



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Strateco Resources Inc.

Subject Application for a Uranium Mine Site Preparation
and Construction Licence for the Matoush
Underground Exploration Project

Public Hearing
Dates June 5 and 7, 2012

RECORD OF PROCEEDINGS

Applicant: Strateco Resources Inc.

Address/Location: 1225, Gay-Lussac, Boucherville, Québec J4B 7K1

Purpose: Application for a Uranium Mine Site Preparation and Construction Licence for the Matoush Underground Exploration Project

Application received: November 4, 2008

Dates of public hearing: June 5, 6, and 7, 2012

Location: June 5 and 6 : Neoskweskau Sports Complex, 206 Main Street, Mistissini, Québec
 June 7 : Club de golf de Chibougamau Chapais, 130, rue des Forces Armées, Chibougamau, Québec

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 R. J. Barriault M. J. McDill
 A. Harvey

Secretary: M.A. Leblanc
 Recording Secretaries: S. Dimitrijevic, D. Carrière and S. Gingras
 Senior General Counsel: J. Lavoie

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Others Representatives
• Ministry of Sustainable Development, Environment and Parks represented by Daniel Berrouard
Intervenors
See appendix A

Licence: Issued

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INTRODUCTION

1. Strateco Resources Inc. (Strateco) has applied to the Canadian Nuclear Safety Commission¹ (CNSC) for the issuance of a Uranium Mine Site Preparation and Construction Licence for its Matoush Advanced Exploration Project located within the Province of Quebec, 210 kilometres northeast of the Aboriginal community of Mistissini and 275 kilometres from Chibougamau. Strateco has applied for a 5-year licence.
2. The project proposed by Strateco is strictly limited to advanced exploration activities and does not include mining or milling. The main activities proposed by Strateco include the excavation of an exploration ramp, driving two exploration drifts in waste rock, and definition drilling of the mineralized zone with up to three excavations through the mineralized zone. With respect to the surface support facilities, Strateco proposed to build a power plant, a petroleum farm, water treatment facilities, garages, offices, waste and special waste pads, and to upgrade the temporary camp. The timeline for the proposed activities is approximately four years.
3. The proposed activities would allow Strateco to further characterize the uranium mineralization. Since there are no plans for mining through the mineralized zone beyond that required to characterize the uranium deposit, Strateco did not seek authorization for mining or milling activities.
4. The results of the exploration obtained during the realisation of this project could be used later for a feasibility study to determine the potential for future mining operation. Depending on the results of the exploration, the feasibility study and other socio-economic factors, a decision would be made whether to proceed with decommissioning of the site or to continue with an application to construct and operate a uranium mine. This application would necessitate a new environmental assessment and a new licence.

Issue

5. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*² (NSCA):
 - a) if Strateco is qualified to carry on the activity that the licence would authorize; and
 - b) if, in carrying on that activity, Strateco 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.

¹ The *Canadian Nuclear Safety Commission* is referred to as the “CNSC” when referring to the organization and its staff in general, and as the “Commission” when referring to the tribunal component.

² Statutes of Canada (S.C.) 1997, chapter (c.) 9.

Public Hearing

6. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission to review the application. The Commission, in making its decision, considered information presented for a public hearing held on June 5 and 6, 2012 in Mistissini, Quebec and on June 7, 2012 in Chibougamau, Quebec. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*³. During the public hearing, the Commission considered written submissions and heard oral presentations from CNSC staff (CMD 12-H7 and CMD 12-H7.A) and Strateco (CMD 12-H7.1 and CMD 12-H7.1A). The Commission also considered oral and written submissions from 97 intervenors (see Appendix A for a detailed list of interventions).

Process for Intervenors

7. Some intervenors expressed the view that the process for registering at this public hearing, including the submission of names and addresses and a written submission of the topics that an intervenor wished to present at the hearing, was too complex. One intervenor was of the opinion that these rules go against an individual's privacy and freedom of speech, which are guaranteed under the *Charter of Freedom of Rights*, which is then protected under the *Constitution of Canada*⁴.
8. The Commission notes that, as a quasi-judicial tribunal, it follows the *Rules of Procedure* that describe the process to be followed during a public hearing. For example, the *Rules of Procedure* describe the information that should be included in a notice of hearing, as well as the information that a person needs to provide in a request for intervention. These *Rules of Procedure* are necessary to allow the Commission to obtain the information it needs to render its decision on the matter being heard and to ensure that the proceeding is dealt with as informally and expeditiously as the circumstances and considerations of fairness permit.

Balance and Completeness of Information

9. Intervenors were of the view that there is no proper balance between the information presented during the hearing from the intervenors, Strateco and CNSC staff, and that there is not enough information in the documents for the Commission to make a proper decision. The Commission notes that the NSCA and its *Regulations* describe the information to be provided by an applicant regarding the matter being heard, and that CNSC staff will examine the information provided by applicants and make recommendations to the Commission. The Commission further notes that there is no prescribed limit on the length of written submissions from either the applicant, CNSC staff or intervenors. The Commission considered information submitted from all participants at the hearing, including the applicant and intervenors. The Commission considers that it has all of the information necessary to render its decision.

³ Statutory Orders and Regulations (SOR) /2000-211.

⁴ *The Constitution Act, 1982*, being Schedule B to the *Canada Act 1982* (U.K.), 1982, c. 11.

Transparency of the Commission

10. The Commission notes that submissions from CNSC staff, Strateco, and the intervenors were made available to the public upon request (except for classified information for security purposes), as per usual procedure. The Commission places considerable weight on transparency, which is one of the reasons why it conducts its hearings in public and why its interactions with CNSC staff on licensing matters such as Strateco's application are carried out in public.

DECISION

11. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*, the Commission concludes that Strateco is qualified to carry on the activity that the licence will authorize. The Commission is of the opinion that Strateco, 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 to Strateco Resources Inc. a Uranium Mine Site Preparation and Construction Licence UMCL-MINE-MATOUSH.00/2017 for its Matoush Underground Exploration Project located in the Otish Basin, Quebec. The licence is valid from October 16, 2012 to October 31, 2017.

12. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 12-H7. In addition to the recommended licence conditions, the Commission directs CNSC staff to add licence conditions with the following hold points to the Matoush Project:
 - the excavation of the exploration ramp and construction of the mine portal will not begin before the Commission is satisfied that all data required for the completion of the aquatic baseline data set are collected and analysed, and the data set is established; and
 - none of the activities associated with releases of effluents into the environment will be allowed to start before a basic monitoring program is fully implemented.
13. The Commission states that no activities listed in the licence shall commence before a financial guarantee acceptable to CNSC staff is in place.

14. The Commission accepts CNSC staff's recommendation regarding the delegation of authority in the draft Licence Conditions Handbook (LCH) and directs CNSC staff to modify the LCH so to accommodate for the additional licence conditions aforementioned in the previous paragraph. The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.

ISSUES AND COMMISSION FINDINGS

15. In making its licensing decision, the Commission considered a number of issues relating to Strateco's corporate qualification to carry out the proposed 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.

Application of the Canadian Environmental Assessment Act

16. Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act*⁵ (CEAA) have been fulfilled. The Commission notes that the updated CEAA that came into force in July 2012 (CEAA 2012⁶) did not apply to the proposed project, as environmental assessments were conducted before that time.
17. The Matoush Advanced Exploration Project is located within the boundaries of the administrative region governed by the *James Bay and Northern Quebec Agreement* (JBNQA) and was subject to both a federal and provincial environmental assessment and social assessment under the JBNQA environmental assessment regime. According to the *Canadian Environmental Assessment Act* (CEA Act), a federal environmental assessment in the form of a comprehensive study is required for this project. The President of the Canadian Environmental Assessment Agency (CEAA) as the Federal Administrator of the JBNQA, and the Deputy Minister of the Environment, Quebec, as the Provincial Administrator, each must make a decision as to whether or not the proposed project proceeds to the next steps.
18. In its submission, Strateco stated that the company recognizes the importance of ensuring that the neighbouring communities are well informed about the underground exploration project, and informed the Commission that dialogues and exchanges with the communities have been ongoing since 2006. Open door meetings, focus groups discussions, presentations and workshops as well as pamphlet publications are some of the initiatives undertaken by Strateco to provide information on the project and uranium mining in general.

⁵ S.C. 1992, c. 37

⁶ S.C. 2012, c. 19, s.52

19. In August 11, 2008, Strateco transmitted preliminary information to the Quebec Ministry of Sustainable Development, Environment and Parks' Evaluating Committee (COMEV). COMEV recommended that the project undergo an environmental and social review under the JBNQA and developed the directives for the project, which met the federal and provincial JBNQA EA requirements and the CEAA requirements. These directives are available on the CEAA web site, and a link to that effect is also provided on the CNSC web site. CNSC staff added that, in accordance with the CEA Act, a federal environmental assessment in the form of a Comprehensive Study had been carried out for the proposed project. The CEAA, *Federal Review Panel-South* (FRP-S or COFEX) and the *Comité provincial d'examen* (COMEX) conducted a two-phased public hearings consultation process in Mistissini and Chibougamau during the year 2010. The Conférence régionale des élus de la Baie James also held expert focus groups in October 2009 and February 2010 in Chapais and in Chibougamau, as well as public meetings in May 2010. Strateco added that it had participated in all of these events.
20. The Commission notes that the FRP-S recommendation, approved by the Federal Administrator, indicated that, subject to certain conditions, the FRP-S is satisfied that the project "is not likely to result in significant adverse environmental and social effects or to infringe on the principle of protecting the Cree people's way of life". The COMEX decision has not yet been issued.
21. CNSC staff reported that verbatim transcripts and videos of the information session and the public hearing were posted on web sites and interventions were all publicly available on the Canadian Environmental Assessment Registry (CEAR). CNSC staff noted that the CEAR contains records of consultations and information documents such as news releases, public notices, hearing documents, FRP-S documents, proponent documents, Federal Administrator documents, etc.
22. Strateco representatives emphasized the role of the Conférence régionale des élus de la Baie James (CRÉBJ) who organized a tour in the principal towns of the territory to inform the population of the main impacts of the proposed project. The Cree Council on Mineral Exploration partly financed a trip where four Tallymen went to Saskatchewan to gather information directly from Cree communities that have territories neighbouring established uranium mines and projects in northern Saskatchewan. Strateco representatives noted that the purpose of the visit was so the Tallymen could find out about uranium exploration and mining and bring the knowledge back to their communities.
23. The Commission notes that an important element, which has impacted the environmental assessment process, was a Court of Appeal decision in Québec that ruled that an EA under CEEA was not required given the provisions under the JBNQA. As a result, the process was substituted under the JBNQA. However, in May 14, 2010 the Supreme Court of Canada held that the CEAA was applicable and that substitution by the environmental assessment procedure provided under the JBNQA was no longer

applicable⁷. Since that substitution no longer had a purpose, the federal procedure set out in section 22 of the JBNQA remained applicable in parallel with that of the CEAA. As a result, and to harmonize the process, in assuming authority under the CEAA, the CNSC proposed in September 2010 that responsibility for conducting the comprehensive study, holding public consultations and preparing the report be delegated to FRP-S. It might be important to note that three members of the FRP-S were chosen by the Cree while four were chosen by the Federal authorities.

24. In July 2011, CNSC staff presented to the Commission a draft Comprehensive Study Report for the project. The Commission concluded on July 29, 2011 that the project as proposed is not likely to result in significant adverse effects, mitigation measures taken into account, and referred the Comprehensive Study Report to the federal Minister of the Environment for his review and decision. The Minister of the Environment also determined in his decision dated February 2, 2012 that, based on the environmental assessment conducted, the Matoush Project is not likely to result in significant adverse environmental effects, taking into account mitigation measures.
25. Some intervenors stated that the information provided by Strateco in the Environmental Impact Statement (EIS) was insufficient to meet the fundamental requirements of an EIS. Another intervenor complained that the CNSC did not make the directives of the EIS publicly available. The Commission notes that the directives of the EIS were made publicly available on the CEAA website on November 3, 2009. The Commission also notes that the Comprehensive Study Report regarding the proposed underground uranium exploration project in Matoush has already been approved by a panel of the Commission in a separate hearing held on July 29, 2011⁸.
26. The Commission inquired about the reports of the FRP-S and the COMEX, and asked whether the COMEX report was available to the public and how much this report takes into account social aspects. A representative of the provincial Ministry of Sustainable Development, Environment and Parks responded that the COMEX decision would be issued and the report would become public after the decision about the project is made by the Commission and announced. The representative added that the report includes a serious analysis of social aspects. While the social acceptability is outside the Commission's mandate, social considerations may fall within the provincial jurisdiction.
27. Based upon the above assessment, information provided on the EA process and the activities surrounding that process, the Commission is satisfied that all applicable requirements of the CEAA have been fulfilled regarding the proposed application for a Site Preparation and Construction Licence. The Commission is also satisfied that the directives of the EIS have been met.

⁷ *Quebec [Attorney General] v. Moses*, 2010 SCC 17

⁸ *Record of Proceedings including Reasons for Decision: Comprehensive Study Report regarding the Proposed Underground Uranium Exploration Project in Matoush, Québec*, Canadian Nuclear safety Commission, 2011.

Mandate of the Commission

28. The Canadian Nuclear Safety Commission regulates the use of nuclear energy and materials to protect the health, safety and security of Canadians and the environment; and to implement Canada's international commitments on the peaceful use of nuclear energy.
29. Under the *Nuclear Safety and Control Act*, CNSC's mandate involves four major areas:
 - regulation of the development, production and use of nuclear energy in Canada to protect health, safety and the environment
 - regulation of the production, possession, use and transport of nuclear substances, and the production, possession and use of prescribed equipment and prescribed information
 - implementation of measures respecting international control of the development, production, transport and use of nuclear energy and substances, including measures respecting the non-proliferation of nuclear weapons and nuclear explosive devices
 - dissemination of scientific, technical and regulatory information concerning the activities of CNSC, and the effects on the environment, on the health and safety of persons, of the development, production, possession, transport and use of nuclear substances
30. The Commission states that it has the independence necessary to fulfill its mandate and that the process in place to obtain the information necessary for making informed decisions is open and transparent. The Commission, as a quasi-judicial administrative tribunal, considers itself independent of all political, governmental or private sector influence.
31. The Commission notes that Subsection 24(4) of the NSCA specifies that the Commission, prior to issuing a licence, must be satisfied that the licensee is qualified to carry on the related activities and that adequate provision for the protection of the environment, health and safety of persons will be in place. The protection of the environment and the health and safety issues associated with each project must be the basis for the Commission's licensing decision. These are the statutory requirements imposed on the Commission. When it makes a regulatory decision, it must ensure itself that it is acting within the confines of the authority granted by Parliament. The Commission also notes that social acceptability is not a criterion that appears in the NSCA. However, while social acceptability could not provide a basis to grant or refuse a licence, it remains a matter that Strateco should address. The Commission exhorts Strateco to take all necessary measures to address acceptability considerations of the project at the local and regional levels.

32. The Commission notes that, as a quasi-judicial administrative tribunal, it is not only independent of all external influence as detailed above in this document, the Commission Members are independent from each other and the Commission is also independent from CNSC staff. The Commission recognizes that scientific and professional judgement guides the work of CNSC staff, who have demonstrated that their aim is to ensure that nuclear activities are operated safely.
33. The Commission notes that the CNSC is divided into two main components: the tribunal component (the Commission) and CNSC staff; the Commission has up to seven appointed permanent members whose decisions are supported by more than 840 employees (CNSC staff). CNSC staff reviews applications for licences according to regulatory requirements, makes recommendations to the Commission, and enforce compliance with the NSCA, its *Regulations*, and any licence conditions imposed by the Commission. CNSC staff also takes all necessary measures to ensure licensing and compliance, as well as it makes recommendations to the Commission, and are independent from industry influence.

