ten-minute guideline for oral interventions during the hearing, to the extent deemed reasonable by the Chair. It is noted that all of the oral interventions exceeded 10 minutes without interruption from the Chair.

3.3 Public Notice of the Hearing

The Local Government District of Pinawa, in its intervention, also expressed concern about what it considers to be the Commission's inadequate publication of the public notice for the hearing. The Commission notes that the notice of the hearing was published in five local newspapers and on the CNSC web site in mid-July 2002. At that time, the notice of hearing was also provided directly to the Local Government District of Pinawa and several other groups and individuals in accordance with the CNSC's normal public hearing notification process.

Based on this information, the Commission concluded that the public had been adequately notified of the public hearing.

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 AECL's qualifications to carry out the proposed decommissioning 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 below.

4.1 Overall Decommissioning Plan

As noted in section 1 above, the licensing matter before the Commission was limited to a discrete set of proposed decommissioning activities that form part of a proposed multi-stage, 60-year decommissioning project. The current decision of the Commission is only with respect to the proposed first phase of decommissioning. The Commission did not make decisions on the future stages of the overall decommissioning plan. In making its decision on Phase 1, the Commission is not constrained in what decisions it may make in regard to the future stages.

However, and guided partly by the many concerns expressed by intervenors about the longer-term decommissioning plan for the site, the Commission did identify and consider several aspects of the overall decommissioning strategy that it viewed to be relevant to its licensing decision on Phase 1. The Commission's findings on those issues are documented below in section 4.1.3, following a brief review of AECL's current overall decommissioning plan (section 4.1.1) and the related concerns expressed by intervenors (section 4.1.2).

The Commission anticipates that the concerns raised by the intervenors about the future decommissioning phases will be addressed by AECL in its applications for the next phase of decommissioning. The Commission also expects that any developments that may affect the long-term decommissioning approach will be noted in the CNSC staff's interim reports to the Commission during Phase 1.

4.1.1 Description of the Overall Decommissioning Plan

Phase 1:

AECL explained that the first phase, projected to last approximately sixty years, will involve completing the safe shutdown of nuclear operations, maintaining the shutdown nuclear facilities in a storage-with-surveillance mode, modifying and maintaining the required site infrastructure, removing redundant non-nuclear facilities and gathering detailed information in support of active decommissioning and waste management activities planned in Phases 2 and 3. AECL described the activities in Phase 1 as being similar to the normal maintenance and modification activities previously carried out during site operations, but on a more frequent basis, and for longer durations. Phase 1 also includes the continuation of some limited research operations that are not related to the decommissioning.

Phase 2:

AECL stated that the planned Phase 2 is expected to last approximately 10 years and will involve continued storage-with-surveillance and the implementation of improvements to the Waste Management Facility (WMF). AECL explained that those improvements are needed to accommodate the waste that will arise from active decommissioning in Phase 3 and to ensure the continued safe interim storage of wastes already at the WMF. One such activity at the WMF, that AECL has already determined to be necessary in Phase 2, involves the removal of high-level wastes from in-ground standpipes to new above-ground interim canister storage at the WMF.

The balance of Phase-2 activities will involve the continued maintenance and surveillance of the shutdown nuclear facilities.

Phase 3:

The planned Phase 3 (to last approximately 40 years) includes the progressive dismantling of the nuclear facilities and ultimate removal of most of the radioactive waste in storage to permanent disposal facilities. AECL stated that, for planning purposes, it has assumed that a national disposal facility for low-level radioactive waste will be in place by the year 2025 and that a national disposal facility for high-level waste will be operational by the year 2050. AECL noted that the planned timing and duration of the decommissioning project phases are largely driven by these assumptions on the future availability of waste disposal facilities. AECL submits that, to avoid the double-handling of material and associated risks to workers, much of the dismantling of contaminated components and transfer of waste should be deferred until those off-site disposal facilities are in place.

Long-term Institutional Control (post-Phase 3):

AECL is also proposing that some of the low-level radioactive waste currently stored in trenches in the WMF, and a limited area of radioactive contaminated sediment in the Winnipeg River, will remain in place after completion of Phase 3. Those areas will be subject to long-term institutional controls prior to eventual abandonment *in situ* when they no longer pose a significant risk (a period presently estimated to last approximately 200 years). The results of enhanced monitoring of the WMF and Winnipeg River will be used to make final determinations on the acceptability of this planned *in situ* disposal option. AECL currently plans to render all other areas on the Whiteshell Laboratories site to a condition acceptable for unrestricted use prior to the end of Phase 3.

4.1.2 Intervenors Concerns on the Overall Decommissioning Plan

Three intervenors (Local Government District of Pinawa (supported by the resolutions of 19 local municipalities), Manitoba Conservation, and the Manitoba Technical Advisory Committee) expressed concern about the 60-year duration of the overall decommissioning project and the planned 200 years of institutional control.

Citing examples of prompt and continuous nuclear facility decommissioning projects of similar scale in the United Kingdom, other OECD countries, and AECL's decommissioning project at Tunney's Pasture (Ottawa), these intervenors are of the opinion that AECL should not defer any of the proposed decommissioning and waste management activities, with the possible exception of the WR-1 reactor core. These intervenors are of the view that the decommissioning of Whiteshell Laboratories should be carried out in a prompt and continuous program, and that the existing and arising radioactive waste should be placed in modern, secure waste storage or disposal facilities elsewhere, irrespective of when the federal government plans to establish national long-term radioactive waste management facilities.

The Local Government District of Pinawa is of the view that some low-level radioactive wastes could remain on the site in a permanent engineered disposal facility, but it rejects the notion of leaving any of that low-level waste in the existing trenches. The Local Government District of Pinawa requested that a licence condition be added, specifically requiring AECL to construct a permanent, engineered low-level waste disposal facility on the site to replace the existing storage structures and trenches; the new disposal facility would be for Whiteshell Laboratories wastes only.

Manitoba Conservation and the Manitoba Technical Advisory Committee are of the view that, in keeping with the original agreement between AECL and Manitoba, all radioactive wastes should be removed from the site and Province of Manitoba as soon as possible.

All three of the above-noted intervenors expressed particular concern about the current storage of high-level wastes below ground in standpipes. They believe this waste should be moved immediately to interim above-ground storage facilities that meet current international standards. In the absence of a national waste repository, these intervenors recommend that that interim storage be provided at AECL's Chalk River Laboratories in Ontario.

The Manitoba Technical Advisory Committee also expressed concern about AECL's plan to solidify high-level liquid waste in Phase 1 using a process of cementation, rather than vitrification.

Furthermore, these intervenors believe that the project, as planned, would have a detrimental effect on the social and economic health of the community. The intervenors generally prefer a continuous, sustained effort that would bring stability to the economy and promote the development of Canadian expertise in radioactive waste management and nuclear facility decommissioning methods. These intervenors also believe that deferred decommissioning would place an unacceptable burden on future generations. They view this burden to be contrary to the federal governments policies for nuclear waste management and sustainable development.

