A PROPOSED APPROACH TO ENVIRONMENTAL PROTECTION

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MESURE PROPOSÉE POUR LA PROTECTION DE L'ENVIRONNEMENT

RÉSUMÉ

Cette présentation a pour objectif d'expliquer notre perception actuelle de la protection de l'environnement dans les installations nucléaires. Mon intention n'est pas de vous présenter un produit fini, mais plutôt d'exposer les premières étapes de la mise au point d'une approche nouvelle et systématique de la protection de l'environnment. Exigée en vertu de la *Loi sur la protection de l'environnment* (LCPE), l'évaluation actuelle des radionucléides provenant d'installations nucléaires constitue un facteur de taille qui influencera l'avancement du processus. On prévoit qu'il faudra deux ans pour terminer l'évaluation demandée par la LCPE. Par la suite, un projet à long terme, soit la conception et la mise en place d'un plan d'ensemble complet de protection de l'environnement, devrait se faire en cinq ans ou moins. Pour débuter, la CCEA devra définir une politique de protection environnementale, dont la mise en oeuvre sera tributaire de la mise au point et de la publication, par la Commission, de programmes, de procédures, de guides, de normes et de lignes directrices à l'intention des usagers.

ABSTRACT

The objective of my presentation to day is to present our thinking to date on the subject of environmental protection at nuclear facilities. What I intend to present is not a finished product, but the first steps in establishing a new and systematic approach to environmental protection. An important factor that will affect the progress of this process is the current assessment of radionuclides (released from nuclear facilities) under the aegis of the *Canadian Environmental Protection Act* (CEPA). It is expected that the CEPA assessment will take in the order of two years to complete. In keeping with this schedule, we expect the overall process of establishing a new and systematic approach to environmental protection to be a long-term project taking up to five years to complete. It will start with the establishment of an AECB policy regarding environmental protection and continue with the development of programs, procedures, guides, standards and criteria to implement the policy.

1.0 MOTIVATION FOR CHANGE

Over the past few years the AECB has become more open in its dealings with the public and its licensees. Board meetings and informal public meetings are now being held at or near the locations of major facilities or regulated activities. These activities gives the public the opportunity to meet with and talk to both the Board members, and AECB staff. Public interaction is also increased by the requirements of new environmental legislation, the Canadian Environmental Assessment Act and its associated regulations. These occasions provide the public with the opportunity to make their concerns known and participate in the decision making process.

During these opportunities members of the public have demonstrated their awareness of environmental issues, and expressed their concerns about environmental regulation. The concerns expressed by a well informed and educated public bring pressure to bear on the AECB to address environmental issues in a more substantial fashion. At public hearings (e.g. for uranium mine development in Saskatchewan) intervenors have questioned the effectiveness of the AECB's regulation and its commitment to environmental protection. There is increased public scrutiny of the work of the AECB and demand for greater accountability in its decisions; this has led to a greater need for dialogue among all stakeholders, the regulatory agencies, the industry and the public.

The Canadian Government in its recent publication "The Guide To Green Government" [1] adopted sustainable development as the goal of all public policies. Two fundamental principles of this policy are openness and accountability both of which are consistent with the move to openness and transparency by the AECB. Both principles lead to a need to be able to demonstrate that the environment is protected from the effects of the activities regulated by the AECB.

The current approach to environmental protection at nuclear facilities is based on the assumption that current limits are sufficiently stringent to ensure that the environment is protected. In short if humans are protected the environment is protected. However belief in this assumption is shared by neither the public nor the scientific community. In addition it is an assumption that cannot be demonstrated by monitoring some element of the environment. Thus the current basis of the approach to environmental protection does not meet the two principles of the sustainable development policy. Neither does it allow for the development of an open and transparent decision making process. Hence the basis for the AECB's approach to environmental protection must be re-examined, and reformulated.

2.0 ENVIRONMENTAL PROTECTION

The term environmental protection is used commonly without much thought to its meaning. What is being protected? What is it being protected against? One perspective is to regard environmental protection as a goal which is to maintain a viable environment for continued human development. It is important to note that this definition recognizes that humans and human society are the centre and driving force behind the concept of protection. This is consistent with the view taken by Environment Canada in their ecosystem approach [2] to environmental protection.

If environmental protection is undertaken to ensure continued human development then what is it that we are protecting? The term environment has been defined by Environment Canada in the CEAA and accepted by the AECB as meaning

"... the components of the Earth, and includes

a) land, water and air, including all layers of the atmosphere,
b) all organic and inorganic matter and living organisms, and
c) the interacting natural systems that include components referred to in paragraphs (a) and (b);"

The important elements to recognize in the definition is first that the environment comprises components, both biotic and abiotic. Thus environmental protection has to include measures to protect individual components. Secondly there is the explicit recognition that the components are related through interacting natural systems. So in addition to components, the interactions must also be protected.

It can be concluded that environmental protection is undertaken to ensure human development, but in a fashion that recognizes that the environment includes abiotic and biotic components organized into interacting systems.