Moratorium on Uranium Exploration and Mining in Quebec

34. Several intervenors, including individuals, requested a moratorium on uranium exploration, mining and milling in the province of Quebec. These intervenors are of the view that the lack of social acceptability of the uranium industry in Quebec, the risks related to the use of nuclear energy, the potential impacts of the uranium industry, and issues related to radioactive waste warrant this moratorium.
35. Coalition Pour que le Québec ait meilleure mine ! also requested a provincial social debate on the presence of the nuclear industry in the province of Quebec.
36. With regards to the request for the implementation of a moratorium in the Province of Quebec, it is not within the mandate, nor the authority of the Commission to consider or implement such a moratorium. In accordance with the powers granted to the Commission by the Parliament, the Commission regulates the production and use of nuclear energy to prevent unreasonable risk to the environment and to the health and safety of persons⁹. As provided in subsection 24(4) of the NSCA, prior to issuing a licence, the Commission must be satisfied that the proponent is qualified to carry the proposed activities and that the proponent will, in carrying on that activity, make adequate provision for the protection of the environment and the health and safety of persons. The decision to impose or not a moratorium on uranium mining is outside of the Commission's mandate.

⁹ *Nuclear Safety and Control Act*, S.C. 1997, c. 9, section 9

Nuclear Energy and its Alternatives

37. Several intervenors, including individuals, the CentricoisES et MauricienNEs pour le déclassement nucléaire, the Atomic Photographers Guild, the Table jamésienne de concertation minière, the Regroupement national des conseils régionaux de l'environnement du Québec, the Conférence régionale des élus de la Baie-James, the Coalition Pour que le Québec ait meilleure mine !, and Minganie sans uranium, provided arguments in favour of or against the project by providing information on advantages and disadvantages of nuclear energy compared to other sources of energy, including the social acceptability of the nuclear industry, economic development, sustainable development, the cost of nuclear energy, greenhouse gas emissions, wastes generated, gas emissions and uranium resources.
38. The Commission has heard the arguments from these intervenors, more particularly, the comments that suggested that the Commission should, for a multitude of reasons, consider the availability of other energy sources and deny the applicant the applied for licence. The Commission notes that, as the Canadian Regulator of the nuclear sector, its mandate is not to evaluate alternative sources or make energy policy, but to ensure, in accordance with the NSCA, the regulation of the development, production and use of nuclear energy to prevent unreasonable risk to the environment and to the health and safety of persons. (section 9 NSCA) The choice of a source of energy or the economical benefits of a project are not within the Commission's authority to adjudicate. These decisions fall under the purview of the various government authorities.

Management System

39. The Commission examined Strateco's Management System which covers the framework that establishes the processes and programs required to ensure the organization achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture.
40. Strateco reported that its management system is based on the process outlined in the internal CNSC document *QA Elements Requirements and Principles* and follows the CSA document *CSA N286, Management System Requirements for Nuclear Power Plants*. Strateco added that the management system provides a framework for managing the activities that will enable the company to perform the work while ensuring the protection of health and safety of the workers, the environment and the public. Strateco intends on monitoring the processes to measure their effectiveness against the established objectives and thus improve the management system. Strateco also stated that internal audits will be conducted to underline the good practices and areas for improvement.

41. Strateco added that the management system describes how management and contractors' activities will be implemented at the site. Strateco has sole responsibility of the contractor activities under the NSCA.
42. Strateco reported that a corrective action process is already in place at the site with regards to the protection of the environment and the health and safety of workers, and that any incident, including accidents, near-misses and non-compliances, would be reported and analyzed. Strateco added that a procedure would be put in place to ensure that the proper authorities are notified of the events to be reported. CNSC staff confirmed that Strateco had submitted detailed program information on its conventional health and safety program and was developing its supporting procedures.
43. CNSC staff reported that Strateco had laid out the program requirements in all key areas and had begun the development of detailed procedures and training programs to support its activities. CNSC staff added that Strateco was in the early stages of developing and implementing an effective management system.
44. CNSC staff confirmed that, commensurate with the overall risks, Strateco has committed to ensure that procedures and training are in place before the commencement of any activities that may pose a risk to health, safety and the environment.

Policies

45. Strateco reported that it applies sustainable development and continuous improvement principles. By optimizing all of its operations, Strateco stated that it strives on reducing to a minimum the impact of its activities on employees, contractors, the communities, and the environment.
46. CNSC staff reported that Strateco has applies the ALARA principle to keep exposures to radiation and all contaminants as low as reasonably achievable taking into account social and economic factors.
47. The Commission enquired about differences that might exist between this exploration project and similar mining projects in fields other than uranium mining. CNSC staff responded that there is practically no difference between this project and other types, such as gold, diamond or other metal mines, in terms of effluent quality, water treatment, waste rock management, poisonous chemicals, metallic or radioactive gaseous products. CNSC staff stated that, in terms of impacts on the environment, gold and uranium mining could be comparable, and that traditionally gold mines have been poor environmental performers because of the use of cyanide. CNSC staff added that, according to the Environment Canada reports on the performance of metal mines, the uranium mines have been among the top environmental performers of all base metal mines in Canada for several years.

48. Responding to the Commission's question about the presence of radon gas and its progeny, CNSC staff noted that, because radon is naturally occurring in geological formations, it is an issue in many mines, and it is dealt with by the construction of appropriate ventilation systems. Strateco representatives said the main difference between this project and other similar mining projects is the larger size of this project's ventilation system, while the other components of the project are quite similar to other mining projects. They also noted that uranium regulatory requirements are much stricter than for the other types of mining.
49. With respect to regulations and regulatory oversight, some intervenors noted that the regulations regarding uranium mining in Canada and regulatory oversight conducted by CNSC ensure a higher level of safety than in other countries where uranium is mined. They also pointed out that mining of other underground resources, which is associated with similar level of health risks and contamination levels, is less regulated.
50. CNSC staff confirmed that they have extensive experience in regulating uranium mines and confirmed that CNSC has extensive regulatory oversight powers to ensure that the safety of the public and the environment is protected at all times, with the authority to shut down any mine if it is not in compliance with the CNSC requirements.
51. In his intervention, S. Iserhoff, supported by P. Robinson, stated that Strateco Board and Management have limited experience in uranium development or mining, and questioned the qualification of Strateco to conduct the exploration project. Another intervenor, A. Matoush, expressed the view that Strateco has the skills to perform the proposed activities. The Commission sought more information on Strateco's experience with similar projects and in the competence of their employees. Strateco representatives responded that they are qualified to manage this project, since they are mining engineers registered in Québec, Ontario and Newfoundland and that they have over 30 years of mining experience. Strateco representatives added that they have contracted services for water treatment plant design from Melis Engineering, and for underground works from Thyssen Mining since their experience in uranium mining is well recognized in Canada.
52. Strateco representatives pointed out that they have started to develop this project in 2006 and, since then, have been developing their expertise in handling radioactive materials. They said that they have been in contact with the CNSC since 2008, and that they have been required to develop protocols and documents that would meet safety requirements, as well as to hire qualified personnel and contract companies with experience in the field. Strateco noted that they intend to build a team with strong experience before the start of this advanced exploration project. Once the licence is issued, Strateco would need about three months to complete its team.
53. Asked by the Commission to comment, CNSC staff stated that the issuance of a licence brings a licensee in position of responsibility to ensure safe realisation of licensed activities. A licence, with all included site-specific licence conditions, represents a basis from which the CNSC conducts inspections and enforces regulatory requirements

in all safety and control areas. CNSC staff added that, when a licence is granted, an applicant becomes a licensee, and thus becomes accountable for compliance with all regulatory requirements, regardless of whether a contractor or worker is engaged to perform an activity included in the licence.

54. CNSC staff further stated that they were conducting pre-licensing inspections and that they would proceed with post-licensing inspections, which are particularly demanding for companies entering the uranium mining, and re-emphasized that CNSC staff has the power to shut down any operations once the inspectors find that there is an activity that is posing risk to the environment or to the health and safety of the public or the workers.

Development of Safety Culture

55. Strateco stated that safety is a priority, that management and workers take safety seriously and that communications are already well established between its Health and Safety director and the personnel at the Matoush site. Strateco added that, if necessary, they would interrupt any site activity to ensure the safety of workers, the public or the environment.
56. CNSC staff reported that Strateco had indicated, in its application, that it would promote a culture of safety by developing safe attitudes and behaviours and by making workers and contractors aware of their responsibility regarding safe work practices and by identifying and correcting causes of unsafe work practices.
57. The Commission enquired about the experience of CNSC staff in regulating small projects like this one. CNSC staff responded that they have a large experience in licensing companies of different sizes, from the smallest to the largest, engaged in existing and future explorations and expansion to mines. CNSC staff emphasized that they apply the same principle to all of them in order to ensure that the programs of applicants, before they become licensees, meet all of the regulatory requirements and the law.
58. CNSC staff added that Canada is at this time the only country that has specific regulations with respect to mines and an extensive compliance program for uranium mines and mills. Other countries that want to establish regulatory oversight and enhance their existing regulatory oversight are looking at the Canadian experience.
59. Strateco representatives explained that they have about 40 employees at the site and noted that, although the project might be considered a small one, it is fairly large for an exploration project.

Management of Contractors

60. Strateco reported that its Management System describes how contractors would be managed. Strateco representatives added that the employees of Strateco, who report to the Project Manager, would oversee the programs and activities associated with radiation protection, health care, geology, engineering and environmental protection.
61. Commenting on Strateco's intention to use a long-term mining contractor to provide workers and line supervision for the underground mine development and contractors to construct surface facilities, CNSC staff stated that, although the selected contractors would perform the licensed activities, Strateco would retain the ultimate responsibility as the licensee under the *NSCA* and its associated Regulations.

Reporting Process

62. Strateco reported that it would put in place a procedure to ensure that the proper authorities are notified of the events to be reported.
63. CNSC staff proposed licence conditions for routine reporting and reporting on significant events. Additional licence conditions were proposed requiring Strateco to develop, implement and maintain a reporting process during the licence term.
64. CNSC staff was of the opinion that the information presented in the application provided a credible demonstration that Strateco would ensure that an effective management system is implemented and maintained in relation to the advanced exploration project.

Conclusion on Management System

65. Based on its consideration of the presented information regarding Strateco's management system and policies, the Commission concludes that Strateco has appropriate organization and management structures in place which provide a positive indication of Strateco's ability to adequately carry out the activities under the proposed licence.

Human Performance Management

66. Human performance management encompasses activities that enable effective human performance through the development and implementation of processes that ensure the licensee's staff have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.

Training

67. Strateco informed the Commission that all new workers would receive orientation training on the first day they arrive on site, and would be presented with conventional health and safety guidelines as well as environmental guiding principles. They would also receive basic radiation safety training.
68. Strateco further informed the Commission that, for jobs having significant radiation and conventional safety implications, the hazards identified would be addressed through a radiation work permit, and all involved personnel would be appropriately trained before the job commences. Strateco representatives added that they had introduced tools to ensure that a worker would be suitable for the requested duty.
69. CNSC staff informed the Commission that Strateco had proposed the training program, which was developed following the systematic approach to training, and noted that Strateco had committed to develop and implement training plans and procedures prior to the commencement of the licensed activities. CNSC staff explained that the proposed training program was designed to provide orientation training to all new workers, as well as specific topics related to radiation protection, emergency measures, environmental awareness, health and safety, ALARA program and other topics dedicated to specific groups of the personnel.
70. CNSC staff added that they would conduct verification activities to assess the effectiveness of the training program and to verify that workers are trained on procedures before carrying out work activities.
71. One intervenor, S. Iserhoff, supported by P. Robinson, expressed the concern that the proposed licence does not require Strateco to guarantee that it would continue to retain sufficiently qualified contractors with demonstrated technical experience, education and professional qualifications to the satisfaction of CNSC, to conduct activities proposed in the application and authorized by the licence.

Conclusion on Human Performance Management

72. Based on its consideration of the presented information regarding human performance management, the Commission concludes that Strateco has appropriate programs in place and that current efforts related to human performance management provide a satisfactory indication of Strateco's ability to adequately carry out the activities under the proposed licence.
73. The Commission notes that CNSC staff has suggested a licence condition requiring Strateco to implement and maintain safety and control measures to ensure that Strateco personnel is qualified and competent to perform assigned work throughout the duration of the licence.

Operating Performance

74. Operating performance includes operating policies, reporting and trending, and the application of operating experience (such as root cause analysis and corrective actions) that shows the licensee's effective performance, as well as improvement plans and significant future activities.
75. CNSC staff noted that since this project is a new-build, no operating performance data was available for discussion; therefore, CNSC staff's evaluation of this Safety and Control Area (SCA) was focussed on the existing exploration activities, follow-up to environmental assessment, licence review and project design control. CNSC staff also informed the Commission about their compliance program for this project.

Existing Exploration Activities

76. Strateco informed the Commission that their surface exploration activities regarding waste management would include recycling, composting and handling of hazardous residual materials such as used oil, and contaminated absorbents. Workers involved with the handling of rock core would wear personal dosimeters and the core shack facility would have appropriate ventilation, dust control and instruments to measure gamma radiation. Further, rock dust generated from the core splitting activity would be placed in closed buckets and kept in a dedicated area.
77. CNSC staff informed the Commission that they had conducted a site visit in September 2010 with the purpose of conducting pre-licensing verification. The opinion of CNSC staff was that the site was well organized and maintained. For example, core handling and storage showed clear evidence of good radiation protection controls and practices, and that brochures and pamphlets on radiation protection were available to workers.
78. C. Mianscum and A. Petawabano enquired about the nature of the existing exploration activities. In response, a Strateco representative noted that for the existing exploratory purposes that they have performed extensive core drillings, built gravel roads and a camp on site to house 60 people, a fuel farm including tanks, and an air strip which was built under a permit issued by the Quebec Ministry of Sustainable Development, Environment and Parks' Evaluating Committee (COMEV) in 2009.

Follow-up to Environmental Assessment and Licence Review

79. Strateco reported that several environmental studies had been completed in order to comply with the Environmental Impact Assessment guidelines filed in October 2009. Strateco further reported that federal and provincial regulators had requested additional information and that the CNSC had participated by reviewing the studies and by providing comments to the Federal Review Panel-South (FRP-S). Strateco added that the conclusions of the review indicated that, although no significant adverse effects to

the environment or to the health and safety of workers and public were likely to occur, additional information was required to validate some uncertainties regarding the baseline data collection on aquatic and terrestrial components, as well as some design modifications. Regarding social impacts, it was recommended to implement information sharing and communication mechanisms with the Cree Nation of Mistissini. Strateco representatives added that Strateco had proposed an action plan to comply with the recommendations in July 2011.

80. Providing more information on the environmental assessment, CNSC staff noted that they had presented a draft Comprehensive Study Report (CSR) to the Commission in 2011. The presented draft was based on the results of a completed review of the environmental impact implications of the project. In July 2011, the Commission decided that the CSR was complete, that the project, taking into account the mitigation measures identified in the CSR, is not likely to cause significant adverse environmental effects, and referred the CSR for the project to the federal Minister of the Environment for Ministerial Decision under the section 21.3¹⁰ of the CEEA.
81. The recommendations stemming from the environmental assessment required that Strateco modify certain aspects of its design to further mitigate projected environmental impacts. During the EA process, CNSC staff had identified certain assumptions and uncertainties which needed further validation in the areas of treated effluent quality and quantity, waste rock management, conventional health and safety, radiation protection and emergency measures. CNSC staff stated that, although these risks were not considered elevated, CNSC staff adopted a conservative and protective approach in establishing the regulatory controls, and further considered these issues within its Safety Analysis of the project.
82. CNSC staff added that they were satisfied with the responses regarding the project modifications resulting from the environmental assessment and licensing review, which had been provided by the Strateco team and their consultants.