The same intervenors also expressed concern that deferred decommissioning would not make use of the existing operational staff's first-hand knowledge about the facilities. They believe that the application of that local knowledge would add significantly to the overall safety of the decommissioning project. They are also concerned that if this expertise and knowledge leaves the site, it may not be possible in their view to recruit the necessary qualified people back to do the work.

4.1.3 Commission Findings on Relevant Long-term Plan Issues

The Commission examined the above-noted concerns of the intervenors and considered the matters of relevance to the current application for Phase 1 in terms of the following five questions:

1. Will the existing and proposed radioactive waste management facilities at Whiteshell Laboratories provide for adequate protection of the environment and the health and safety

of persons during the proposed Phase-1 licence period, and also not compromise the proponent's ability to maintain a similarly acceptable level of protection in future phases?

2. Will the proposed deferral of decommissioning activities at Whiteshell Laboratories lead to a larger and more complex decommissioning task than if the facilities were promptly decommissioned; for example, due to the spread of contamination?
3. Will the deferral of major decommissioning activities for several years result in a loss of operational knowledge about those facilities (possessed by site staff) to an extent that the proponent likely will not be able to demonstrate to the CNSC in the future that it is qualified to undertake the remaining decommissioning activities?;
4. Will the deferral of major decommissioning activities result in placing a disproportionate share of the liability and burden for completing the project on future generations?; and
5. Regardless of the plan and schedule for the overall decommissioning plan, would the activities currently proposed to be carried out over the next six years (Phase 1) be substantially different, or need to be carried out in a substantially shorter time frame?

Other issues raised by the intervenors that are not related to the long-term decommissioning strategy are identified and discussed below in other sections of this *Record of Proceedings*.

4.1.3.1 Question 1 - Waste Management Strategy

With respect to the first question above concerning the adequacy of the waste management measures in the short and long term, the Commission notes that AECL is proposing to undertake, in the early part of Phase 1, a detailed assessment of the fitness-for-service of the existing waste management facilities at Whiteshell Laboratories. AECL plans to continue using the existing facilities to the extent possible and, if necessary, construct new interim waste storage structures that will meet the remaining design life requirements for the interim storage; that is, until national repositories are constructed elsewhere to receive the waste. In this regard, AECL is already planning to moving the high-level wastes from the in-ground standpipes to above-ground interim canister storage at the WMF.

As documented in the following paragraphs the Commission considered a number of issues related to the above waste management strategy. The objective was to determine if any remedial activities at the WMF should be accelerated to Phase 1, or whether the safety assessments planned for Phase 1 should be based on different assumptions.

Limited Data on Waste Trenches

Manitoba Conservation, as part of its argument for an earlier remediation of the low-level waste trenches in the WMF, pointed out that very little reliable hydrogeological data is currently available to predict groundwater flows at the WMF. Manitoba Conservation also noted that, during the first 15 of the 25 years that the low-level trenches were in use, very little information was recorded about the source-term characteristics of the waste.

In response to questions from the Commission on these points, AECL stated that it addressed the same concerns when they were raised by CNSC staff and Fisheries and Oceans Canada (DFO) during the environmental assessment conducted under the CEAA. AECL stated that it responded by sampling the soils in the immediate vicinity of the trench wastes and by reviewing the relevant information on the origin of the wastes. The results of the soil sampling confirmed that the natural attenuation characteristics of the soil has prevented, and continues to prevent, any significant spread of contamination from the trenches. The follow-up monitoring program was also designed to respond to the groundwater flow data reliability issue and provide a better basis for planning future requirements.

On the matter of the limited waste characterization records, AECL acknowledged that the records maintained in the early years of trench usage include only information on the types of packages and the radiation fields emanating from each. AECL noted, however, that it is confident that it has a good understanding of the radionuclide content in the trenches. This is based on the dose rate measurements, and on information about where and when the waste was produced in the research facilities.

In response to follow-up questions from the Commission, CNSC staff expressed the view that, while the more detailed follow-up is needed for future planning, the recently acquired information is sufficient to demonstrate the continued acceptability of the waste trenches during the proposed Phase 1.

To further examine the acceptability of the waste trenches in Phase 1, the Commission sought additional information on how flooding of the WMF could affect containment and pose a risk to the Winnipeg River. AECL responded that the effects of a rupture of the up-stream hydro-electric dam and from a 100-year flood event on the WMF were considered in the environmental assessment and were found to be acceptable. Furthermore, AECL stated that the site has experienced heavy rainfalls in the past. These have produced standing water conditions on the site which approximate worst-case flooding conditions. AECL reiterated that the recent sampling of soils in the immediate vicinity of the trench waste has demonstrated that such rainfall events have not had an adverse effect on the spread of contamination. CNSC staff also stated its conclusion, from the environmental assessment, that the effect of the environment on the project (including from extreme natural events such as flooding) is not likely to be significant.

Based on this information, the Commission is satisfied that neither the limited hydrogeological information, nor the limited waste characterization information warrant a requirement to remediate the waste trenches in Phase 1. The Commission is also satisfied that the risk of flooding is not a factor that would warrant a remediation of the trench waste in Phase 1. The Commission, however, is of the view that the proposed enhanced monitoring of the WMF should be implemented as soon as possible in Phase 1.

Waste Facility Design-life Requirements

To establish the reasonableness of the projected remaining design-life requirements for the on-site interim waste management facilities (i.e., a key performance requirement that will be used in Phase 1 to assess the fitness-for-service of the individual waste storage facilities), the Commission questioned AECL on the underlying assumptions it used in estimating when waste disposal facilities will be available (i.e., 2025 for low-level waste, and 2050 for high level waste). AECL responded that it looked at the experience in other countries where it has been shown to take approximately ten years from the point of committing to a national repository to its actual realization. AECL noted that it also considered the approximate time frame within which the new Waste Management Organization, operating under the provisions of the *Nuclear Fuel Waste Act*, will likely establish such facilities in Canada for high-level waste. AECL also considered it reasonable to assume a low-level facility will precede a high-level facility due to the less complex issues and hazards that will be involved.

The Commission questioned Mr. D. McCauley of Natural Resources Canada on the federal government's policy concerning radioactive waste management. Mr. McCauley acknowledged that the policy of the federal government is that the producers of the waste are responsible for its management. He also confirmed that the *Nuclear Fuel Waste Act* was passed to provide a framework for the nuclear power utilities to arrive at a permanent solution for their high-level wastes, including that presently owned by AECL. Mr. McCauley remarked, however, that a number of factors may influence the timing of when a facility is established. Mr. McCauley stated that the establishment of a national repository for low-level waste is not currently a policy priority of the federal government, but that this could change. Specific low-level waste projects, such as that planned for the Port Hope area, are being developed as needed.