3.0 ENVIRONMENTAL MANAGEMENT

How is this goal to be attained? The federal government believes that pollution prevention is the most effective means of protecting the environment and hence has adopted this approach as its' strategy for environmental protection [3]. One action the federal government will take in implementing its strategy is to "promote the best practices for environmental protection, including environmental management systems and pollution prevention techniques through a mix of regulations, economic instruments, and voluntary agreements." [4] A recent report from the House of Commons Standing Committee on Environment and Sustainable Development contains a recommendation that pollution prevention should become the guiding principle of the *Canadian Environmental Protection Act*.

A possible viable approach that can be readily developed and remain consistent with government policy, is an environmental management approach. "Environmental management" is a coordinated set of activities, including a decision making framework, undertaken to ensure that environmental effects arising from the use of nuclear energy are evaluated and minimized.

An environmental management system is life cycle oriented, and is applied thorough out the various stages of the facility. It would commence with environmental assessment in the planning phases of the project which:

- identifies potential impacts and mitigative measures;
- collects baseline data;
- predicts facility behaviour; and
- proposes a tentative decommissioning plan.

The initial environmental assessment establishes measurable objectives that all stakeholders agree on as indicators of environmental protection. Measurable objectives can be established for each of these four areas and the objectives subjected to a systematic and routine assessment (and subsequent reassessment) throughout the life cycle of the project. Environmental protection is then and demonstrated through the auditing of onsite activities such as commitments to implement mitigative measures, the monitoring of offsite environmental indicators (components and system indicators).

The critical activity for environmental management is the establishment of the key objectives (i.e., ecological risk assessment, environmental assessment, stakeholder consultation) and decision making criteria with stakeholder participation. It will be this process that will hold the biggest challenge, to resolve scientific and social perspectives and establish objectives and criteria that are both scientifically and socially acceptable.

These objectives and criteria focus the regulatory effort and allow both the regulator and the licensee to evaluate and demonstrate the achievement of environmental protection. Environmental management systems are not new, national and international standards exist [5,6,7]. They all stress management of onsite activities, they are prevention oriented, use objectives to measure success, and stress continual improvement of the management process These principles are consistent with the principles of sustainable development and with Canadian government policy.

4.0 CONCLUSION

The process of developing a new approach to environmental protection for the AECB will be a long-term process. It will involve consultation with all stakeholders and undoubtedly involve many new challenges. However based on consideration of public reaction, scientific review, government policy and regulations, we

have concluded that environmental management may present the best approach to environmental protection that is open integrated, and accountable.

Environmental management includes a mechanism for demonstrating the achievement of environmental protection, audits, and environmental monitoring. It allows the participation of all stakeholders in developing objectives and criteria for decision making. It can be used to address, as far as practical, impacts on all components and interactions in the environment. Finally it is compatible with the view that protection of the environment means protection of humans.

5.0 DISCUSSION

Question No.1: What evidence do you have to support your statement that the current approach of the ICRP was not socially acceptable?

Mr. Maloney replied that during public hearings the public has questioned the validity of this assumption. He indicated that comments have been made that the ICRP's assumption *[that if man is protected then so is the environment]* has been used for other substances, and then proved wrong. Even if the assumption is valid, it has been tarnished as a simplistic assumption which must be proven.

Question No. 2: What then is considered socially acceptable?

Mr. Maloney replied that this will be determined through a consultative process. The goal of the environmental management process has been challenged when it was indicated that the goal is based on the need to maintain "human development." Although environmental protection is the main goal, the underlying basis is still support for human development.

The process to be followed was also discussed. With regard to economic considerations, Mr. Maloney indicated that the licensees would be expected to bring in the economic factors through the use of cost/benefit analysis and use of the ALARA principle. It is not the policy of government to put unacceptable burdens on companies. The AECB wishes to ensure a consistent environmental protection approach for all nuclear facilities (mines and power plants), which would stand up to public and scientific review. Mr. Maloney agreed that the level of an environmental standard associated with radioactive material should be consistent with that for non-radiological substances. Mr. Maloney provided a tentative schedule, indicating that they will be developing a draft internal policy by end of February 1997, and consultation will take place over 1997. This document will set direction and establish criteria. They (the AECB) will wait for the result of the PSL2 assessment. Overall they expect it to take about five years. They expect to hold another symposium in about three years to gain more international input.

6.0 REFERENCES

[1] "Guide to Green Government," Government of Canada 1995, Green Lane Home Page, http://www.doe.ca/.

[2] "Reviewing CEPA: The Issues #3. The Ecosystem Approach."

[3] "Pollution Prevention: A Federal Strategy For Action," Press Release, Green Lane Home Page, http://www.ec.gc.ca/pollution/strategy/plt_bg_e.htm, 06/26/96.

[4] Ibid.

[5] C.S.A. Standard (Z750), "A Voluntary Environmental Management System."

[6] ISO/DIS 14001, "Environmental Management Systems — Specification with Guidance for use."

[7] British Standard BSI-7750, "Specification for Environmental Management Systems."