Project Design and Controls

83. Strateco informed the Commission that all infrastructures had been designed to minimize the impact on the environment and to ensure the protection of the health and safety of workers. Strateco described the infrastructure components, and contractors and consultants involved in the design.
84. CNSC staff informed the Commission of their evaluation of Strateco's approach to project design and control, and reiterated that Strateco uses the services of a number of consultants with experience in uranium mining, milling and effluent treatment. CNSC staff added that Strateco had established resources to monitor the performance of licensed activities in the areas of worker health and safety, radiation protection, environmental protection and emergency measures. CNSC staff expressed their opinion that the Strateco team was qualified to carry out the licensed activities.

¹⁰ Record of Proceedings including Reasons for Decision in the matter of Strateco Resources Inc.. Hearing date: July 29, 2011.

85. In her intervention, Dr. Isabelle Gingras enquired about the availability of inspectors in Quebec to ensure mining companies respect regulations. CNSC staff responded that the CNSC has an office in Laval, Québec, which is supported by offices in Ottawa, Ontario and Saskatoon, Saskatchewan that provide mining expertise and support during inspections. CNSC staff added that they have sufficient resources available to inspect every licensed activity in Canada. CNSC staff explained that they collaborate with provincial authorities to ensure that provincial requirements are also addressed in a single inspection. CNSC staff stated that it is the lead authority for all inspections of nuclear-related activities, regardless of the type of activity that is being inspected. The Commission is satisfied that the CNSC has resources available to ensure mining companies respect regulations.

CNSC Staff Compliance Program

86. CNSC staff reported that they have established a compliance program that includes on-site inspections, desktop reviews and promotion of safety activities. The compliance plan would be reviewed annually and would be aligned with the Matoush Project schedule. CNSC staff added that they have established verification criteria for each licence condition and developed a Licence Conditions Handbook (LCH) to articulate and codify the CNSC staff expectations for compliance with the licence. CNSC staff proposed to present the results of the compliance activities to the Commission at a meeting to be scheduled at the mid-point of the licence term.

Conclusion on Operating Performance

87. Based on the information presented on operating performance, the Commission concludes that the current activities at the facility provide a positive indication of Strateco's ability to carry out the activities under the proposed licence.

Safety Analysis

88. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. It supports the overall safety case for the facility.
89. Strateco reported that they have evaluated potential hazards associated with malfunctions and accidents considering transportation, heating, fire, accidents on site, spills and risks to wildlife from the dispersion of waste. Strateco added that they would confirm the models used and resulting conclusions by means of monitoring throughout the duration of the underground development project. The monitoring would encompass hydrological monitoring (flow measurements and water quality), hydrogeological monitoring (groundwater quality), aquatic component (fish, sediment, benthos), terrestrial component (vegetation) and air (air quality).

90. CNSC staff reported that they have performed the systematic evaluation of potential hazards associated with the proposed activities and considered the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

Human Health and Ecological Risk Assessment

91. CNSC staff informed the Commission that they have evaluated the human health and ecological risk assessment performed by Strateco, which was presented to the Commission earlier in the context of the Comprehensive Study Report in 2011¹¹, from the perspective of the following factors:
- hydrogeology, hydrology and water quality;
 - surface water quality and the aquatic environment;
 - human health;
 - air quality; and
 - terrestrial environment.
92. CNSC staff stated that more realistic estimates of effluent contaminant concentrations are not likely to cause significant adverse effects on surface water quality for the calculated effluent discharge rates, and that the airborne emissions are expected to be very low. They added that terrestrial receptors were not expected to receive a measurable exposure to releases from the Matoush Project.
93. After evaluating the risks associated with the proposed activities, the proposed mitigation measures and follow-up monitoring conditions, CNSC staff was of the opinion that the proposed project is not likely to cause significant adverse effects on human health or on the environment.

Environmental Risk from Transportation and Surface Operations

94. CNSC staff reported that they examined the risks associated with transportation and surface operations and identified moderate risks related to potential events involving spillage or loss of containment of hazardous goods during transport or storage, fires/explosions, disturbance of sensitive habitat, vehicle accidents, and interactions with wildlife. CNSC staff stated that, with due diligence and mitigating measures the operational conditions of the proposed project do not present an unacceptable level of environmental risk.

¹¹ CMD 11-H120

Mine Water Inflow Rate

95. CNSC staff informed the Commission that, based on information from existing drill holes and experience with fully developed uranium mines in bedrock similar to the Matoush site, a groundwater inflow rate had been conservatively estimated at 40 m³/h. CNSC staff noted that, by controlling the groundwater source and by applying precautionary measures, lower inflow rates could be achieved and the resulting risk of water inflow minimized.

Exploration Ramp Water Treatment Plant Risk Assessment

96. CNSC staff reported that Strateco had conducted a systematic review of the Development Ramp Water Treatment Plant using a hazard and operability process, and that the risk assessment resulted in a number of recommendations that had been properly addressed so that the water treatment system had been designed with considerations to manage the operability risks.

Risk Management Program

97. CNSC staff informed the Commission that Strateco had adequately evaluated potential hazards associated with the facility, and identified preventative measures and strategies to reduce the effects of these hazards. They added that Strateco had completed an inventory of known risks and proposed a program to continue to identify, evaluate and minimize risks.

Conclusion on Safety Analysis

98. On the basis of the information presented, the Commission concludes that the systematic evaluation of the potential hazards and the preparedness for reducing the effects of such hazards is adequate for the operation of the facility and the activities under the proposed licence.

Physical Design

99. Physical design relates to activities that impact on the ability of structures, systems and components to meet and maintain their design basis given new information arising over time, planned modifications to the facility, and taking into account changes in the external environment.

100. Strateco representatives stated that the facilities for this project were designed in order to minimize the impact of the proposed activities on the environment and to ensure the health and safety of workers and the public.
101. CNSC staff informed the Commission that they had reviewed the design process and detailed preliminary design. CNSC staff was of the opinion that all identified concerns had been satisfactorily addressed by Strateco in its revised submissions. CNSC staff stated that the proposed physical design meets best industry standards and provides sufficient flexibility to adapt to changing conditions. CNSC staff added that the proposed safety and control measures were conservative and protective.

Surface Construction

102. Strateco representatives stated that the surface runoff water management system at the site had been designed by Genivar, a large engineering company. Strateco explained that all runoff waters would be controlled by ditches with sediment traps built along these ditches to prevent fine particles from migrating into water bodies or wetlands, and to prevent clean water from entering the site activities area. Water flowing within the site activities area would be sent to dedicated surface runoff ponds, analyzed and treated, if required.
103. Strateco explained that the water treatment plant (WTP) would encompass two storage ponds, two settling ponds and a building for chemical treatment. Storage ponds would have double liners with a leak capture system between liners, while the settlings ponds would have a single liner. The treatment circuit could be diverted back in case water does not meet quality criteria. If needed, the water can be returned underground. All pumps would have a backup and alarm system. Strateco added that Melis Engineering had designed the WTP, and would supervise the commissioning of it and the setup of the operating manual.
104. Strateco informed the Commission that the construction of the waste pads will be overseen by Genivar and inspected by Strateco. Rock would be classified as clean waste rock or special waste rock and would be placed on specific pads. Strateco estimated that approximately 286,000 tonnes of waste rock would be excavated. Strateco stated that uranium is not expected to be detected at the location of the proposed ramp, if uranium-bearing rock is encountered, it would be placed on a special waste pad with radiation measuring devices, built with a liner and surrounded by a berm and a ditch, also protected by a liner. Clean rock would be stored on a pad built with compacted till and surrounded by a ditch.
105. With respect to ground control, Strateco stated that the access to the underground ramp would be possible via a portal built with a corrugated steel arch culvert. Strateco indicated that fault zones had been identified where rock quality could be of lower quality, and an adequate procedure for the excavation of the ramp while approaching a

known fault zone had been proposed. Strateco stated that ground water inflows, which would decrease the rock mass stability around the ramp, would be addressed by grouting/shotcreting incoming water from underground to improve rock stability and the contact of clean water with excavation activities. Strateco added that this measure would prevent unnecessary water treatment and would limit the release of radon gas.

106. In their intervention, MiningWatch Canada stated that there is no robust hydrogeological model for this advanced exploration project. MiningWatch Canada, InnuPower and Sept-Îles sans uranium were concerned that the exploration ramp would fill with water as it is being constructed. Furthermore, MiningWatch Canada questioned the rigour of the calculation for water extraction volumes and claims that there was no thorough review of the cone of depression or of the effect that the ramp will have on surrounding groundwater, springs and wetlands. CNSC staff responded that the hydrogeology of the site had been investigated by drilling four boreholes through the different rock formations that the exploration ramp will cross, and that measurements of the permeability of the rock formations and water levels had been conducted. CNSC staff explained that preliminary calculations on the probable water inflow in the ramp openings had been performed using this hydrogeological information. CNSC staff stated that they recognize that those estimates were based on the best available information at the time and that higher inflow maybe possible when the ramp crosses structural features. A Strateco representative stated that they would perform borehole drilling as they advance in the exploration ramp in order to verify conditions and that they had developed a methodology for reducing the permeability of the rock formation when problematic hydrogeological conditions are encountered. The proposed methodology included contingency measures to reduce the inflow below 100 cubic metres per hour (m^3/h), which is the design capacity of the water treatment plant and inflow maximum in the proposed licence.
107. With regards to the water treatment plant capacity, Strateco representatives explained that the very conservative design capacity of the water treatment plant was determined from estimates from mine water inflow rates at other mines in Saskatchewan ($20m^3/h$) multiplied by a safety factor of 5. Strateco representatives stated that they expect $40m^3/h$ to be more representative of the mine water inflow, based on their findings to date. Strateco confirmed having procedures in place, which were reviewed by CNSC staff, to ensure they do not encounter problems with excessive water in the ramp.
108. The Commission asked CNSC staff if a numerical analysis of the estimated mine water inflow rate was performed. CNSC staff responded that they performed a numerical analysis of Strateco's preliminary calculation and found that the estimated $100m^3/h$ inflow rate could be exceeded in some instances where the permeability of the rock formation may be higher than the average permeability of the overall rock formation. CNSC staff stated that Strateco has appropriate contingency measures in place to reduce the inflow rate in those instances and that Strateco has committed to maintaining the mine water inflow below the maximum inflow rate of $100 m^3/h$. CNSC staff added that this analysis could be made publicly available to those interested.

109. Coalition Pour que le Québec ait meilleure mine and MiningWatch Canada enquired about the analysis of groundwater drawdown. CNSC staff responded that specific calculations to quantify the drawdown had not yet been conducted and noted that Strateco's proposed contingencies for when the inflow is likely to exceed the 100 m³/h maximum should limit the amount of drawdown.
110. InnuPower and Sept-Îles sans uranium asked how the rock structure of the Matoush site compares to the rock structure of mines in Saskatchewan. CNSC staff responded that, while a direct comparison between the geology of the Matoush site and of mine sites in Saskatchewan is not possible, the two mechanical analyses performed by Strateco have shown that the strength of the sandstone is adequate and that there should not be any major structural stability issues during ramp excavation except when it crosses structural features, like fault zones and discontinuities where ground stabilization measures will be required.
111. Strateco also informed the Commission about additional surface facilities necessary for the realization of the project, including a fuel farm, hazardous waste storage and a power plant. The fuel farm meets the applicable construction codes, and would consist of twenty above ground double-walled reservoirs equipped with overfill valves and control level systems. The fuel farm would be built on a hydrocarbon-resistant liner surrounded by a berm and a ditch with installed oil separator, also covered with a liner. The installations for management and storage of hazardous substances (petroleum products, propane, explosives, used oil, etc.) would be part of planned inspections to ensure their good working order. The power plant would consist of four 1,500 kW generators and one 500 kW generator. Strateco stated that a maximum of three 1,500 kW generators would operate simultaneously to meet power requirements, while the fourth one would be a stand-by generator.
112. The Commission sought more information on power generation at the site. Strateco representatives explained the anticipated electricity demand, and noted that the designed fuel storage would allow three to four months of continuous operation.
113. CNSC staff noted that the construction schedule was sequenced to start with surface works first, and then to proceed with underground construction. CNSC staff informed the Commission that they had reviewed the physical design of the following components of the proposed surface construction:
- mine portal;
 - clean and special waste storage rock pads;
 - development ramp water treatment plant;
 - surface runoff collection system;
 - hazardous waste management facilities;
 - power generation;
 - fuel storage; and
 - other surface facilities (offices, ditches, power plant, septic system, etc).

114. CNSC staff further informed the Commission that the construction of surface facilities would be carried out by contractors and that the oversight of the contractors and quality assurance would be carried out by Genivar. In addition, CNSC staff informed the Commission on measures that would be applied to the site preparation stage to enhance the environmental protection measures.
115. The Commission considers that Strateco will have adequate infrastructure in place to support the project. The Commission is satisfied that the surface construction will control surface water to protect clean water bodies and wetlands and that the waste pads will adequately contain waste rock and special waste rock. The Commission considers the water treatment plant design capacity to be sufficient, given the mitigation measures in place to reduce possible mine water inflows above the design capacity. The Commission also considers that the proposed procedures for the safe excavation of the ramp while approaching fault zones and mitigation measures for reducing mine water inflow are adequate. The Commission directs CNSC staff to provide further information regarding the analysis of ground water drawdown to the public.

Underground Construction

116. Strateco noted that the drilling for the underground exploration program would begin once all the underground infrastructure is in place and when the final ventilation system is completed. Strateco added that they expect that activity should start approximately 34 months after receiving the authorization to proceed.
117. Strateco informed the Commission that the design of the underground development was completed by Scott Wilson Roscoe Postle Associates, while Thyssen Mining would construct the ramp, which will have two horizontal drifts located at the 165 m and 300 m levels (165 and 300 meters below the surface). Strateco stated that the Radiation Protection Code of Practice established by Strateco, which meets the CNSC requirements, would be applied, and radiation monitoring will be completed throughout the excavation activities to verify for the presence of radon gas, radon progeny, radioactive dust and gamma radiation.
118. Strateco further informed the Commission that the ramp dewatering system and underground water management had been established by Scott Wilson Roscoe Postle Associates, and that the design had been based on the maximum capacity of the WTP of 100 m³/h. Strateco added that small sumps would be constructed at regular intervals to pump the water to the surface using submersible pumps. Strateco explained that the main sump will be located at 300 m level and would serve to collect the ramp water and remove sediments in a four-stage process prior to pumping to the treatment plant on surface via a single line pump system. The main sump would have two backup pumps, one in case of malfunction of the operating pump and a second one for maintenance purposes. An alarm would be activated at critical water levels, or in case of failure of the pumping system.

119. CNSC staff informed the Commission about their review of the physical design of underground construction works, which include the following components:
- construction of exploration ramp and mine infrastructure;
 - mine ventilation system;
 - ground support system;
 - mine dewatering system;
 - sealing or grouting exploration drill holes; and
 - underground exploration and excavation through the mineralized zone.

CNSC staff noted that the design of the proposed underground exploratory ramp was carried out by Scott Wilson RPA Inc. The same company will review changes to the mine design, done by Strateco's Mine Engineering Department, and this reviewed design will be submitted to CNSC staff for final acceptance.