Based on this information, the Commission is satisfied that AECL's assumption about the establishment of a national high-level waste disposal facility is appropriately conservative; that is, it will be assumed the existing facilities need to operate for a conservatively long period of time.

On the matter of the permanent disposal of the low-level waste from the Whiteshell site, however, the Commission notes that there will be in the order of 17,000 cubic metres of low-level waste that AECL plans to ultimately remove from the site (not including the trench wastes AECL currently plans to leave permanently *in situ*), but for which no plan or government policy currently exists for its permanent disposal. While the Commission is satisfied it has enough information to conclude that this waste can continue to be safety managed on the site during the six years of Phase 1, AECL's planning assumption of the year 2025 for the existence of an off-site low-level waste disposal facility remains uncertain. The Commission encourages AECL to work towards clarifying this matter with the federal government for the purpose of future licence applications.

Solidification of High-Level Liquid Waste

With respect to the above-noted intervenor's concern about AECL's plans to solidify a quantity of high-level liquid waste in Phase 1 using a cementation, rather than vitrification process, AECL

responded that cementation is also an internationally recognized method for the interim stabilization and storage of liquid waste. CNSC staff noted that while AECL is planning to experiment with vitrification at its Chalk River Laboratories in Ontario, that program would not be available to treat the small inventory of liquid waste stored at Whiteshell (approximately two and one half 45 gallon drums) for several years. CNSC staff expressed its safety preference to have the liquids solidified in the shorter term.

The Commission concurs with CNSC staff on this matter and is satisfied that the liquid wastes may be solidified with a cementation process in Phase 1.

Conclusion - Effect of the Long-term Waste Strategy on Phase 1 Licensing

The Commission is satisfied that the approach of using existing facilities for interim storage in Phase 1 is acceptable, subject to ongoing compliance monitoring and verification. The Commission is of the view that the need for new above-ground interim storage on the site must first be demonstrated before the incremental risks of building new facilities and transferring the waste to them can be justified. At this time, the Commission finds that there is no evidence to suggest that the waste storage facilities are currently posing a significant impact on health, safety or the environment, or that they will have such an impact within the proposed 6-year term of the licence. The Commission is of the view that the proposed fitness-for-service evaluations and enhanced monitoring will provide an appropriate validation of performance and design basis for any necessary modifications within an acceptable time frame.

4.1.3.2 Question 2- Spread of Contamination

On the related question of whether the on-site maintenance of the facilities in an extended state of storage-with-surveillance could lead to significantly more complex decommissioning tasks in the future, the Commission is satisfied that this would not be the case. AECL has indicated that the process of safe shutdown includes the removal, containment or immobilization of sources of contamination that would otherwise migrate over time. As noted in the foregoing discussion of the waste management strategy, AECL has demonstrated that there is presently no significant spread of contamination from the waste storage facilities. The Commission is also satisfied that the surveillance aspect of the program will ensure that any unusual migration of contaminants during the storage-with-surveillance period will be detected and that timely and appropriate measures could be taken to protect the environment and persons if detected.

With respect to the proposed management of off-site contamination, the Manitoba Technical Advisory Committee expressed concern about the contaminated sediment AECL is proposing to leave in the Winnipeg River. The Manitoba Technical Advisory Committee indicated that it does not consider that the contaminated sediments, and potential for them to spread further down stream and through ecological pathways over time, have been properly assessed, or will be adequately monitored. The Manitoba Technical Advisory Committee also noted that the assessment of the sediments did not include non-radiological chemical compounds.

In considering whether these sediments need prompt (i.e., Phase-1) remediation to prevent such effects and avoid a potentially more challenging future clean up, the Commission sought

additional information from AECL on the assessments recently conducted in the Winnipeg River.

In response, AECL described the detailed characterization and sampling surveys that were completed in the river in the fall of 2000. AECL reiterated its conclusion that the contaminated material it plans to leave permanently undisturbed in the river sediment does not, and will not, pose a significant risk to human health or other biota. AECL and CNSC staff also pointed out that the environmental assessment follow-up program will require ongoing monitoring of the effluents, sediment, water quality and potential effects on biota in the river. Remedial action, such as improved effluent controls or removal of the contaminated sediment would be required if the monitoring results show that conditions warrant. The adequacy of the environmental monitoring program is discussed further below in section 4.4.2.

Based on this information, the Commission concludes that the proposed deferral of decommissioning activities at Whiteshell Laboratories will not lead to a larger and more complex decommissioning task than if the facilities were promptly decommissioned; for example, due to a spread of contamination. The Commission is satisfied that the proposed surveillance and environmental monitoring programs, including in the Winnipeg River, will ensure that any significant spread of contamination would be detected and that appropriate actions could be taken to ensure future decommissioning activities are not adversely complicated or prolonged as a result.

4.1.3.3 Question 3 - Loss of Knowledge

With respect to the third question identified above, the Commission recognizes the importance of capturing and using the inherent first-hand knowledge of operational personnel to the extent possible in the planning and execution of nuclear facility decommissioning projects.

In response to questions from the Commission on how knowledge would be managed during the project, AECL noted that it does not plan to defer this aspect of the program and that many of the activities planned in Phase 1 are designed to capture and systematically document the relevant knowledge that will be used in the planning and execution of future decommissioning activities. CNSC staff concurred that this is a very important aspect of Phase 1 and that AECL must take appropriate steps in Phase 1 to capture and transform the remaining “local knowledge” of site staff into “documented knowledge”. CNSC staff remarked that AECL is already using much of that “local knowledge” in the preparation of decommissioning planning documents and facility shutdown plans. CNSC staff further stated that it is employing both quality assurance and human factors principles to its assessment of the retention and maintenance of knowledge for this project. CNSC staff indicated that, regardless of the decommissioning schedule, it fully expects AECL to rely heavily on “documented knowledge” during active decommissioning, supported with appropriately qualified safety personnel (such as in the field of radiation protection) to ensure a cautious and systematic planning and execution of the work as it unfolds.

On the question of whether AECL will be able to recruit the qualified personnel when the time comes to do the major dismantling stages, AECL responded that it is committed to maintaining and developing qualified resources while benefiting from national and international experience.

AECL indicated that it expects decommissioning will be a significant and growing business both in Canada and internationally. As a result, AECL expressed confidence that an adequate body of experienced resources will be available to it when needed. In response to a follow-up question from the Commission on the retention rate of the existing knowledgeable staff, AECL reported that the staffing levels have recently increased somewhat in preparation for Phase 1, and that there continues to be a normal rate of turnover.