120. The Commission enquired about the development rate of the exploration ramp. A Strateco representative explained that they estimate advancing in the ramp at a rate of approximately 10 metres per day and that they would perform two drill holes, testing at every 100 metres to verify that there are no potential water inflow issues. CNSC staff clarified that Strateco would be test drilling over a 100-metre length prior to advancing in the ramp.
121. In his intervention, G. Gunner expressed concerns regarding incidents of ground collapse at other mine sites and asked what measures would be in place to prevent a ground collapse incident at the Matoush site. A Strateco representative explained some of the circumstances surrounding ground collapse events at other mine sites. The Strateco representative stated that, since this project involves building an exploration ramp and not a mine, a feasibility study into the chosen mining method would only be conducted once they decide whether or not they will proceed with mining activities at the Matoush site following the advance exploration project.
122. G. Gunner also asked what type of mine Strateco planned to develop if they were to decide to pursue a mining licence in the future. A Strateco representative explained that they had completed a scoping study which looked at long-hole drilling for narrow vein mining as an estimate. The Strateco representative stated that it would be an underground mine but that the exact type of mine will only be confirmed once they have decided whether or not they will move forward with an application for a mining licence.
123. The Commission considers that Strateco will have appropriate resources for underground construction activities. The Commission also considers that Strateco will have an adequate ramp dewatering system and underground water management system with alarming capabilities to alert at critical water levels or in the event of a pump failure.

Conclusion on Physical Design

124. On the basis of the information presented on physical design, the Commission agrees with CNSC staff's assessment and concludes that the design of the Matoush facility is adequate for the operations included in the proposed licence.

Fitness for Service

125. Fitness for service covers activities that are performed to ensure the systems, components and structures at the Matoush facility will continue to effectively fulfill their intended purpose.
126. Strateco stated that the Maintenance Department would be in charge of implementing a preventive and predictive maintenance system, while each department would be responsible for the maintenance and calibration of its equipments and devices.
127. CNSC staff reported that it was not expected that the physical condition of systems, components and structures will deteriorate over the proposed licence period, given that the facility was still under construction. However, they added that an effective preventive maintenance program is required to ensure that critical equipment remains fully functional. CNSC staff, therefore, expects that Strateco will develop a document describing the fitness for service program for safety critical systems within six months of the licence being granted. This document should include calibration and testing of alarm systems and monitoring instruments, vehicles' emission control, and testing and maintenance of fire protection systems.

Conclusion on Fitness for Service

128. The Commission is satisfied that Strateco will develop programs for the inspection and life-cycle management of key safety systems. Based on the above information on fitness for service, the Commission concludes that the equipment currently installed, and to be installed, at the Matoush facility is fit for service.

Radiation Protection

129. As part of its evaluation of the adequacy of the provisions for protecting the health and safety of persons, the Commission considered Strateco's program to ensure that both radiation doses to persons and contamination are monitored, controlled, and kept as low as reasonably achievable (ALARA), with social and economic factors taken into consideration.

130. CNSC staff stated that this safety and control area includes the implementation of a Radiation Protection Program in accordance with the *Radiation Protection Regulations*¹². This program must ensure that contamination and radiation doses received are monitored, controlled and kept ALARA.

ALARA

131. Strateco expressed its commitment to implementing the ALARA principle. CNSC staff noted that elements of the ALARA program included management of work practices, personnel training and qualifications, monitoring exposures to workers and planning for unusual situations.
132. CNSC staff informed the Commission that it is satisfied that Strateco will comply with all applicable regulatory requirements and, through the management and control of potential exposures, keep radiological doses ALARA.

Radiation Protection Program

133. Strateco informed the Commission that it had prepared a Radiation Protection Program for its underground exploration ramp as required by CNSC regulatory documents. Strateco's radiation protection program, as presented in its application, was focused on radon and protection from its progeny (decay products), gamma radiation and contamination of underground equipment and material. Strateco representatives said that the level of radiation was anticipated to be low during the exploration phase, due to the low concentration of uranium in the rock. However, since the level of radon in the groundwater entering the ramp is uncertain, the ventilation system was designed to control significant levels of radon underground. The underground workings would have connections to the exhaust raise to surface at the -165 m level and the -300 m level, and the ventilation system would evolve through stages as construction proceeds. Strateco added that sampling and continuous radon gas and radon progeny monitoring would be performed on surface and underground throughout the underground development project.
134. Strateco said that increased gamma radiation could be encountered in the drill bays as a result of radiation from mineralized drill cores produced during exploration drilling activities, as well as in the vicinity of the stringer if the ore body is intersected while excavating the ramp. All potentially exposed workers at the site would carry thermoluminescent dosimeters (TLD) in order to measure exposure from ionizing radiation, and some workers would carry personal alpha dosimeters (PAD). The direct reading dosimeters (DRD) would be used to monitor exposure of the workers in the areas of elevated gamma radiation during underground development activities. Strateco said that gamma radiation levels would be also monitored using a portable Geiger counter as part of the system of engineering controls.

¹² SOR/2000-203

135. Strateco stated that all underground equipment would go through the underground wash bay and will be scanned prior to being sent to the maintenance shop on surface.
136. CNSC staff reported that Strateco had proposed a radiation protection program that included monitoring of radiation levels and radiation doses received by workers, with identified responses and reporting requirements for the following items:
- escalating measurement values for radon progeny;
 - gamma radiation;
 - long-lived radioactive dust;
 - radon gas; and
 - uranium concentrations in urine.
137. CNSC staff noted that a code of practice has been used for the identification of these items. The program should be overseen by the Safety Coordinator, Radiation Protection. CNSC staff added that the program must include action levels¹³. The action levels proposed for the total worker effective radiation dose were 0.25 mSv per week, but must not exceed the cumulative limit of 1.25 mSv over three months. The regulatory limit is 50 mSv per year (mSv/y), but must not exceed the cumulative limit of 100 mSv over five years.
138. CNSC staff is of the opinion that the proposed Radiation Protection Program is comprehensive and adequate to manage the radiation risks posed by the activities at the site.

Radiation Risks

139. CNSC staff reviewed potential radiation risks from the Matoush Project and concluded that the radon progeny in the underground workings during the advanced exploration activities would represent a potential risk to the workers, and that gamma radiation and long-lived radioactive dust could also, to a lesser extent, contribute to the total effective dose received by the workers.
140. CNSC staff added that, using conservative assumptions, the total effective dose for the most exposed work group was predicted to be 2.3 mSv/y, well below the regulatory limits of 50 mSv/y.
141. Many intervenors, including M. Iserhoff, A. Neeposh Iserhoff, R. MacLeod and the CentricoisEs et MauricienNEs pour le déclassement nucléaire, expressed concerns regarding worker exposure to radiation in uranium mines, and the Commission asked CNSC staff to explain the medical studies that have been conducted regarding the impact of radiation on uranium mine workers. CNSC staff explained that studies completed by the CNSC in collaboration with other government agencies in northern

¹³ An action level is a specific dose of radiation or values of other parameters that, if reached, may indicate a loss of control over program elements, and trigger specific action to re-establish full control. It is well below health risk level.

Saskatchewan show that workers currently employed at uranium mines are exposed to very low doses of radiation and that their exposure is well controlled. CNSC staff added that there are no proven cases of lung cancers or other diseases from radiation exposures in modern uranium mines in northern Saskatchewan. Furthermore, CNSC staff clarified that workers of the proposed advanced exploration project would be exposed to some limited gamma radiation when gathering rock samples, but that studies have also shown that workers on uranium exploration projects have no adverse health effects due to gamma radiation exposures.

142. In their interventions, R. MacLeod, Dr. Isabelle Gingras and the Canadian Coalition for Nuclear Responsibility discussed the dangers of radon exposure and the case of the Navajo uranium mine workers. The Commission requested further information regarding radon gas and worker exposure to radon gas. With regards to the health effects of radon, CNSC staff explained that information is readily available on the health effects of radon because miners in the 1930s to 1950s were exposed to high levels of radon. CNSC staff stated that nuclear regulators and public health agencies have since analysed information on radon exposure and lung cancer and developed protective measures to ensure workers are not exposed to high levels of radon. CNSC staff stated that radon exposures for miners in Canada are well controlled. CNSC staff also stated that scientific studies conducted by the CNSC and by other agencies on mine workers exposed to radon from the 1970s to present show that the radiation doses due to radon from mining are very low, and do not pose a risk of lung cancer at these levels.
143. Further, CNSC staff explained that radiation exposure to miners and underground workers is controlled by ensuring an adequate supply of fresh air is available to control the concentration of radon, radon decay products (such as polonium-210 and lead-210) and other contaminants from the mine airspace. CNSC staff stated that the radiation protection approach taken would be to avoid an environment that requires the worker to wear a mask as a protection measure by providing enough ventilation. CNSC staff added that some situation may require the use of masks, but those situations would be known and controlled.
144. R. Del Tradici of The Atomic Photographers Guild enquired about information disseminated by the CNSC on alpha radiation. CNSC staff responded that information on radiation, including alpha radiation, can be found on the CNSC Web site, which includes information documents, fact sheets and links to published peer-reviewed studies.
145. During their presentation, the Centricoisis et Mauriciens pour le déclassé nucléaire asked why compensation is not provided for the radiation doses received by Canadian nuclear energy workers (NEWs). CNSC staff responded that Canada does not compensate NEWs in civil nuclear programs because there are no proven health impacts of being currently employed in the nuclear industry.

146. Some intervenors, including J. Debassige and R. MacLeod, discussed the possibility of health issues affecting people living near uranium mines, such as an increased risk of lung cancer, kidney failure, respiratory problems, and reproductive defects. CNSC staff reported that studies on the health effects of communities living near uranium mills and processing facilities referenced by a number of intervenors have not stood up to rigorous analysis and that some studies were misinterpreted. CNSC staff explained that the studies reviewed by the CNSC and conducted by reputable research scientists in many countries do not show negative health effects on people living near uranium mills and processing facilities.
147. In their intervention, Dr. Isabelle Gingras and the Regroupement national des conseils régionaux de l'environnement du Québec (RNCREQ) cited a study that suggested that children living near nuclear power plants are at higher risk of developing leukemia. The Commission asked CNSC staff to explain in the hearing, for the benefit of participants, the information on the health impacts of people living near nuclear power plants. CNSC staff responded that the study referenced by Dr. Gingras has been criticized by the scientific community because, of the 37 studies identified by the author, 17 studies showing zero risk to children were excluded from the author's analysis. CNSC staff added that the analysis retained only studies where some indication of risk was seen and that the author of the study also failed to present radiation measurements in their analysis. CNSC staff also added that another study often referred to by intervenors is the KiKK¹⁴ study which suggested that children living near nuclear facilities have a higher risk of leukemia. In its review of this study, CNSC has found that the KiKK study had indications of leukemia clusters in areas near nuclear facilities; however, CNSC staff stated that such leukemia clusters have also been identified in areas around the world that are not in proximity to nuclear facilities. CNSC staff also added that the authors of the KiKK study have concluded that there is no evidence that the leukemia clusters identified were caused by radiation.
148. Dr. Isabelle Gingras and Minganie sans uranium also cited a study that stated that young Navajo adolescents have a risk of reproductive organ cancer that is eight times higher than the risk of non-Aboriginal children. CNSC staff disagreed with this statement and stated that the study referenced by Dr. Gingras on this subject actually demonstrates that Aboriginal Navajo children have a lower risk of cancer than the average cancer rate in the general population of Caucasian children.
149. The Commission again asked CNSC staff to address the issue regarding the risk of birth deformities caused by exposures to radiation from uranium mining activities. CNSC staff responded that 30,000 children exposed to the nuclear bombs of Hiroshima-Nagasaki were followed for three generations and no evidence of birth defects has been observed. CNSC staff stated that the only evidence of effects of radiation on infants has been due to very high doses targeted directly on the foetuses of

¹⁴ SSK. Assessment of the "Epidemiological Study on Childhood Cancer in the Vicinity of Nuclear Power Plants" (KiKK Study): Position of the Commission on Radiological Protection (SSK) (2008).

pregnant women. CNSC staff also stated that, under natural radiation conditions around uranium mines, there has never been any demonstrated causal effect between natural radiation from uranium mines and children born with deformities.

150. The Commission has considered the different studies on the health effects of radiation, and has found that uranium mining activities have not been proven by peer-reviewed scientific studies to pose a risk to the health of workers and people living near nuclear facilities.

Conclusion on Radiation Protection

151. In addressing the health effects of the activities to be licensed and in order to issue a licence, the Commission must be satisfied that Strateco would make adequate provision for the health and safety of persons - workers and the public that could be affected - arising from the activities. The Commission, in making its decision, must reach an objective view of the potential health impacts of the proposed project. In the context of this licence application, the potential health effects on the public are predictable and manageable.
152. The Commission considered the information provided by several intervenors alleging potential negative health effects as a result of the anxiety that people feel about the prospect of uranium mining. Several intervenors living in the surrounding community have expressed deep concerns about the effect of the proposed activities on their health. However, based on all of the information presented on this topic during the course of this hearing, the Commission agrees with CNSC staff's conclusions and is of the view that no objectively determinable evidence or measurable factor directly linking potential health impact to the proposed activities was provided. Even if subjective fear or anxiety-related potential health effects were to be considered, the Commission would have to determine whether these effects are attributable to the activity proposed by Strateco and, if they were, whether the applicant was not providing adequate measures for the protection of the health and safety of persons. The Commission licenses the operation of several modern uranium mines, and for those mines there has been no evidence of impact to the health of workers or the public.
153. With the information it received during the course of this hearing, the Commission is convinced that, given the mitigation measures and safety programs that will be in place to control hazards, Strateco will provide adequate protection to the health and safety of persons, the environment and national security.

Conventional Health and Safety

154. Conventional health and safety covers the implementation of a program to manage workplace safety hazards. The conventional health and safety program is mandated for all employers and employees to minimize risk to the health and safety of workers posed by conventional (non-radiological) hazards in the workplace. This program includes compliance with the applicable labour codes and conventional safety training.

155. CNSC staff informed the Commission that they expect uranium mines and mills to develop, implement and maintain effective safety programs and identify potential safety hazards, assess the associated risks, and put in place the necessary materials, equipment, programs and procedures to effectively manage, control and minimize these risks. CNSC staff added that licensees are expected to follow processes and procedures to investigate accidents and incidents to identify root causes, to implement corrective actions and to verify that the corrective actions are completed and will effectively prevent recurrence.

Health and Safety Risks

156. CNSC staff noted that the conventional health and safety risks to workers at the Matoush Project are the same as those encountered in any underground mine or construction project, and noted that the risk assessment conducted for this project had determined a risk inventory.

Conventional Health and Safety Program

157. Strateco informed the Commission that their Occupational Safety Program aims at eliminating sources of danger that could affect the health, safety, and physical integrity of the workers. Strateco added that the Industrial Hygiene Program, which could be summarized as the anticipation, identification, evaluation and the management of occupational hazards, is complementary to their Occupational Health Program. Strateco representatives said that the Occupational Health and Safety Committee (OHSC) would play a key role in ensuring compliance with health and safety documents, including radiation protection.
158. CNSC staff informed the Commission that Strateco had proposed a Conventional Health and Safety Program, which was designed to meet the regulatory requirements administered by Human Resources and Skills Development Canada (HRSDC) and the Commission de la santé et sécurité au travail (CSST). These organisations regulate the health and the safety of mine workers in Quebec. CNSC staff noted that they would use the Joint Regulatory Group format to meet with HRSDC and CSST officials to identify ways and methods for collaboration as the CNSC also has a role in this regard for uranium mines.
159. With respect to the proposed program, CNSC staff stated that they expect the Occupational Health and Safety Committee (OHSC) to play a central role in identifying the personal protection measures and conduct workplace inspection of the site, as well as to hold regular meetings and document their findings and recommendations. CNSC staff was of the opinion that the applicant's proposed measures for conventional health and safety were sufficient to meet the regulatory requirements under the NSCA and associated regulations for the issuance of a licence.

160. The Commission asked about Strateco's experience in managing occupational health issues and about the number of injuries at the site since the beginning of exploration. Strateco representatives responded that they are familiar with the Quebec regulations and with the management of emergency measures and health and safety in the workplace, and noted that their Health and Safety Director has 33 years of experience with health and safety issues related to mining operations. They added that there was one injury in 2010 and said that their well-equipped base camp provides support and medical assistance when required or requested by employees.

Conclusion on Conventional Health and Safety

161. Based on the information presented, the Commission is of the opinion that, given the safety programs that will be in place during the proposed site preparation and ramp construction activities at the Matoush Project, the health and safety of persons will be adequately protected.

Environmental Protection

162. Environmental protection covers Strateco's programs to identify, control and monitor all releases of nuclear substances and to minimize the effects on the environment which may result from the licensed activities. It includes effluent and emissions control, environmental monitoring, and estimated doses to the public.

Environmental Protection Program

163. Strateco informed the Commission that they have prepared an Environmental Protection Program for the underground development activities in accordance with the CNSC Regulatory Guide G-296¹⁵. In their submission, Strateco described the objectives of the program, and explained their activities regarding the implementation of the program. Strateco representatives noted that Strateco has been documenting all environmental incidents at the site since 2008. All of these events had been reported and reviewed, and appropriate corrective measures were taken. The preventive measures taken to reduce the occurrence of incidents included improved procedural controls, such as equipment inspections and checks, and worker education.
164. CNSC staff informed the Commission that the objectives of Strateco's Environmental Protection Program would be met by providing environmental awareness training, conducting daily environmental inspections and conducting an environmental monitoring program. The objectives of the proposed program include the following items:
- meeting regulatory requirements;
 - determination of the environmental baseline and potential site contributions to contaminant levels in the receiving environment;

¹⁵ Regulatory Guide G-296: *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* (March 2006)

- verification of the quality and quantity of effluent releases from the facility;
 - verification of the validity and effectiveness of models used to predict environmental effects;
 - monitoring the receiving environment including water, air, soil and biota; and
 - identification of potential environmental problems and implementation of remedial measures.
165. In his presentation, J. Debassige asked how Strateco would assure the protection of the environment and if their team included objective professionals. A Strateco representative responded that people from the community, Strateco employees and consultants retained by Strateco, under the regulatory purview of CNSC staff, would work together to assure the protection of the environment.
166. J. Debassige also enquired about a statement on Strateco's Web site which reads that the project will have negligible impact on the workers, the local populations and the environment. This intervenor asked how Strateco defines the term "negligible impact". A Strateco representative responded that they would ensure that the exploration project has negligible impacts on the workers, the populations and the environment by meeting all provincial and federal regulatory requirements. The Strateco representative stated that their health and safety program, which is continuously improved, is detailed and has been reviewed and accepted by CNSC staff.

Environmental Baseline

167. The environmental baseline describes the existing environmental conditions at the Matoush site. It is used to assess potential impacts of the project and to support the environmental monitoring program for the duration of the project. For the purpose of the Matoush Project, Strateco was required to collect data that would provide information on the condition of the aquatic environment (streams, lakes, sediments, fish and other aquatic biota), as well as the terrestrial environment (plants, animals and humans).
168. CNSC staff reported that, for the aquatic component of the environmental baseline, Strateco had collected data on water and sediment quality, benthic invertebrates, fish communities and fish chemistry, radionuclides and metals. The data supported the findings from the environmental assessment that the project is not likely to cause significant adverse effects. The same conclusion had been reached by all federal reviewers, including the CNSC, the Canadian Environmental Assessment Agency (CEAA) as well as the federal Review Panel South (FRP-S). This finding was included in the Comprehensive Study Report, which the Commission sent to the Minister of the Environment and which was accepted.

169. In their presentations and written submissions, many intervenors, including the Mistissini Youth Council, InnuPower and Sept-Îles sans uranium, expressed their concerns regarding the gaps recognized by the CNSC and the Federal Review Panel in the environmental baseline data compiled by Strateco. The Commission asked CNSC staff and Strateco to elaborate on this matter. CNSC staff responded that they found gaps in the quality and quantity of environmental information that describes the current state of the air, water and biological communities in the project area. CNSC staff explained that, while the collected data were sufficient for the purpose of the environmental assessment, the information was not sufficient to adequately identify possible future changes in the environment resulting from the proposed licensed activities. CNSC staff said that they requested additional data in order to obtain a better understanding of the natural variations that occur in the environment from year-to-year. CNSC staff stated that this information, when completed, would be required for the development of the environmental monitoring program, and would allow credible future monitoring to differentiate between natural changes and the changes that might result from the proposed project. CNSC staff noted that this information could also be used for an accurate determination of licensing action levels, as well as for any future environmental assessment. CNSC staff added that since submitting their application, Strateco has submitted the plan for additional baseline monitoring, which was reviewed and accepted by CNSC staff.
170. The Commission enquired about what it would take to complete the environmental baseline data necessary for formation of an inclusive environmental portrait of the area before the works described in the project begin. CNSC staff explained the concept of the basic monitoring program and stressed the importance of the environmental baseline data set. CNSC staff noted that a valid environmental baseline data set requires that the needed information is collected over, at least, three seasons in order to understand annual variability. For the surface aquatic component, data are collected for streams, rivers and lakes, bottom sediments, benthos, fish and aquatic vegetation. CNSC staff added that Strateco had collected these data in 2007, 2008, 2009 and 2011. The supplementary data that were missing had been collected during spring and fall 2011, and that the results of the analysis of these data were expected. CNSC staff noted that a similar procedure would be followed for other environmental components as well. CNSC staff suggested that the existing licence conditions related to this issue and corresponding explanations included in the LCH be consolidated and grouped together.
171. CNSC staff provided further information in order to address concerns raised by many intervenors regarding the gaps in the environmental baseline data. CNSC staff explained that some of the gaps could be closed quickly, which would allow for proper monitoring of the advanced exploration project. CNSC staff stated that if Strateco were to apply for a mining licence in the future, the collection of additional baseline information would be required over the four-year advanced exploration project period. A representative from Strateco confirmed that they would have sufficient data to monitor the advanced exploration project and that they would continue to collect environmental baseline data for air, surface water, groundwater, fish, and vegetation.

CNSC staff added that conditions in the proposed licence prohibit Strateco from releasing any effluents before a monitoring program is in place and until additional baseline data is collected by Strateco. Furthermore, CNSC staff stated that the proposed licence requires Strateco to submit their environmental baseline data to the CNSC within 12 months following licence issuance, and requires Strateco to provide their environmental monitoring results to the CNSC for review within 90 days of the end of the quarter for which they were collected.

172. The Commission, InnuPower and Sept-Îles sans uranium asked if the exploration ramp would be necessary to gather the data required to complete the environmental assessment for a future mine. A Strateco representative responded that the exploration ramp would be required to determine the quantity and quality of ground water, to gather radiological information and to collect information on the geology of the site, along with testing the mining method and defining the ore body. A Strateco representative added that they will also consider data collected from another source of information that encompasses traditional knowledge obtained from Tallymen. This information had been obtained through a consultant.
173. After considering the material presented in the Strateco's and CNSC staff's CMDs, as well as interventions presented during the public hearing, the Commission requested that CNSC staff provide more detailed information regarding the existing gaps related to the aquatic component of the environmental baseline data set. In response, CNSC staff submitted to the Commission a supplemental document on June 20, 2012. The document included a detailed map with all sampling locations, and a table with the overview of the data collected from 24 locations since 2007. The table also included indicators for all data that were still missing. Strateco has been requested to collect the missing data, analyze them and submit the results to CNSC staff.
174. CNSC staff informed the Commission that the request to Strateco included a list of sampling locations and timing (sampling seasons), list of requested samples (surface water, lake sediments, benthos, fish) and an extensive list of contaminants to be analyzed.
175. CNSC staff further informed the Commission that Strateco had submitted a plan for additional baseline data collection, which was reviewed and accepted by CNSC staff. As an update, Strateco has informed CNSC staff that it has completed the collection of the data and plans to submit the required information by September 2012. CNSC staff recommended that no effluent release would be permitted until the analysis of the collected data is completed and satisfactory results received.

Proposed Effluent Discharge Rate and Quality

176. Strateco explained that, since there is no historical data for effluent releases, modeling had been used to assess the potential impact of effluents released from the water treatment plant. The design of water treatment had been based on simulated mine

water, prepared by using ore samples. However, it is expected that real water samples from the exploratory excavation should be cleaner as excavation of the ramp goes through barren rock, instead of the ore body.

177. CNSC staff noted that, although the Matoush Project is not subject to the *Metal Mining Effluent Regulations*¹⁶ (MMER), the proposed Development Ramp Water Treatment Plant (DRWTP) is designed to produce a final treated effluent that is at or below the MMER release limits, which were included in the proposed licence limits, as well as below the release limit objectives for molybdenum, uranium and selenium.
178. CNSC staff informed the Commission that a control monitoring program and an Environmental Code of Practice that includes action levels and administrative levels have been proposed. CNSC staff explained that reaching or exceeding an administrative level, which is lower than the licence limits, is an advanced warning sign to operators, and that exceedances should be investigated.

Water Releases

179. C. Mianscum and A. Neeposh Iserhoff expressed concerns regarding the contamination of rivers and the watershed from project emissions and from uranium mine emissions. The Commission requested information regarding the potential contamination of the watershed by the project. Strateco responded that the contaminants in the effluent that will be discharged to the environment during the advanced exploration project will meet regulatory requirements. Strateco also stated that they have completed an assessment of the impact of the effluent releases on the downstream environment and found that the quality of water from current exploration activities is good and the project will have minimal impact on the environment. CNSC staff added that Strateco and their consultants have mentioned that the assessment was based on an effluent flow rate of 100 m³/h with the provisions that the water will remain underground if it exceeds the treatment plant capacity.
180. With regards to concerns raised by intervenors on possible environmental disasters resulting from the advanced exploration project or from a future mine and mill, CNSC staff stated that effluent releases would not be large enough to contaminate large bodies of water. CNSC staff explained that a lot of the contaminants would deposit in sediment close to the point of effluent release which would limit the contamination of water bodies. CNSC staff added that the new CNSC Regulatory Document RD/GD-370¹⁷ has very stringent requirements for designing tailings facilities to limit the contamination of the environment thus avoiding environmental disasters.
181. In their presentations, J. Debassige and R. MacLeod expressed their concerns regarding the contamination of fresh water bodies surrounding the site. They asked how Mistissini Lake will be protected from the project's activities and how they will be remediated if they are contaminated. A Strateco representative responded that water

¹⁶ SOR/2002-222.

¹⁷ Regulatory Document RD/GD-370: *Management of Uranium Mine Waste Rock and Mill Tailings* (March 2012).

treatment plants on site will treat the water to very low levels of contaminants. CNSC staff was asked by the Commission to explain the likelihood of contamination of Mistissini Lake because of the project. CNSC staff responded that the probability of Mistissini Lake being contaminated by the project is essentially zero because of the water treatment capabilities on the project site.

182. The Council of the Cree Nation of Mistissini stated that in order to protect the drinking water source coming from the Otish Mountains, careful consideration needs to be given to the type of development that is allowed in these mountains.
183. In his intervention, A. Coon provided detailed information regarding the surface hydrology of the site and surrounding area. The Commission enquired about the watershed analysis that was performed by Strateco and asked if assurance can be given that there will be no contamination of the watershed. CNSC staff responded that the availability of baseline information is currently limited and while there is enough information available for the advanced exploration project, more information is required and a more detailed assessment will be conducted if an application for a mine construction were to be considered in the future. CNSC staff stated that they will consider Mr. Coon's information on the surface hydrology around the site.
184. The Commission is satisfied that Strateco will have sufficient water treatment capacity and adequate provisions in place in the event effluents exceed the water treatment capacity to prevent the contamination of lakes, rivers and the watershed.

Air Emissions

185. In their oral and written presentations, many intervenors discussed Strateco's ventilation system. One intervenor asked how Strateco would control radon emissions and requested information on the associated cost of this control. Strateco representatives responded that they would have a large ventilation system in the underground shaft to ensure that radon is removed from the shaft for the safety of workers. In their interventions, InnuPower and Sept-Îles sans uranium enquired about the ventilation system's ability to remove radon and micro particles from the air before it is released to the environment. CNSC staff responded that radon gas is not filtered since it is an inert gas and noted that particulates have to be controlled at the source using water.
186. With regards to radon emissions, InnuPower and Sept-Îles sans uranium asked what quantities of radon and its daughter product, lead-210, are expected to be emitted to the atmosphere by the advanced exploration project and what quantities of these radionuclides would be emitted from mining residue piles. CNSC staff explained that the level of radon around mine sites in Canada is similar to the concentration of radon elsewhere in Canada where uranium mining activities are not occurring. CNSC staff stated that there is equipment and processes in place to monitor for radioactive dust, lead-210 and polonium-210 around mine sites and noted that the concentrations of these radionuclides are generally not detectable. CNSC staff added that the quantities of radionuclides are small and are being dispersed in a way that there is no radioactive contamination of a territory by radioactive dust.

187. The Commission considered the information presented and finds that Strateco will have adequate ventilation to control radon and particulate emissions from the project activities.

Effects of Air Emission and Water Releases on Animals

188. In his presentation, Deputy Grand Chief Ashley Iserhoff explained that the quality and integrity of the water and resources in the Otish Mountains were highly valued, but that serious concerns exist regarding the contamination of wildlife, vegetation, groundwater, and surface water by radioactive contaminants. The Deputy Grand Chief stated that the people doubt that the project will have a low risk on health and are not confident that Strateco's environmental risk management system will effectively deal with the potential physical impacts and the community's negative perception and concerns regarding the project. The Deputy Grand Chief also expressed the view that the Crees are concerned that their environment and health will be subjected to severe repercussions from all aspects of the nuclear industry's life cycle. The Deputy Grand Chief added that most scientific explanations given to the Mistissini population have not been accepted.
189. In their interventions, InnuPower and Sept-Îles sans uranium, the Council of the Cree Nation of Mistissini and G. Gunner expressed their concerns regarding the contamination of animals by radionuclides such as lead-210 and polonium-210 and asked what quantities of these radionuclides would be dispersed in the atmosphere around the Matoush site. CNSC staff responded that radioactive contamination around the site would be so small that it would be difficult to measure.
190. CNSC staff explained that lichen across the north of Canada already have high concentrations of polonium in their tissues due to the naturally high concentration of radon from the ground in that area. CNSC staff stated that the high concentration of polonium-210 in caribou is a very well known natural phenomenon that is not linked to uranium mining. CNSC staff added that at a few tens of metres from the exploration site, concentrations of polonium-210 would not be different than background in both health and quantity perspectives. CNSC staff further added that they are expecting radiation measurements of 1000 to 1500 becquerels per cubic metre (Bq/m³) at the point source of the exhaust raise. The dispersion modelling shows that at 10 metres from the point source, the radiation measurements would be down to 10-20 Bq/m³.
191. Some intervenors, such as G. Gunner, also expressed concerns regarding the health impacts of the consumption of caribou with naturally high concentrations of polonium-210. CNSC staff explained that the Inuit have been consuming caribou with naturally high concentration of Polonium-210 for thousands of years without consequences of health effects.

192. A. Coon, in his presentation, expressed concerns regarding the selenium concentration in fish near uranium mine sites. The Commission asked CNSC staff to provide information on fish studies. CNSC staff explained that the CNSC and Environment Canada became aware of selenium issues at uranium mine sites in the mid-1990s and found through studies that only one currently operating mine site in Canada had selenium issues due to the ore and watershed characteristics. CNSC staff stated that the selenium issue has been assessed for Strateco's advanced exploration project to ensure it does not develop if the project goes ahead. Strateco stated that since the Environmental Impact Statement, they analyzed fish in 12 more lakes and that they have been conducting experimental fishing to complete the data group. The Commission asked when the results of these additional analyses will be available and requested that they be available to the public. Strateco stated that they will be submitted to the CNSC in the fall of 2012 and, at the request of the Commission, could be also added to the Strateco external Web site. Strateco added that a two-year regional study regarding fish would commence in June 2012 and include additional data collection along the watershed and stream by Strateco and the Tallymen.
193. A. Coon also expressed concerns that selenium, even at low concentrations, affects the juvenile stage of a fish and that selenium contamination of fish will spread through spawning in the spring and fall. CNSC staff stated that the impact of selenium on fish is hard to detect because selenium is concentrated in the gonads and reduces the ability of fish to reproduce. CNSC staff explained that fish contaminated by selenium will not contaminate other fish through spawning since selenium is not a virus or bacteria.
194. The Commission is satisfied that information regarding radiation concentration in animals is available and understood, and that Strateco will have appropriate measures in place to prevent the contamination of animals in and around the Matoush site.