The Commission also asked AECL about the projected nature of the workforce that will exist at Whiteshell Laboratories at the end of Phase 1. AECL responded that the workforce will consist of: scientists and engineers in various disciplines; technicians in fields such as radiation protection, environmental monitoring, and laboratory analysis; building maintenance; security; fire protection; and emergency response. AECL noted that the current number of staff is approximately 250. AECL estimates that the number of staff will increase somewhat during Phase 1, and decrease as the site is brought into the storage-with-surveillance mode towards the end of Phase 1.

Based on this information, the Commission concludes that the likely lack of direct involvement of former operating personnel in much of the active decommissioning project stages is not a significant factor affecting AECL's current qualification to carry out the activities under the proposed licence; nor is it a factor that would necessarily preclude AECL from being able to demonstrate its qualifications to carry out future decommissioning phases. The Commission is satisfied that AECL's qualifications, including applicable knowledge of the site conditions and hazards, will be gathered and continually verified by CNSC staff throughout the proposed licence period for Phase 1. All information relevant to maintaining a safe shutdown condition, and to the planning and execution of decommissioning activities, must be systematically documented and maintained up-to-date and in a readable format throughout the decommissioning program.

4.1.3.4 Question 4 - Burden on Future Generations

With respect to the fourth question above concerning whether the proposed overall decommissioning plan would place an unacceptable burden on future generations, the Commission is satisfied that the provision of appropriate financial guarantees for the entire project at this time will ensure that future generations do not bear a disproportionate share of the financial burden. The matter of financial guarantees for decommissioning is discussed further below in section 4.11.

With respect to any future burden in terms of effect on health, safety and environment, the Commission will consider these matters at each future licensing decision on the project. At no time would the Commission authorize activities that have unacceptable effects on the health and safety of persons, or the environment.

4.1.3.5 Question 5 - Effect of Alternative Decommissioning Strategies on Phase 1

With respect to the fifth relevant aspect of the long-term decommissioning plan, the Commission questioned AECL as to whether the proposed activities in Phase 1 would be significantly

different if it were planning to complete the entire project in a time frame different from the current 60 year plan. AECL replied that, regardless of the future plans, the nuclear facilities and activities must be brought to a safe shutdown condition in a planned and systematic manner. AECL also expressed the view that much of the gathering of detailed information and planning document preparation that is scheduled for Phase 1 must also be done regardless of the future decommissioning work schedule. With respect to the rate at which the planned Phase 1 decontamination activities can be completed (for example in the Building 300 laboratories), AECL cautioned that this is something that cannot be significantly accelerated given the need to work down through the buildings in a systematic way to ensure safety of workers and avoid the spread of contamination to other areas.

CNSC staff stated that it considers the six-year time frame for Phase 1 to be appropriate for the work proposed. CNSC staff also noted that six years is appropriate for the establishment and implementation of the planned monitoring and assessment programs, the results of which will be pivotal in the planning of future decommissioning stages.

In response to a question from the Commission concerning what other specific activities it would recommend be added to Phase 1, the Manitoba Technical Advisory Committed indicated that it would like to see AECL proceed with some of the interim waste storage improvement projects during Phase 1. As noted in section 4.1.3.1, the Commission determined that the existing waste storage facilities will provide adequate containment of the wastes during Phase 1. The Commission acknowledges that the recovery, characterization, repackaging and storage of the waste in new facilities, if necessary, will require significant time and effort to carry out safely. Special tools and structures may need to be designed and fabricated to handle and store the waste while ensuring adequate protection of workers and the environment during these operations.

Based on the above information and findings, the Commission is satisfied that the planned activities for Phase 1 would not need to be substantially different under other long-term decommissioning strategies. Providing that the monitoring and surveillance does not indicate a significantly increasing risk to the environment and people from the existing waste management facilities, the Commission is satisfied that the Phase 1 period will provide an appropriate time frame for the planning and design of the future waste remediation projects. This does not mean, however, that AECL would be prohibited from advancing some of planned remedial work in the WMF to Phase 1, subject to the appropriate regulatory approvals.

4.1.3.6 Conclusions Related to the Long-term Decommissioning Plan

Based on the determinations and reasons noted above, the Commission concludes that the planned completion of the decommissioning project over several decades does not significantly affect the determination of whether AECL is currently qualified to carry out the activities proposed in the current application; nor does it prevent or significantly limit AECL, or any other proponent, from being able to demonstrate its qualifications to carry out decommissioning activities in future project phases.

Similarly, the Commission concludes that the proposed phasing of the larger decommissioning project does not necessarily affect AECL's ability to make adequate provisions for the protection

of the environment, the health and safety of person and the maintenance of national security and measures required to implement international obligations to which Canada has agreed. The Commission is satisfied that the contaminants at the facility will remain relatively stable and immobile throughout Phase 1. As such, the Commission concludes that the future options for proceeding with the principal decommissioning activities will not be significantly limited, or made significantly more complex, by deferring those activities until after Phase 1.

As noted above, the Commission did not address licensing of the overall decommissioning plan at this time. Only the Phase-1 activities are the subject of the current application. The Commission notes that many of the planned activities in Phase 1 are directly related to the gathering and preparation of information that will be used in preparing applications for future phases of the project, and in particular, the plan for the longer interim storage of radioactive waste on the site. With its decision on the current application, the Commission is in no way constrained in what decisions it may make in regard to the future applications for decommissioning at the Whiteshell Laboratories site; nor is AECL prohibited from applying to the CNSC to proceed with activities planned for future phases in Phase 1, based on information available at the time, and subject to the appropriate regulatory approvals.

The Commission acknowledges the many deeply held concerns of intervenors about AECL's 60-year decommissioning plan. The Commission recommends that AECL take note of these concerns and continue an open dialogue with the community, CNSC staff, and other relevant federal and provincial authorities throughout Phase 1 as part of its preparation for the next licensing phase of the project.

4.2 Radiation Protection

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 AECL in the area of radiation protection.

CNSC staff reported that AECL's radiation protection program and its implementation currently meet all requirements and expectations. CNSC staff is of the view that this performance can be expected to continue during Phase 1 decommissioning. CNSC staff reported that, during 2001, no workers received a radiation dose in excess of the regulatory limit. The results for 2002 were not yet available. As well, no dose to workers exceeded AECL's own administrative control limit of 20 mSv.a (40% of the annual regulatory limit of 50 mSv.a). Furthermore, there were no unplanned worker exposure events in 2000 or 2001. AECL noted that the radiation exposures to workers have increased somewhat in recent months due to the increased facility shutdown activities, but remain very low. AECL predicts that somewhat higher dose rates can also be expected while active decommissioning of contaminated facilities is underway. However, AECL maintained that, because the planned activities are similar to the routine maintenance and modification work that AECL is accustomed to carrying out at Whiteshell Laboratories, the doses during Phase 1 decommissioning can be expected to remain well within regulatory limits.

With respect to doses received by the public as a result of activities at Whiteshell Laboratories, CNSC staff reported that the estimated doses to the theoretically most exposed members of the public remain negligible.