Cumulative Environmental Effects

195. Many intervenors, including the Council of the Cree Nation of Mistissini, Deputy Grand Chief Ashley Iserhoff, InnuPower and Sept-Îles sans uranium, expressed concerns regarding the cumulative impact of mining projects in the area on the environment. The Council of the Cree Nation of Mistissini stated that, although the proposed exploration project poses low environmental risks, concerns remain regarding the long-term potential impacts that it will have on Cree land. This intervenor also stated that Canadian agencies have yet to effectively identify and address cumulative impacts of uranium exploration, mining and milling activities on the environment.

Emissions from Future Mining Activities

196. In his intervention, Dr. Gordon Edwards of the Canadian Coalition for Nuclear Responsibility claimed that the project would turn the community of Mistissini into a nuclear waste dump because the radioactive content in the residues from the uranium milling process remain dangerous for thousands of years. Many other intervenors, including Michel Duguay, were also concerned about the tailings that would be produced by a future mine and its impact on the environment.

197. In their intervention, the Conférence régionale des élus de la Baie-James (CRÉBJ) recognized the population's concerns regarding the health impacts of future mining activities on the Matoush site. In their review of different studies that were conducted, the CRÉBJ found that radiological and non-radiological substances released by advanced exploration project would have no negative impact on the environment and on human health. The CRÉBJ stated that the natural concentration of certain substances of interest in the water, ground and in sediments are already much greater than the concentration that could be emitted by the proposed advanced exploration project. The CRÉBJ therefore stated that an increase in the substance concentration due to the project would be negligible, as has already been observed at current operating uranium mines in Canada.
198. The Commission is of the opinion that, since the advanced exploration project will not produce uranium, the issue of managing large quantities of contaminated waste, and in particular tailings management, is premature at this time and would need to be addressed further in the context of a more comprehensive environmental assessment should Strateco wish to proceed beyond the exploratory phase.

Proposed Treated Effluent Administrative Levels

199. Strateco stated that they had developed a Contaminated Water Code of Practice, which defines administrative and action levels that meet CNSC requirements. These levels represent specific limit concentrations of a contaminant and they are set to provide a margin of safety in order to avoid exceeding regulatory limits.
200. CNSC staff informed the Commission about the administrative levels established to control quality of treated effluents, and said that these values have been set to approximately two-thirds of Strateco's discharge concentration objectives, e.g. to 10 mg/L (milligrams per litre) for total suspended solids, and the interval boundaries of 6.5 to 8.5 for the pH (measure of the acidity of effluents). CNSC staff stated that every event in which the administrative level is exceeded must be investigated immediately to determine the cause, actions must be taken to return and maintain all contaminants in the effluent below the specified administrative levels, and the event has to be documented for reporting purposes and must be reported to the CNSC Project Officer within 72 hours.

Action Levels

201. In their submission, CNSC staff informed the Commission on action levels and stated that when an administrative level is triggered, a process is initiated to assess whether the event is indicating a loss of control, and whether it approaches an action level. Reaching the action level would indicate a potential loss of control. Actions to be taken in this case would include an investigation to determine ongoing cause and immediate corrective action to regain control over effluent quality, and to return to acceptable

levels of contaminants. The measures also include a notification to the Quebec Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP) and the CNSC within 24 hours of the action level being triggered, and a summary investigation report to the MDDEP and CNSC staff on the actions taken to remedy the situation and prevent recurrence. CNSC staff noted that this report must be submitted within 30 days of the incident.

Environmental Monitoring Program

202. Strateco has identified the release of the treated effluent to the environment as the most significant environmental aspect of the Matoush Project, and developed a site-specific monitoring program to evaluate the effects of the treated effluent on the receiving aquatic environment. The program was designed to provide statistically valid confirmation that a change or effect is occurring prior to carrying out additional monitoring and assessment. Strateco explained that the treated effluent will be released into a permanent stream, and that the monitoring would involve a total of six lakes, located upstream and downstream, a reference lake, as well as the outlet of the regional watershed at the confluence with the Camie River. The frequency of monitoring would vary from once a week to once a year, depending on the environmental component monitored. The collected data would be used to validate the environmental assessment conclusions and to determine the effectiveness of the mitigation measures, as well as to show whether some corrective actions need to be implemented. Reports on results of the environmental monitoring would be submitted to the CNSC on a quarterly and annual basis. CNSC staff concurred with Strateco and noted that the monitoring results must be submitted to CNSC staff by September 30th of each year.
203. CNSC staff informed the Commission that Strateco had proposed an Environmental Monitoring Program, which includes monitoring of the following environmental components:
- air;
 - final treated effluent;
 - surface runoff;
 - groundwater;
 - surface water;
 - benthic invertebrates community structure;
 - sediments; and
 - hydrology.

CNSC staff added that the Environmental Monitoring Program has to be evaluated and revised annually, and potential revisions to the program would have to be reviewed by CNSC staff prior to their implementation.

204. CNSC staff further informed the Commission that the environmental effects caused by the discharge of treated effluents downstream from the site would be determined by monitoring the following parameters every three years:

- water and sediment quality;
- benthic invertebrate community structure;
- aquatic vegetation;
- fish community structure; and
- fish tissue and bone.

The results of monitoring would be compared to the environmental baseline data set and with data collected at unaffected reference stations to check for potential differences and to identify the causes if significant differences are seen.

205. CNSC staff stated that they and the MDDEP have sent comments to Strateco on the Environmental Monitoring Program and that they intend to continue on providing regulatory oversight as Strateco finalizes and implements the program.
206. Some intervenors, such as S. Coonishish, L. Taylor and R. MacLeod, questioned the safety of uranium mines in Saskatchewan and their impact on the environment. CNSC staff provided an overview of the environmental monitoring information collected in northern Saskatchewan by the licensees and community groups involved in the monitoring programs. CNSC staff stated that cumulative impacts have never been detected through the monitoring that was conducted by the province of Saskatchewan and that the levels of radiation and metals are the same as they were before the current uranium mining projects commenced. CNSC staff added that all studies have shown that there is no contamination of food, and that trappers continue to live near mine sites and pursue their activities.
207. MiningWatch Canada stated that some lakes in Saskatchewan are contaminated from uranium mine tailings. The Commission asked CNSC staff to elaborate on the contamination of these water bodies in Saskatchewan. CNSC staff responded that the contamination of these lakes is due to legacy issues but that technology and capacity to treat effluents have changed, and environmental protection regulations are now more strict. CNSC staff stated that there are no bans on fish consumption due to currently operating mines in Saskatchewan. CNSC staff explained that mitigation measures are in place to remediate lakes on the Beaverlodge site which were contaminated by tailings while the mine was operational. CNSC staff noted that the Beaverlodge mine site was decommissioned in 1992 and was never licensed by the CNSC or AECB¹⁸. CNSC staff stated that the lakes were filled with tailings, a practice which is no longer acceptable, and CNSC staff has been requiring that additional mitigation measures be introduced. CNSC staff also explained uranium deposition in Hidden Bay sediments, stating that they are aware of the situation and that they have recommended that the Commission add a licence condition on the Rabbit Lake mine licence to handle effluents containing uranium.

¹⁸ AECB: Atomic Energy Control Board – predecessor to the CNSC.

208. Further to the concerns of a number of intervenors, CNSC staff stated that both the CNSC and Environment Canada have performed a detailed assessment of the uranium impacts on mines in Saskatchewan. CNSC staff also stated that a lot of work has been completed to implement new technologies to control contamination issues. CNSC staff added that the CNSC, along with the province of Saskatchewan, implemented environmental effects monitoring programs before they became a requirement under the MMER.
209. The Commission asked the Conférence régionale des élus de la Baie-James (CRÉBJ) and the City of Chibougamau if they had participated in site visits to mines in Saskatchewan and enquired on the neutrality of information presented during those visits. The CRÉBJ responded that they had visited mines sites in Saskatchewan and stated that their questions were answered and that they were reassured by members of the local population. The City of Chibougamau stated that they gathered neutral information through various sources during their visit. The Commission also enquired on the delegation that visited uranium mines in Saskatchewan and asked if there was Aboriginal representation. The City of Chibougamau described their delegation and stated that, at the time, the Aboriginal representatives were unavailable to participate.

Conclusion on Environmental Protection

210. Based on the above information, the Commission is satisfied that, given the mitigation measures and safety programs that are in place to control hazards, Strateco will provide adequate protection to the environment.

Emergency Management and Fire Protection

211. Emergency management and fire protection covers the provisions for preparedness and response capabilities which exist for emergencies and for non-routine conditions at the Matoush site. This includes nuclear emergency management, conventional emergency response, and fire protection and response.
212. CNSC staff reported that Strateco had proposed an Emergency Measures Program and a Fire Prevention Program. The proposed programs identify the roles and responsibilities of key personnel, including the corporate crisis management committee and emergency responders, and identify the minimum number of employees and equipment required for interventions. Response procedures have been developed for 30 different events, including ground failure, water inflow, spills, fire, road accidents and plane crash.
213. Strateco further informed the Commission that they have performed annual fire drills at the site and with exercises involving the evacuation of an injured person since 2009, and that these exercises and drills were used to detect deficiencies in the procedures and make appropriate corrections.

Emergency Management

214. Strateco informed the Commission that they had prepared an Emergency Measures Program for the underground exploration ramp of the Matoush project. This program was aimed at defining the structure and ensuring they have the means and resources required to respond to an emergency situation. The Emergency Measures Program would act as a reference document in the event of an alert or mobilization, establish the roles and responsibilities of employees involved in a response, and facilitates communication among them. Strateco added that the Civil Protection Committee would be in charge of developing, implementing, reviewing and updating the preventive and preparatory emergency response plans.
215. CNSC staff added that the emergency response plan would be tested through an annual partial evacuation and simulation, and through training and drills for the emergency response teams.
216. The Commission noted that some intervenors, including A. Neeposh Iserhoff, made reference to natural disasters, and enquired about potential effects of such events to the project and potential adverse effects. CNSC staff responded that a site assessment had been done with respect to the seismic activity, and that the results have shown that the site is located in an area of low seismic activity where the hazard of earthquakes is very low. CNSC staff added that the appropriate building code has been applied for the design of the facility so that it can withstand earthquakes, tornados and other potential natural disasters.
217. The Commission further noted that some intervenors, including R. MacLeod, have referred to nuclear disasters and used the term “meltdown”. CNSC staff stated that there will be no nuclear activity associated with any activity at the site; since there are no nuclear reactors involved with any mining operation, nuclear reactions will not occur under any circumstances. It is physically impossible to have a criticality issue and there is no risk of a “meltdown”. The use of these terms in association with uranium mining is incorrect.

Fire Protection

218. Strateco also informed the Commission that their Fire Prevention Program aims at eliminating potential sources of fire hazard and at managing adequately the fire hazards, or fires that could pose a threat to the workers, equipment, facilities and environment.
219. One intervenor, P. Dixon, expressed concerns related to forest fires. The Commission asked what kind of protection Strateco uses for protection against forest fires. Strateco noted that, in the case of a forest fire where the lives of the workers are in danger, the procedure at the site consists of calling the *Sûreté du Québec* which in turn will contact the *Société de protection des forêts contre le feu* (SOPFEU) to request their assistance

at the site¹⁹. The Strateco representatives responded that Matoush is located in the Northern zone and is not covered under SOPFEU. Strateco has its own pumping installation for fire protection. In a case when an evacuation is necessary, Strateco could contact the *Sûreté du Québec*, which would order SOPFEU to help with evacuation of workers, while the site assets, including the material, would not be protected.

Conclusion on Emergency Management and Fire Protection

220. Based on the above information, the Commission concludes that the fire protection and emergency management preparedness programs in place, and that will be in place, at the facility are adequate to protect the health and safety of persons and the environment.

Waste Management

221. Waste management covers the licensee's site-wide waste management program. CNSC staff evaluated Strateco's performance with regards to waste minimization, segregation, characterization, and storage.

Wastes

222. Strateco reported that they had elaborated a Waste Management Program for the Matoush Project with the following types of waste produced at the site:
- solid domestic and industrial waste;
 - waste rock;
 - domestic and industrial waste water;
 - radioactive waste; and
 - hazardous waste.
223. CNSC staff confirmed that Strateco has proposed a Waste Management Program that includes the management of different types of waste produced at the site. Solid domestic waste includes mostly common recycling, composting, incinerating and items for landfill, while hazardous waste includes chemicals fuels and other similar materials. Waste water includes domestic waste water, surface runoff and mine water. Waste rock includes unconditional use rock, waste rock and special-waste rock. Radioactive waste includes any material that contains a radioactive "nuclear substance", as defined in section 2 of the NSCA and which the owner has declared to be waste. Radioactive waste may also contain non-radioactive "hazardous substances", as defined in section 1 of the *General Nuclear Safety and Control Regulations*.²⁰

¹⁹ Although Strateco is not covered under SOPFEU, the *Sûreté du Québec* can request SOPFEU's assistance in the event of a forest fire.

²⁰ Radioactive waste defined in CNSC Regulatory Policy P-290 *Managing Radioactive Waste* (July 2004).

224. Strateco stated that they were already recycling and reusing most of the domestic waste. Strateco explained that most of the waste is pre-sorted at the site and stored in containers or outside for further pick up by a licensed transporter, and that kitchen waste is recycled. Domestic wastes that cannot be reused or recycled would be buried at the existing site landfill or placed in a dedicated container and shipped off site to the Chibougamau landfill. Strateco noted that incinerating the waste at the site would not be allowed. Strateco representatives added that the volume of waste generated at the site is recorded. Inspection and verification of waste disposal at the site are carried out by Strateco employees.
225. With respect to the waste rock, Strateco reported that approximately 286,000 tonnes of rock would be excavated throughout the construction work. The clean waste rock would be placed on a dedicated pad and used for construction purposes at the site. Chemical analyses conducted on the waste rock samples have shown that the rock should be classified as low risk and non-radioactive waste. If strings of mineralization are encountered during the excavation, this special waste rock would be stored in a dedicated storage area, on a pad that would be lined to prevent spreading of contaminated water. This storage space could be expanded in case that more storage space is required for special waste rock. Strateco stated that it had developed a waste rock characterization procedure and segregation criteria in order to segregate clean waste from special waste rock.
226. Strateco informed the Commission that domestic waste water would be collected by above-ground, insulated, heated free-flow conduits and by an underground conduit that would direct the free-flowing waste water to a septic tank that would empty into the pumping station, which feeds the above-ground seepage bed. The water from the portal dry would flow directly to the water treatment plant. Water generated by drilling and underground exploration activities would be collected by temporary sumps, and eventually a main sump, before being pumped to the water treatment plant on surface. Strateco added that all four water treatment plant ponds would be lined with membranes, with storage ponds 1 and 2 also having a leak capture system between the liners. Once clean, the final effluent would be discharged into a permanent stream. A drainage system with sediment trap would be created on the site perimeter to capture runoff waters and prevent it from coming into contact with the surface facilities. Additional ditches would be dug on the site based on surface facilities and would redirect surface water runoff towards two surface runoff ponds. These waters would be analysed and, if required, treated prior to being discharged into the environment.
227. Strateco further informed the Commission that the waste generated underground, which could potentially be radioactive, would be disposed of in a sealed, visibly labelled container that would be checked for radioactivity prior to disposal. All non-fixed surface contamination would be washed to remain in compliance with the disposal limit for fixed surface contamination of 0.4 Bq/cm^2 (becquerels pre square centimeter). If the results of radioactivity tests were not satisfactory, the waste would be normally disposed of or recycled; otherwise, it would be kept in the sealed container. Depending on the future of the project, the radioactive waste would be either

returned underground into a re-muck bay, in the case of project abandonment after the exploratory phase, or would be disposed of in the tailing ponds of the future mine, if the project were to advance to a mine.