In its supplementary information for day-2 of the public hearing AECL elaborated on the specific aspects of its radiation protection program, including the use of: safety analysis; work plans, procedures and controls; training; protective equipment; health surveillance (e.g., dosimetry); and various levels and types of plan reviews and audits by technical experts, compliance staff, facility management, workers, CNSC staff, and AECL's Safety Review Committee.

Based on the above-described design and proven performance of the radiation protection program, the Commission concludes that AECL will, in carrying out the proposed activities under the licence, make adequate provision for the protection of workers and the public from the effects of radiation.

4.3 Conventional Health and Safety

Also with respect to its assessment of the measures to be taken to protect the health and safety of persons, the Commission examined AECL's past and planned program for conventional (non-radiological) health and safety at Whiteshell Laboratories.

CNSC staff reported that Human Resources and Development Canada (HRDC), who administers the applicable federal regulations on occupational health and safety, conducts periodic inspections at Whiteshell Laboratories. CNSC staff noted that HRDC is presently satisfied with AECL's safety program.

The Commission, noting that the initial phase of decommissioning will involve potentially hazardous activities that have not normally been carried out at the site (such as the demolition of structures), questioned if AECL's health and safety program will remain adequate and applicable for these future activities. CNSC staff responded that it intends to assess all hazards in its review of the detailed decommissioning plans required for each step in the process. CNSC staff also noted that HRDC will be involved in those plan reviews and will continue to undertake compliance monitoring on site.

AECL added that it will continue to practice its work planning processes which routinely account for both potential radiological and conventional risks to worker health and safety. AECL further noted that the Occupational Health and Safety Program actively involves the workers in its review and that all managers and supervisors are held accountable for the safety of the people reporting to them.

Based on the past performance of AECL in the area of conventional health and safety, and the adequacy of its related programs, the Commission is satisfied that AECL will make adequate provisions for the protection of workers from non-radiological risks during the proposed decommissioning activities.

4.4 Environmental Protection

To determine whether AECL will make adequate provisions to protect the environment while carrying out the proposed decommissioning activities, the Commission examined AECL's past performance in protecting the environment and its related plans for Phase 1 decommissioning. In particular, the Commission examined issues related to the control of emissions and effluents, the assessment of potential contamination outside the active area, the proposed disposal of non-radioactive waste, and the adequacy of the proposed environmental monitoring program.

4.4.1 Compliance with Emissions and Effluent Limits

CNSC staff reported that AECL's environmental protection program at Whiteshell Laboratories, and its implementation, have consistently met expectations during the current licensing period. CNSC staff and AECL reported that all radiological releases to the environment are monitored and have been at small fractions of the approved Derived Release Limits (DRLs); i.e., generally below 0.1% of the DRLs.

The Commission finds this level of performance acceptable and indicative of an adequate program for controlling radiological releases to the environment for Phase 1 decommissioning.

4.4.2 Potential for Contamination Outside the Active Area

Winnipeg River Sediment

As noted in section 4.1.3.2 above, the Manitoba Technical Advisory Committee expressed concerns about what it considered to be an inadequate assessment of the contamination of sediment in the Winnipeg River. In response (and as also documented in section 4.1.3.2 above), AECL described the detailed survey of the sediments and resident biota that it undertook in the river sediments, and identified the ongoing follow-up monitoring that is proposed to further examine this area.

While the Commission agrees that further monitoring of the sediment quality and its effects on biota is required in Phase 1, the Commission is satisfied that the removal of the affected sediments is not required at this time or likely during the proposed 6-year duration of the initial Phase 1 decommissioning licence. The Commission made no decisions about what may be required in future decommissioning phases. The Commission's further consideration of the environmental monitoring program for the Winnipeg River and elsewhere is contained below in section 4.4.4 of this *Record of Proceedings*.

Contamination in "Unaffected" Areas

The Commission questioned whether there could be radiological contamination in other areas of the property outside the areas known to have been affected by past nuclear facilities and activities. In response, AECL and CNSC staff described a detailed radiation survey that was conducted in 2000 on all areas thought to be unaffected by nuclear activities. The survey

employed the search of records, and use of sensitive radiation instruments in aircraft, vehicles and as held by personnel on foot. CNSC staff also reviewed and approved the survey design in advance and conducted a thorough audit of its execution in the field. CNSC staff reported its satisfaction with the survey and reliability of the results. From the survey, it was concluded that it is unlikely there is any radiological contamination in the unaffected area.

4.4.3 Non-radioactive Waste Disposal

The Commission also sought clarification on the proposed fate of the non-radioactive waste that will be generated during the demolition of the non-active buildings. AECL indicated that, for planning purposes, it assumed this waste would be transported to local municipal landfill sites, but that formal arrangements for this with the local governments have not yet been made. The Commission expressed surprise that this had not yet been discussed with the local officials, particularly given the serious concerns expressed by the Local Government District of Pinawa about AECL's information program (see section 4.12 below). AECL stated that much of the demolition waste will be recycled and that the final volume of this waste will be relatively small. AECL also noted that the demolition of buildings is not scheduled for the first part of Phase 1 and that there is adequate time to make arrangements for disposal of this waste.

While the Commission is generally satisfied with this response, the Commission encourages AECL to embark on the necessary negotiations with local government as early as possible. The Commission also encourages AECL to ensure, through the information program, that the local authorities are aware well in advance of other potential demands for off-site services in Phase 1.

4.4.4 Environmental Monitoring Program

CNSC staff stated that the environmental protection program has been modified for the Phase 1 decommissioning project by incorporating the impact mitigation measures and enhanced environmental monitoring that were identified during the Comprehensive Study Environmental Assessment of the project (completed in accordance with the CEAA) - see also section 4.13 for further details on the environmental assessment process. CNSC staff recommended that these additions to AECL's Environmental Protection Program be formally committed by reference in the conditions of the proposed licence.

In response to the concerns raised by the Manitoba Technical Advisory Committee on the adequacy of the proposed environmental monitoring program (and particularly in regard to the what the Manitoba Technical Advisory Committee considers as the need for a more thorough contaminant pathways approach in the monitoring of effects on the Winnipeg River), CNSC staff stated that the details of the program for Phase 1 are public and have been reviewed in detail. CNSC staff stated that the environmental monitoring program is required to link sources of contaminant discharge to points of potential accumulation in the environment and subsequent exposure of biota. The program must also be flexible to respond to unexpected findings and, therefore, AECL's environmental monitoring program at Whiteshell can be expected to continually adapt to the results and to changing decommissioning activities on the site. CNSC staff indicated its satisfaction with the proposed Phase 1 environmental monitoring program. CNSC staff also noted that the adequacy of the environmental monitoring program will be

continually reviewed by CNSC staff in consultation with a Joint Review Group, including the Manitoba Technical Advisory Committee, and that the initial findings will be reported to the Commission in the proposed interim report to the Commission.

AECL noted that, in addition to the monitoring in the river, the follow-up environmental monitoring program includes air monitoring during building demolition, groundwater flow and quality monitoring at the WMF, and enhanced monitoring at the non-active landfill and sewage lagoon.

Based on the above information, the Commission is satisfied that the proposed follow-up environmental monitoring program during Phase 1 will provide further information on the conditions in the Winnipeg River and other environmental media, including on any cumulative environmental effects on biota that may occur during Phase 1. The Commission is also satisfied that the Manitoba Technical Advisory Committee, and other interested parties will continue to be informed of, and have opportunities to comment on, the monitoring program.

4.4.5 Conclusion on Environmental Protection

In conclusion, the Commission is satisfied that AECL has made, and will continue to make adequate provision for the protection of the environment in carrying out the activities authorized under the proposed licence. This conclusion is based on: the past performance of AECL in controlling releases of radiological and non-radiological contaminants to the environment; a positive assessment of the environmental protection and follow-up program proposed for the initial phase of decommissioning (parts of which will enable rapid response to any unanticipated effects and other parts to the establishment of a solid baseline for assessing future phases of the project); and the results of recent site-specific environmental evaluations in the Winnipeg River, at the WMF, and on “unaffected” lands surrounding the active area.

4.5 Performance Assurance

AECL’s ability to assure performance over time is another important area examined by the Commission in its assessment of whether AECL is, and will likely continue to be, qualified to carry out the activities under the proposed licence. It also provides the Commission with part of the basis for deciding whether the proposed protection measures will likely be maintained effective through the period of the licence. The areas of quality assurance, training, and organization and management were the principal factors considered by the Commission during the hearing.

4.5.1 Quality Assurance

CNSC staff and AECL described the structure of AECL’s quality assurance program, including the work presently underway to document the specific requirements for quality assurance during the Whiteshell Laboratories decommissioning project. It was noted that AECL recently submitted its *Company-wide Decommissioning Quality Assurance Manual* for CNSC staff review. That manual fits within the framework of AECL’s existing overall *Quality Assurance*

Manual. A more specific *Whiteshell Laboratories Decommissioning Quality Assurance Plan and Procedures* is also in preparation. Quality assurance for the research activities that are proposed to continue operating during the initial decommissioning phase would continue to be managed under AECL's existing *Facilities and Nuclear Operations Quality Assurance Manual*.

Because the quality assurance programs for decommissioning are not fully documented, CNSC staff stated its view that the quality assurance program does not currently meet expectations. However, staff indicated its expectation that a satisfactory program will be documented, and that the AECL staff will be trained on it, prior to the proposed decommissioning licence coming into effect. CNSC staff noted that the remaining work involves ensuring the documentation is in a form that would allow a third-party audit.

Although CNSC staff expressed general satisfaction with the direction AECL is taking in the development of the decommissioning quality assurance program, CNSC staff recommended that the Commission consider including in the licence a condition that would require AECL to implement a decommissioning quality assurance program, acceptable to the Commission, or person authorized by the Commission, no later than June 30, 2003 (proposed condition 10.1). Until the quality assurance program is finalized, CNSC staff stated that it considers the working level procedures currently in place will provide acceptable interim coverage.

Based on this information, the Commission is satisfied that AECL is taking the necessary steps to ensure its quality assurance program and implementation meets the requirements and expectations of the CNSC. The Commission, however, remains concerned that the program documentation is not yet fully in place and therefore concurs with CNSC staff's recommendation to include a licence condition requiring that this be corrected by no later than June 30, 2003.

4.5.2 Training

CNSC staff stated that it considers AECL's general training programs to be adequate and that AECL is suitably re-developing and adapting its specific training for decommissioning at Whiteshell Laboratories. Key areas of training include radiation protection, emergency preparedness and environmental protection. AECL added that site staff is now scheduled to be trained on the quality assurance manuals, plans and procedures before the decommissioning licence comes into effect.

Based on this information, the Commission concludes that the training program for decommissioning at Whiteshell Laboratories is adequate and will help ensure AECL staff remains qualified to carry on the activities under the proposed licence.

4.5.3 Organization and Management

AECL explained that it has recently transferred responsibility for Whiteshell Laboratories from the Facilities and Nuclear Operations Unit (FNO) to its Decommissioning and Waste Management Unit. The Decommissioning and Waste Management Unit, however, will remain accountable to the FNO for ensuring compliance with AECL's radiation protection,

environmental protection and emergency preparedness programs. AECL further described how the major safety compliance and quality management functions will report within that structure. Specifically, AECL also noted that the quality managers for decommissioning and waste management will report to the AECL Chief Executive Officer and Chief Quality Officer.

CNSC staff stated that it views this organization and management structure as having attributes that will contribute to the safe decommissioning at Whiteshell Laboratories. However, CNSC staff indicated its plan to assess the effectiveness of the organization and management structure during the first half of the proposed licence period and report its findings to the Commission at that time.

Based on this information, the Commission is satisfied that AECL has an appropriate organization and management structure for the project. The Commission acknowledges the proposal of CNSC staff to periodically report to the Commission on this important aspect of AECL qualifications to carry out the licensed activities.

4.6 Operating Performance

The Commission examined AECL's past operating performance at Whiteshell Laboratories as a further indication of whether AECL is qualified to carry out the proposed decommissioning activities and maintain adequate protection measures.

CNSC staff reported that AECL's programs for facility operations, operational inspection, procedural adherence, internal communications, approvals, change control, maintenance and reporting all currently meet expectations, both in design and implementation. CNSC staff noted that, during the current licence period, all activities were carried out in accordance with AECL's compliance program and there were no reportable events. CNSC staff further expressed its expectation that these programs will remain effective during the planned Phase 1 decommissioning.

Based on this positive assessment, the Commission finds AECL's past operational performance to be satisfactory. The Commission is also satisfied that the related programs will be applicable to, and result in similar performance during, the initial phase of the decommissioning project.

4.7 Emergency Preparedness

As part of its assessment of AECL's provisions for protecting the health and safety of persons, the Commission examined the adequacy of the emergency preparedness at Whiteshell Laboratories.

CNSC staff provided a positive assessment of the Whiteshell Laboratories Emergency Preparedness Plan and noted that an exercise of the plan in 1999 met all performance objectives. During the course of the hearing, CNSC staff reported that it had recently reviewed and accepted

a further revision of the plan. CNSC staff recommended that the current revision of the plan be referenced in the proposed decommissioning licence.

AECL remarked that, as part of the emergency program, AECL maintains specialized equipment and personnel on the site to respond to all types of emergencies, such as fire and radiological releases. AECL also noted that it will continue to review and maintain the Emergency Preparedness Plan as part of its quality assurance program.

Based on this positive assessment the Emergency Preparedness Plan, the Commission concludes that AECL would be able to provide for the appropriate protection of persons and the environment in the event of an emergency at the Whiteshell Laboratories.