228. With respect to hazardous waste, Strateco informed the Commission that the substances consumed or produced at the site would include petroleum products, used oil or products retrieved from an accidental spill or mechanical maintenance, glycol, propane, explosives and other chemicals. The fuel storage area (fuel farm) was designed to meet the applicable construction codes, and the provincial Environment Quality Act²¹ and Regulation respecting hazardous material²². Used oil could be stored in a double-walled, above-ground reservoir in order to be reused for heating, or might be recycled. Similarly, used glycol would be contained in dedicated barrels, labelled and stored in secondary containment prior to collection for disposal at an authorized location off-site. Strateco added that all unused explosives would be returned to the supplier at the end of the underground exploration program, and remaining package boxes would be incinerated at the site. Chemicals used for water treatment would be stored inside the water treatment plant, the potable water building and in Strateco's warehouse. All materials used to clean up accidental spills would be contained in a dedicated container provided by a supplier who specializes in hazardous waste management equipment.

Waste Management Facilities

229. CNSC staff reported that the design details for the waste management facilities were described in the Physical Design of the facility submitted by Strateco, and that the facilities to be constructed at the site would include the following components:
- laydown areas for waste shipping containers;
 - landfill;
 - waste rock pile;
 - special-waste rock pile;
 - septic treatment system;
 - two surface runoff catch basins;
 - two minewater storage ponds;
 - development ramp water treatment plant;
 - two effluent settling ponds;
 - final effluent discharge point;
 - propane park; and
 - fuel park.

²¹ R.S.Q. c Q-2

²² Règlement sur les déchets dangereux

230. In his presentation, G. Gunner expressed concerns regarding the possible failure of tailings containment barriers and asked if the waste produced by the advanced exploration project would destroy the environment surrounding the Matoush site. A representative from Strateco assured that the environment would not be contaminated by such a failure, since the advanced exploration project will not produce uranium mine tailings.
231. Many intervenors expressed their concerns that uranium tailings at the Matoush site, if mining proceeds at a later stage, would contaminate the environment, since tailings retain approximately 85 percent of the initial natural radioactivity of the mined ore for long periods. CNSC staff affirmed that, while it is true that uranium mine waste retains approximately 85 percent of the ore's initial natural radioactivity, the advanced exploration project would not produce this type of waste. CNSC staff explained that the advanced exploration project would produce waste rock and special waste rock, the latter of which would contain some radioactive contaminants. CNSC staff further explained that the special waste rock would be placed on a high density polyethylene liner, which has an expected lifespan of 150 years and a permeability of almost zero. CNSC staff stated that it does not expect any contamination seeping from the special waste into the ground for the duration of the project. CNSC staff added that diverting ditches around the special waste rock piles would intercept precipitation and prevent freshwater from contacting the special waste.

Waste Management Program

232. CNSC staff stated that Strateco's Waste Management Program includes the following elements:
- recording and reporting the volume of wastes and their disposition;
 - routine inspection of waste management practices; and
 - off-site disposal of wastes.

CNSC staff added that waste rock segregation and the proposed operation of the Development Ramp Water Treatment Plant and associated ponds and discharge points were described within Physical Design of the facility.

233. InnuPower and Sept-Îles sans uranium enquired about the long-term plan for the special waste. However, InnuPower and Sept-Îles sans uranium expressed the view that 50 percent of the material excavated from the exploration ramp could not be stored back into the ramp at the end of the project due to a bulking factor and that the extra waste rock would require a permanent repository. CNSC staff commented that the special waste will be backfilled into the exploration ramp if the mining project does not move forward.

234. With regards to long-term waste management, A. Neeposh Iserhoff expressed concerns regarding the long-term monitoring and oversight of the nuclear waste generated by the proposed project and potential future mine. CNSC staff stated that they acknowledge this intervenor's concerns and explained that long-term waste management is part of the overall regulatory role of the CNSC. CNSC staff further stated that they have extensive experience with the regulatory oversight of long-term uranium mine waste management and that they could continue to monitor mine waste continuously at both the provincial and federal levels.
235. Sébastien Bois of the CentricoisES et MauricieNEs pour le déclasséement nucléaire asked the CNSC if there were a permanent solution for nuclear waste management. He, along with É. Hébert, also asked the CNSC if the proposed Matoush project were being considered as an option for deep geological repository of nuclear waste generated in Canada. CNSC staff confirmed that the advanced exploration ramp was not being constructed as a deep geological repository. With reference to the intervenor's question on permanent nuclear waste management solutions, CNSC staff explained that the Government of Canada has established a program for the long-term management of nuclear waste, and that a permanent waste management solution would be determined in due time.

Conclusion on Waste Management

236. The Commission has considered information presented by Strateco, CNSC staff and intervenors on waste management. The Commission notes that only information on the waste management for the proposed advanced exploration ramp was considered and that information on the management of uranium mine waste would be considered in the future should an application for a uranium mine at the Matoush site be submitted following the advanced exploration project.
237. Based on the above information and considerations, the Commission is satisfied that Strateco is safely managing waste at its Matoush facility, and that programs are in place to provide for the proper management of waste resulting from the activities listed in the proposed licence.

Security

238. This Safety and Control Area covers the programs required to implement and support the security requirements for the Matoush project.
239. With respect to site security issues, Strateco reported that its Industrial Security Program was developed in order to provide clear and precise procedures to security officers. CNSC staff confirmed that it reviewed Strateco's program and determined that it meets regulatory requirements.

240. Strateco stated that a threat and risk assessment was also conducted to identify deliberate threats and natural risks, and to implement mitigation and control measures. CNSC staff commented that the security risk was low, given the proposed activities, the nature of radioactive materials to be managed and the remoteness of the site, and that Strateco plans to establish site access controls and security checks similar to those used at existing uranium mines in northern Saskatchewan.
241. With the information provided on Strateco's Industrial Security Program, the threat and risk assessment done and CNSC staff's evaluation of Strateco's performance in this area, the Commission concludes that Strateco has made adequate provision for ensuring the physical security of the facility, and is of the opinion that Strateco will continue to make adequate provision for security during the proposed licence period.

Safeguards and Non-Proliferation

242. The CNSC's regulatory mandate includes ensuring conformity with measures required to implement Canada's international obligations under the Treaty on the Non-Proliferation of Nuclear Weapons. Pursuant to the Treaty, Canada has entered into safeguards agreements with the International Atomic Energy Agency (IAEA). The objective of these agreements is for the IAEA to provide credible assurance on an annual basis to Canada and to the international community that all declared nuclear material is in peaceful, non-explosive uses and that there is no undeclared nuclear material or activities in this country.
243. CNSC staff reported that, since there are no obligations in the Canada/IAEA Safeguards Agreement for underground exploration, this Safety and Control Area does not apply to the proposed activities. Strateco noted that no safeguards program has been established at this time.
244. CNSC staff noted that they would keep the IAEA apprised of any future plans to develop a uranium mine and mill at the Matoush Project, as expected under safeguards agreements that Canada has signed.
245. P. Robinson expressed concerns regarding the level of national security, international obligations, and the peaceful use of nuclear substances due to, in his view, the lack of qualifications on the part of Strateco and its staff. He also stated that there is no international agreement for the uranium in question. CNSC staff responded that Canada has signed an agreement for the peaceful use of uranium in Canada known as the Comprehensive Safeguards Agreement, INFCIRC/164 (also referred to as the Canada-IAEA Safeguards Agreement). According to this agreement, all uranium is tracked and it cannot be shipped or sold unless the recipient has also signed the agreement.

246. In his presentation, the R. Del Tredici of The Atomic Photographers Guild explained that uranium is an essential ingredient for nuclear weapons, atomic bombs specifically. A representative from CentricoisES et MauricienNEs pour le déclassément nucléaire, as well as M. Duguay, expressed serious doubts on the capacity of the Canadian government to prevent the proliferation of nuclear weapons. The Commission asked CNSC staff to clarify CNSC's level of control over uranium. CNSC staff responded that the sale and export of uranium in Canada is strictly controlled by safeguards agreements by the CNSC and the Government of Canada. Canadian uranium mines are also subject to inspection by international inspectors from the IAEA.
247. Based on the above information, the Commission concludes that the Canada/IAEA Safeguards agreement does not apply to the current proposed exploration project since there are no obligations in the Canada/IAEA Safeguards Agreement for underground exploration. The Commission notes that, if Strateco were to apply for a licence for the operation of a uranium mine and mill in the area, this agreement may apply and the information provided on this Safety and Control Area would be considered at an eventual future Commission hearing. Furthermore, The Commission notes that uranium from Canada shall not be used for anything but peaceful application and that this commitment can be verified and guaranteed.

Packaging and Transport

248. Packaging and transport covers the safe packaging and transport of nuclear substances to and from the Matoush site. Strateco must adhere to the *Packaging and Transport of Nuclear Substances Regulations*²³ and Transport Canada's *Transportation of Dangerous Goods Regulations*²⁴ for all shipments leaving the site. The *Packaging and Transport of Nuclear Substances Regulations* apply to the packaging and transport of nuclear substances, including the design, production, use, inspection, maintenance and repair of packages, and the preparation, consigning, handling, loading, carriage and unloading of packages containing nuclear substances.
249. Strateco reported having procedures in place for the packaging and transportation of rock samples, which are the only potentially radioactive material generated at the site throughout surface exploration activities and likely the only one for the underground exploration project. CNSC staff concurred with Strateco, and noted that these samples must be packaged and transported in compliance with the requirements of the *Packaging and Transport of Nuclear Substances Regulations*. CNSC staff also noted that Strateco had been safely shipping exploration samples to off-site laboratories during the surface exploration program.

²³ SOR/2000-208

²⁴ SOR/2001-286

250. Strateco explained that other non-CNSC regulated materials would include the transportation of petroleum products, propane, explosives and chemical products. The transportation of these goods is completed by authorized companies that meet the requirements of the *Transportation of Dangerous Goods Regulations*.
251. Strateco stated that transportation of materials is done via the winter road, and that procedures are in place to respond to road accidents and spills. CNSC staff concurred with Strateco.
252. S. Coonishish, in her intervention, expressed concerns regarding the construction of a new highway in the traditional trapping lands. She noted that, while it would facilitate access to authorized trap lines, it may result in an increase in poaching and disrespect to the surrounding land.
253. Another intervenor, É. Hébert, questioned the way in which truckloads containing nuclear substances would be consistently inspected visually and for radioactivity. Furthermore, she expressed concerns regarding disposal methods and waste uses. CNSC staff responded that when there is any nuclear substance involved in transportation, there are requirements and regulations in place by Transport Canada and the CNSC. CNSC staff explained that there is a process and a whole system of regulatory requirements with respect to transport. The Mayor of the City of Chibougamau described her city council's meeting with the CNSC and how the Council was reassured by CNSC staff in regards to questions concerning transport, related accidents and spills and emergency response.
254. An intervenor, P. Petawabano, claimed that an air strip was developed in the area surrounding the Matoush site without Cree consent. He was concerned about the sustenance and preservation of the Cree lifestyle given a possible unauthorized development on their lands. A second intervenor, A. Petawabano, questioned if the air strip had already been built in the Otish mountains, whether a permit was obtained, and if the development went under an environmental review pursuant to the James Bay and Northern Quebec Agreement (JBNQA). The Strateco representative responded that, while an environmental review was not performed for the air strip, a certificate of authorization was granted by le "comité d'évaluation" (COMEV). The COMEV is the committee charged with determining the environmental processes that apply under the JBNQA and for developing the environmental assessment directives (guidelines). This certificate, which allows Strateco to proceed with the land strip development was granted after Strateco hired a consultant to assess the surrounding environment and submitted the information as part of their application.
255. Based on the above information, the Commission is satisfied that Strateco has appropriate provisions in place to meet regulatory requirements regarding packaging and transport. The Commission notes that the construction of new highways and airstrips is outside of its jurisdiction, and encourages the intervenors who raised concerns on these topics to refer to the appropriate authorities for more information.

Public Information

256. A public information program is a regulatory requirement for licence applicants and licensed operators of a uranium mine. Paragraph 3(c)(i) of the *Uranium Mines and Mill Regulations*²⁵ requires that licence applications include “*the proposed program to inform persons living in the vicinity of the mine or mill of the general nature and characteristics of the anticipated effects of the activity to be licensed on the environment and the health and safety of persons.*”
257. In its intervention, Minganie sans uranium stated that the Commission systematically dismisses information provided by opponents of the nuclear industry. The Commission disagrees with this statement and notes that, as an independent tribunal, it will consider all information presented during a hearing, no matter the source.

Strateco’s Public Information Program

258. Strateco informed the Commission about their Public Information Program (PIP) and said that it describes all the aspects associated to communications with the public concerning the Matoush Project during the underground exploration phase. Strateco presented the overall and strategic objectives of the PIP, as well as intended means to achieve these objectives.
259. Strateco added that the company would elaborate a public disclosure protocol in its PIP in order to share information with and disseminate reports of interest to the public on a regular basis. This information would include items of interest to the community of Mistissini, such as routine and non-routine situations, environmental or health and safety performance, events and activities. The frequency and medium of disclosure would be elaborated by the Communication and Information Committee.
260. CNSC staff informed the Commission about Strateco’s PIP and related documentation, as well as about their assessment of Strateco’s communications and consultation activities. These activities have been assessed against CNSC Regulatory Guide G-217, *Licensee Public Information Programs*. CNSC staff stated that the reviewed program meets the criteria for an acceptable PIP. CNSC staff further informed the Commission that Strateco had committed to make their annual compliance reports available to the public. CNSC staff is of the opinion that Strateco should develop a formal public disclosure approach that includes criteria for proactive release of information about non-routine emissions and events, and proposed it as a licence condition.
261. The Commission has examined the information that was submitted on Strateco’s PIP and, based on the public information activities described and CNSC staff’s assessment that Strateco’s PIP is acceptable and meets the requirements set in G-217, the Commission considers Strateco’s PIP acceptable.

²⁵ SOR/2000-206

CNSC Consultation Activities

262. CNSC staff informed the Commission that they had participated in a number of outreach activities to assist various decision makers and community representatives in understanding the regulation of the uranium mining industry. CNSC staff noted that they had made presentations to the communities of Mistissini and Chibougamau at meetings organized by the FRP-S and COMEX in May 2010 on the environmental effects of uranium mining and milling, and had met separately with the FRP-S and COMEX in October 2010 to provide them with a detailed overview on how the CNSC regulates uranium mines and mills. CNSC staff had used these opportunities to provide decision-makers and the public with an understanding of the uranium mining regulation and to gain a better understanding of public concerns in this regard.
263. The Commission noted that several intervenors complained of the lack of information to the public about the project, and suggested that CNSC staff provide technical information to the public on the project, and more particularly to the youth, as per the CNSC's mission. CNSC staff confirmed their readiness to establish contact with the Mistissini Youth Council.