4.8 Fire Protection

Further with respect to the protection of persons and the environment, CNSC staff indicated that it is currently engaged in a detailed review of the fire protection measures at the Whiteshell Laboratories. A planned fire protection audit was completed and, at the time of the hearing, the audit report was under review by CNSC staff. CNSC staff reported that the initial audit found some items at variance with the *National Fire Code*. AECL has addressed all items identified as having an immediate implication for nuclear safety.

To address the remaining actions and provide consistency with other major facility licences, CNSC staff recommended that a licence condition be included to ensure AECL designs, builds, modifies and otherwise carries out work with the potential to impact protection from fire in accordance with the requirements of the *National Building Code, 1995* and the *National Fire Code, 1995*, and provide the Commission annually with evidence of compliance with those codes.

The Commission is satisfied that the ongoing fire protection evaluation and the proposed licence condition requirement will ensure AECL maintains adequate fire protection during the proposed decommissioning phase.

4.9 Security

With respect to the Commission's examination of AECL's provisions for maintaining national security at Whiteshell Laboratories during decommissioning, the Commission considered AECL's security program in relation to the *Nuclear Security Regulations* and Commission Order 01-1.

CNSC staff reported on the positive results of a security audit and exercise conducted at the Whiteshell Laboratories in September 2001. A further security compliance audit related to Commission Order 01-1 was carried out in April of 2002, the findings of which were addressed by AECL in a revised Site Security Report. The report was received on time and was under

review by CNSC staff at the time of the hearing. Additional security audits are planned during the decommissioning project.

To ensure the maintenance of security at the site, CNSC staff recommended that a licence condition be included to require AECL to comply with the measures specified in AECL's *Site Security Plan*.

Based on its consideration of AECL's security program and performance to date, the Commission concludes that AECL has made, and will continue to make adequate provisions for the maintenance of security at Whiteshell Laboratories. The Commission concurs with the recommendation of CNSC staff for the inclusion of a licence condition to ensure continued implementation of the *Site Security Plan*.

4.10 Safeguards and Non-Proliferation

To evaluate whether AECL will make adequate provisions for the maintenance of national security and international obligations to which Canada has agreed, the Commission examined the measures in place to address the safeguarding of nuclear materials and non-proliferation.

With respect to those measures, AECL reported that it continues to follow a well-established internal *Nuclear Materials Management Compliance Program*.

CNSC staff stated that AECL's program and its implementation presently meet all of the requirements for Whiteshell Laboratories. CNSC staff also described initiatives that are currently underway at Whiteshell Laboratories to further enhance the level of information. For example, updated design information is currently under review by CNSC and IAEA staff. In addition, a review is underway to help verify the contents of the standpipe containment structures in the Waste Management Area.

Based on the above information, the Commission concludes that AECL has made, and will continue to make, adequate provision at Whiteshell Laboratories for safeguarding nuclear materials and ensuring their non-proliferation in accordance international agreements to which Canada has agreed.

4.11 Financial Guarantees

In order to guarantee that the financial resources will be present to complete the decommissioning project, and ensure all of the necessary protection measures are maintained throughout, the Commission requires that a financial guarantee be provided.

In their interventions, the Local Government District of Pinawa, the Manitoba Minister of Conservation, and the Manitoba Technical Advisory Committee expressed concern that AECL's proposed plan to defer the bulk of the decommissioning activity for several decades would, in their opinion, place an unacceptable burden on future generations.

The Commission is of the view that appropriate financial guarantees can be used to effectively mitigate that potential financial burden.

CNSC staff reported that both the cost estimates for a guarantee and the formal arrangements for providing the guarantee remain under development and review. To ensure that AECL and the Government of Canada expedite an arrangement for a suitable guarantee, CNSC staff recommended that the Commission impose a licence condition requiring AECL to provide, no later than December 31, 2003, a financial guarantee in a form and of a value acceptable to the Commission, or a person authorized by the Commission. The Local Government District of Pinawa expressed the view that such guarantees should be in place before the initial decommissioning licence is issued.

In response to questions from the Commission about the scope and proposed structure of the financial guarantee, CNSC staff confirmed that the guarantee will address the entire three-phase decommissioning proposal – not just the initial phase. CNSC staff also stated that it is currently seeking a guarantee that consists of a fund that will build over time with the remaining balance of the liability being covered at all times by a government commitment. CNSC staff indicated that it would regularly review the adequacy of the guarantee to ensure it is up-to-date and continuing to meet requirements.

Manitoba Conservation expressed a lack of confidence in the cost analysis prepared thus far (as part of the environmental assessment). Manitoba Conservation does not believe the true costs and benefits of deferring work over 60 years have been properly assessed and urged that the costs be realistically calculated using adequate and recognized economic models.

The Manitoba Technical Advisory Committee also expressed skepticism that the federal government would be able to meet its commitments to cover the balance of the liabilities in the event other priorities begin competing for limited government resources over such a long period of time.

With respect to the first phase of decommissioning, the Commission sought further information on the projected budgets required. AECL responded that the current operating budget of \$8 million per year is expected to continue at that approximate level throughout Phase 1; however, the utilization will shift from operation to decommissioning activities as Phase 1 progresses. AECL provided assurance that the segregated fund that has been established for decommissioning contains more than enough funds to complete the first phase of decommissioning.

With respect to the above information and intervenors' comments, the Commission is of the view that the establishment of a financial guarantee is of very high importance for this project. The Commission is concerned that an acceptable cost estimate and arrangement for a guarantee was not in place at the time the licence application was made. As a result, the Commission has no assurance at this time whether the cost of the overall project has been estimated in a thorough and rigorous enough manner.

The Commission, however, is satisfied that sufficient resources will be available to initiate the proposed decommissioning activities and maintain the site in a safe condition for the first phase. For this reason, the Commission decides not to deny the decommissioning licence on the grounds that an adequate financial guarantee is currently not in place. The Commission, however, requires, by condition of the licence (condition 11.1), that such a guarantee be in place by the end of 2003.

The Commission is in agreement with the proposed conceptual structure of the guarantee for this facility, i.e., a growing fund together with a government commitment for the balance of liability.

4.12 Public Information Program

The CNSC requires that licensees have adequate programs for informing the public about the effects of their facilities and projects. In this regard, CNSC staff expressed its satisfaction with the information program that AECL has in place at Whiteshell Laboratories. CNSC staff reported that the program involves local government officials and provides relevant information to interested organizations, individuals, First Nations and the media. Various methods of communication are employed, including letters, interviews, presentations, newsletters, information displays, an Open House, and most recently, the creation of a Public Liaison Committee.

The Local Government District of Pinawa expressed an opposing point of view on the effectiveness of this information program. The Local Government District of Pinawa considers that the program involves only information, but no meaningful consultation. The Local Government District of Pinawa stated that AECL appears not to heed any of the recommendations it receives from the public and proceeds with its plans without providing any valid reasons for rejecting those recommendations.

With reference to the types of public information programs being promoted for the industry in other countries, the Local Government District of Pinawa recommended that the program for Whiteshell be made to include elements that go beyond information and consultation, and include principles of public involvement, collaboration and empowerment. The Local Government District of Pinawa also accused AECL of acting in bad faith during the initial meetings of the Public Liaison Committee by making false statements and attempting to divide the members on issues.

With respect to these comments of the Local Government District of Pinawa, the Commission notes that *Class 1 Nuclear Facility Regulations* require only that proponents have a program “to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects....” While information programs may go beyond this requirement, the Commission finds AECL’s program to satisfy the regulatory requirement.

The Commission is, however, concerned about the allegations raised by the Local Government District of Pinawa concerning alleged inaccurate information and inappropriate behavior in the delivery of the program. The Commission did not attempt to establish the validity of those

allegations during the hearing; however, the Commission trusts that AECL has taken note of them and will endeavor to ensure a constructive exchange of information with the community is maintained.

Based on the information above, the Commission is satisfied that AECL's public information program for the decommissioning project at Whiteshell Laboratories meets the regulatory requirement. The Commission notes that CNSC staff's the planned interim reports to the Commission should include information on the success of the information program.

4.13 Canadian Environmental Assessment Act

Before the Commission can take a licensing decision, it must be satisfied that any applicable requirements of the *Canadian Environmental Assessment Act* (CEAA) have been met. In this case, the project was determined to be subject to a Comprehensive Study environmental assessment under the CEAA. For that type of assessment, the decision under the CEAA as to whether the project is likely to cause significant adverse environmental effects is made by the federal Minister of the Environment. The Comprehensive Study was completed and the Minister decided in March 2002 concurred with the conclusion that the project would not likely cause significant adverse effects. The Minister then referred the project back to the responsible authorities (CNSC and DFO) for licensing decisions.

All of the intervenors to the current licensing hearing expressed a variety of concerns about the conduct of the environmental assessment process. For example, concerns were expressed about the depth of analysis of the potential effects on the Winnipeg River, the refusal of the Minister to refer the project to a review panel, the scope and level of assessment of socio-economic effects, and the evaluation of project phasing alternatives.

The Commission notes that the environmental assessment was a Comprehensive Study, conducted pursuant to the provisions of the CEAA. As such, the decision on these matters came under the purview of the Minister of the Environment. With the decision of the Minister on the conclusions in the Comprehensive Study Report, the environmental assessment process was completed. The current public hearing by the Canadian Nuclear Safety Commission is for the purpose of the licensing decision. It is not for the purpose of appealing or re-determining the decisions of the Minister. That being said, the Commission acknowledges the role of its staff in carrying out the environmental assessment studies in cooperation with other government departments. In that regard, Mr. Harvey, in his intervention, stated that CNSC staff had erred in its interpretation of the CEAA concerning the requirement for a socio-economic effects assessment, and had erred in its advice to the Minister. In response to the Commission's questions on these statements of Mr. Harvey, CNSC staff maintained that its interpretations of the CEAA were correct, and that its final conclusions and recommendations were accurate.

Based on the above information and considerations, the Commission is satisfied that all of the requirements of the CEAA have been properly fulfilled for the project and the current licensing proceedings.

The Commission notes that the decision of the Minister of the Environment on the likely effects of the planned long-term decommissioning project, does not necessarily mean that that is the project that will ultimately be approved. As noted elsewhere in this *Record of Proceedings*, the Commission retains full discretion under the *Nuclear Safety and Control Act* for licensing decisions on future project phases. In the event the proposed project changes significantly (for example, at the time the application for Phase 2 is prepared), it is possible that the earlier environmental assessment of the project will need to be appropriately revisited under the provisions of the CEEA.

4.14 Licence Length

AECL has applied for a decommissioning licence with a term of 6 years. As noted above, this time frame will cover approximately the first of the 3-phase decommissioning project.

With reference to the criteria for recommended licence length set out in CMD 02-M12, CNSC staff recommended that the Commission accept the proposed licence term of 6 years. CNSC staff expressed its opinion that the current deficiencies in the quality assurance program noted above are not sufficient to have a bearing on the determination of licence length.

In recognition of the length of time until the next planned formal licensing hearing before the Commission, CNSC staff offered to provide an interim report on the progress of the project and performance of the licensee. CNSC staff proposed that this report would be presented at a public proceeding of the Commission in approximately three years time.

With respect to the proposed licence term, the Commission is satisfied that AECL has demonstrated its understanding of, and ability to safely carry out, the proposed work. The Commission also acknowledges the merit in aligning the licensing renewals to significant stages of the decommissioning process. The Commission therefore concurs with the proposed six-year licence term.

The Commission agrees with CNSC staff that interim reporting to the Commission in this case is warranted. However, due to the high level of public interest in the project, the significant information gathering aspects of the Phase 1 activities, and the outstanding issues of quality assurance and financial guarantees, the Commission requests CNSC staff to present interim reports to the Commission approximately every two years (i.e., approximately in December 2004 and December 2006). In addition to reporting on the compliance and performance of the licensee, the interim reports should provide any relevant information that may affect the current planning assumptions for the future decommissioning phases. The interim reports will be presented at public proceedings of the Commission. While it is not possible to plan the agenda of the Commission proceedings with precision that far in the future, the Commission will examine opportunities to receive an interim report, and possibly conduct the hearing on the application to renew the decommissioning licence, in Manitoba.

5. Conclusion

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

The Commission concludes that AECL is qualified to carry on the activity that the licence will authorize. The Commission also concludes that AECL, 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 issues Nuclear Research and Test Establishment Decommissioning Licence NRTEDL-02.00/2008, pursuant to section 24 of the *Nuclear Safety and Control Act*, to Atomic Energy of Canada Limited. This licence is valid from January 1, 2003, to December 31, 2008, unless suspended, amended, revoked or replaced.

The Commission requires CNSC staff to present interim status reports to the Commission approximately every two years during the term of the licence (i.e., in approximately December 2004 and December 2006).

Marc A. Leblanc
Secretary,
Canadian Nuclear Safety Commission

Date of decision: November 14, 2002

Date of release of Reasons for Decision: December 19, 2002

Appendix A – Intervenors

Intervenors	Document Number
Local Government District of Pinawa, represented by Mayor Len Simpson	CMD 02-H19.2 CMD 02-H19.2A
Manitoba Technical Advisory Committee, represented by Edwin Yee	CMD 02-H19.4
Manitoba Department of Conservation, represented by David Wotton	CMD 02-H19.3
Keith B. Harvey	CMD 02-H19.5
Natural Resources Canada, represented by David McCauley	