Conclusion on Public Information

264. Based on the information presented, the Commission is satisfied that Strateco's public information program meets regulatory requirements. The Commission also considers the public information activities performed by Strateco and CNSC staff to be acceptable.
265. However, during the course of the hearing, the Commission, while it noted that most members of the City of Chibougamau were in favour of the project, it also noted the strong opposition of several members of the community of Mistissini to the project. Most community members in the area are very afraid of losing their traditional way of life and of the impact of the project on their health and the environment. Due to the existence of these deep concerns, the Commission strongly encourages Strateco to do more and to use any available means in making useful and frequent contact with the population in this area, in order to make the public information program more effective and to provide objective and understandable information to the affected communities.

Aboriginal Consultation

266. The common law Duty to Consult with Aboriginal peoples applies when the Crown contemplates actions that may adversely affect established or potential Aboriginal or treaty rights. As an agent of the Government of Canada and as Canada's nuclear regulator, the Commission must act in accordance with the Constitution and its imperatives. The Commission ensures that its licensing decisions under the *Nuclear Safety and Control Act* and environmental assessment determinations under the CEEA uphold the honour of the Crown.

267. The Matoush project is located within the boundaries covered by the *James Bay and Northern Québec Agreement (JBNQA)*²⁶. The JBNQA is a modern comprehensive land claim agreement signed in 1975. It establishes the foundations for a new relationship between the Cree, the Inuit, the Naskapi, the Government of Canada and the Government of Quebec. The agreement clarifies the rights of the Native peoples who inhabit that specific area, the obligations to the Native peoples as well as affirming the role and authority of the provincial and federal government throughout the territory. The objective of the agreement is to achieve a balance recognizing the Government's duty to ensure the "orderly and rational development of the resources"²⁷ and the recognition and protection of "the needs of the natives peoples, the Crees and the Inuit, who have a different culture and a different way of life from those of other peoples of Québec."²⁸
268. The JBNQA sets out the various procedures to be followed for the environmental and social impact assessment process for proposed projects located on the territory of the JBNQA. In accordance with the agreement's requirements, environmental assessments were conducted to which the Cree Regional Authority (CRA) participated. The CRA, as the administrative arm of the Cree government and having responsibilities with respect to environmental protection, the hunting, fishing and trapping regime, economic and community development, appointed two of the five panel members of the FRP-S. Aboriginal consultations have been integrated into the FRP-S process during the EA review, and have been coordinated by the CEA Agency.
269. In addition to the environmental assessment reviews undertaken pursuant to the requirements as set out in the JBNQA, the Supreme Court of Canada in its decision, *Quebec (Attorney General) v. Moses*²⁹ confirmed that the project is also subject to the *Canadian Environmental Assessment Act*.³⁰ Accordingly, a comprehensive study was undertaken for this project. The CNSC was the responsible authority for that assessment.

Traditional Land Rights and Cree Rights

270. At the Hearing, some individuals expressed their point of view on the Crees right on the territory where the Matoush project is located.
271. One important aspect of the JBNQA is the establishment of a land regime to achieve a balance between respecting and protecting the most important traditional occupation of the Native peoples and the development of the vast resources contained in that territory. The regime specifies the rights and obligations pertaining to each category.

²⁶ *The James Bay and Northern Quebec Agreement (JBNQA)*, online: <<http://www.gcc.ca>>.

²⁷ JBNQA, *Philosophy of the Agreement*.

²⁸ Ibid.

²⁹ [2010] 1 S.C.R. 557

³⁰ S.C. 1992, c. 37,

As described in the introductory section of the JBNQA – “Philosophy of the Agreement:”

Category I – Lands allocated to the native peoples for their exclusive use which are located in and around communities – set aside exclusively for the Aboriginal communities.

Category II- Lands where native peoples have exclusive hunting, fishing and trapping rights, but no special right of occupancy and where the Government of Quebec may earmark for development purposes at any time. Mining exploration and technical surveys may be carried out freely on Category II lands.

Category III- Lands where exclusive rights or privileges are not granted to the Native peoples. Aboriginal and non-Aboriginal peoples may hunt and fish – Aboriginal have certain harvesting rights over that territory but no exclusive rights or privileges.

272. Section 5.3.1 of the Land Regime Section of the JBNQA, more particularly section 5.3.1 specifies that: “General access to Category III lands will be in accordance with Provincial legislation and regulations concerning public lands.” The harvesting rights and guarantees given to the Native peoples are subject to the right to develop Category II and Category III lands in accordance with the applicable disposition for hunting, fishing and trapping.
273. The Matoush project is located within category III lands. The Commission is cognizant of the fact that even if a project is located on Category III lands, it does not mean that the Crees’ interests are not taken into account: the agreement provides that they will be able to pursue their harvesting activities – hunting, fishing and trapping – as in the past.
274. Under the JBNQA for projects located in Category II and III lands, it is the Federal and/or the Provincial Administrator that are ultimately responsible to determine whether a project can go ahead or not and under what conditions. In making their decision, the administrators must first determine whether the processes provided for under the JBNQA have been followed and whether a project meets the requirements of the agreement. The Federal Administrator has already issued her decision, confirming that the project, subject to certain conditions, could proceed. Under the Canadian Environmental Assessment Act, the federal Minister of the Environment also concluded that the project would not cause adverse impacts to the environment. The decision from the Provincial Administrator is still pending.

Consultation with the Cree Nation of Mistissini

275. Strateco reported that dialogue and exchanges with the community have been ongoing since 2006, and more intensively since 2008. Open door meetings, focus groups discussions, presentations and workshops as well as pamphlet publications are some of the initiatives taken by Strateco to provide information on the project and uranium in general. Strateco further reported that the annual conference of the Aboriginal organisation Learning Together, held in Montreal in April 2009, answered many questions of the participants on uranium related projects. Strateco also informed the Commission that an Open House event was organized in Mistissini on March 14th, 2012, following the annual meeting with the Tallymen. Strateco used this opportunity to make a presentation, and First Nations members from Saskatchewan came to share their experience in working with the uranium industry.
276. CNSC staff noted that \$40,000 of funding had been allocated for the participation of Aboriginal groups in the Environmental Assessment process through the Canadian Environmental Assessment Agency's (CEAA) Participant Funding Program and the Aboriginal Funding Envelope.
277. CNSC staff reported that, during the EA review period, the Cree Nation of Mistissini had engaged consultants to review the Environmental Impact Statement (EIS), and formed a working group with Tallymen, community representatives and workers in health and education sector. The working group developed a plain language information pamphlet and a frequently asked questions document for distribution to community members. CNSC staff was invited by the Cree Community of Mistissini to participate in three public information sessions (September 2009, October 2009, and September 2010), where CNSC staff provided information on health risks, CNSC regulation of uranium mining and aquatic science. CNSC staff also participated in a radio show in September 2010. Throughout this process, community members expressed concerns over a large number of themes ranging from radiation and environmental protection to traditional way of life and socio-economic issues.
278. CNSC staff reported that the Chief of the Cree Nation of Mistissini presented the community's concerns during the EA hearing in Mistissini in November 2010. The presentation was followed-up by a written submission to the FRP-S and COMEX in December 2010. This submission concluded that the people of Mistissini have strong concerns regarding the impact of the proposed project on the land users, the environment and wildlife, and recommended that the COMEX and FRP-S reject Strateco's proposed project on the grounds that the company did not make necessary efforts to build social acceptability within the community. CNSC staff noted that during the FRP-S/COMEX hearings, simultaneous translation in Cree was available, as well as the opportunity to participate in the hearings via teleconference. There was also a glossary of uranium and mining terms that was developed in English and in Cree to support participation. CNSC staff further noted that the summary of the report of the FRP-S was translated in Cree.

279. Several intervenors complained that Strateco did not provide sufficient information regarding the project and that the language used during the consultations and in information provided by Strateco and CNSC staff was too technical and difficult to understand. The Commission inquired about Strateco's effort to communicate relevant information about the project to the community of Mistissini. Strateco representatives responded that, besides already described ways to engage all interested sides, they had engaged a dialogue with the community of Mistissini, and had two open sessions in May 2011; however, attendance to these sessions was rather small. Strateco representatives added that they would like to provide more information through an open dialogue with the community, particularly the youth.
280. Noting that a large number of intervenors from the Mistissini community expressed their opposition to the proposed project, as well as the view expressed by the representative of the Grand Council of the Crees that the information presented by Strateco has not materially improved the community's perception of the project or met with the community's expectations, the Commission asked whether the opposition stands for this project particularly, for uranium mining, or for mining in general. Most intervenors responded that they do not oppose mining in general, or economic development of the region, but expressed considerable concern regarding health issues, contamination, adverse environmental issues and disturbance of their traditional way of life if uranium excavation is allowed. They expressed very strong opposition to the proposed project and its potential development towards a full scale uranium mine. According to them, Strateco was not able to demonstrate to date that the proposed project could bring economic, educational and other benefits to the community, while not jeopardizing their health or lifestyle.
281. CNSC staff further reported that, in a resolution by the Council of the Cree Nation of Mistissini adopted in January 2011 and a resolution by the Board/Council of the Grand Council of the Cree from March 2011, the results of a door-to-door poll were cited, and that the Cree Regional Authority (CRA) had formally supported the implementation of a moratorium on uranium mining on the traditional lands of the Cree Nation of Mistissini. The moratorium had been proposed to allow for greater information to the members of the Cree Nation of Mistissini on the socio-economic and environmental impacts of advanced uranium exploration and uranium mining. They identified the following items needed to be addressed by Strateco:
- conduct more studies to measure and record baseline data so that the Cree can better understand what impacts uranium mining could have on the vast Otish mountains watershed;
 - provide sufficient information to the community to allow a majority of the people in Mistissini to be able to make an informed decision; and
 - engage the community to build relationships based on mutual benefit and trust.
282. CNSC staff reported that the James Bay Advisory Committee on the Environment (JBACE), advised in June 2011 that a precautionary approach is warranted and that special attention must be given to the project's anticipated environmental and social impacts, since the Matoush Project is the first advanced uranium exploration project in

Quebec. The Committee deemed it essential to release accurate information adapted in particular to the Cree community of Mistissini. In order to establish a relationship of trust with the community of Mistissini, Strateco had met with the Chief of Mistissini and implemented a communication plan proposed by the Cree Mineral Exploration Board, to help them make an informed decision based on facts and not on fear and misconception of anticipated impacts. In December 2011, Strateco announced in a press release that it had signed a Communications and Information Agreement with the Cree Nation of Mistissini.

283. The Commission asked S. Coonishish if she was confident that the Commission would shut down a facility if it were releasing contaminants to the environment that were unsafe for the fish and the land. S. Coonishish responded that she had some trust, but expressed concerns that the regulator would not be able to find on time that contaminants are released to the environment in sufficient quantities to cause damage. CNSC staff explained that there are regulatory levels, which are significantly lower than what is considered unsafe for the environment. There are also action levels³¹ and administrative levels³², which are even lower than regulatory levels. CNSC staff will act within 24 hours of receiving information that a regulatory level or an action level has been reached, by performing an inspection and taking independent measurements if necessary. CNSC staff stated that the controls in place have enough safety margins to ensure adequate protection of the environment. CNSC staff also stated having shut down hospitals, research laboratories and mining operations because of concerns to the health and safety of persons or to the environment, and provided an example of a northern Saskatchewan mill having to do a series of toxicity tests to demonstrate that an effluent was not toxic before being allowed to release it to the environment. The Commission notes that, as part of its mandate, it will ensure that all necessary measures are taken to protect the health and safety of persons and the environment.

Communication and Information Agreement

284. Strateco informed the Commission that a four-year Communication and Information Agreement (CIA) was signed between the Cree Nation of Mistissini and Strateco in December 2011. Strateco noted that this agreement reflects the intention of the Cree Nation of Mistissini to receive additional information about the advanced exploration activities, and could not be considered as support for the possible construction and operation phases of the mine for the Matoush Project. The Strateco representative also noted that the CIA include a shared environmental monitoring of the project with Cree people. Strateco representatives further informed the Commission that a Communication and Information Committee was already in place to implement this CIA.

³¹ An action level is lower than the regulatory limit and indicate a potential loss of control from the licensee. The licensee is therefore typically required to report to the CNSC a value higher than the action level and take appropriate action.

³² An administrative level is lower than the action level and is set by the licensee. This is a level where the licensee might consider taking action in order not to reach the action level.

285. The Chief of the Cree Nation of Mistissini noted that, in their view, Strateco has not carried out sufficient communication activities and consultation with the First Nations even with a CIA in place, and therefore has not attained social acceptability for the project in the area. The Chief of the Cree Nation of Mistissini also stated that they had requested that the CIA be implemented for at least 6 months before the project is licensed, but that this request had not been respected. The Strateco representative noted that, after the signing of the CIA, the frequency of meetings had increased and they feel that doors are opening towards better communications with the Cree community.
286. Strateco stated that they had six meetings with the Communication and Information Committee and that the Council of the band was engaged to help the company to relocate in order to gain more visibility in the community. Strateco expressed their expectation that the local community and the Chief would accept their representatives and that mutual understanding and communication could improve.
287. With Regards to the CIA, the Commission recognizes that its implementation raises concerns and is not meeting all of the expectations of the signatories, but it is a forum through which the various parties have been directly exchanging information on this project.

Position of the Cree Nation of Mistissini expressed during Commission Hearings

288. The Commission noted that it was under the impression that the community of Mistissini has not been concerned so much by the exploratory project itself, but rather by the potential of future construction and operation of the mine that had yet to be explained in detail. The Commission asked if the future steps and hold points of the project could be clarified for the community. Strateco representatives responded that, while they would prefer to focus only on the exploration project and not on future steps, the project has been explained several times, they had invited members of the community and that they had door-to-door campaigns to explain the project. Strateco representatives added that they had the opportunity to explain their exploratory project to the intervenors during this public hearing, as well.
289. Commenting on the issue raised by several intervenors that Strateco did not provide sufficient information to certain community groups, the Commission asked about Strateco's efforts to approach the youth and the Mistissini community. Strateco representatives explained that they found the intervention to be based on misinformation spread by persons that have used their influence on the youth through the secondary school, and said that they deemed it unacceptable that the students had not been offered unbiased and objective information. In response to the Commission's question, Strateco representatives said that they have not been successful in initiating a dialogue with the Mistissini youth, mostly due to their firm opposition. They added that, in 2008, they had organized open information sessions with focus groups for the elders, association of women, and, among others, for the youth; however, the youth from the community did not take part in these activities. Strateco representatives noted that, while the anti-nuclear advocates were provided with an opportunity to meet with the youth, they had not been invited to the school for discussion and did not have an opportunity to explain the project to the students or to bring balance to the discussions.

290. One intervenor, L. Taylor, stated that Strateco misrepresented the impact of uranium mining to the population of Mistissini on several occasions. The Strateco representative provided responses to examples provided by the intervenor and expressed Strateco's intention to develop and deepen the relations with the Mistissini Cree in order to respond appropriately to their concerns.
291. The Cree Health Board, Public Health Department, in their interventions, noted that according to their experience regarding large scale development projects, some would benefit from the positive impacts and others would suffer harm from negative impacts, and stated that the goal must be to maximize the potential health and social benefits, minimize potential harm and ensure that the distribution of benefits and harms within the community is fair. They added that the impacts of such projects on employment are small but often have unexpected negative impacts associated with an increase of problems in small communities in such a way that social and health services often become overwhelmed. As a more effective process for examining the potential health and social impacts of the economic development projects, they proposed an approach that includes a list of affected groups, identification of potential positive and negative impacts for every group, and recommendations on how to optimize and balance negative impacts and benefits stemming from the project.
292. The Commission expressed its appreciation for the scope of this approach, and noted that this decision has to be made for the exploration project proposal, and that for further development of a mining operation, a more comprehensive environmental assessment will have to be done with all these very important issues raised at that time. Strateco representatives stated that there will be a committee working with the Health Department covering all the subjects, under the Communication and Information Agreement signed with the Cree community of Mistissini in December 2011.
293. In their intervention, the CRÉBJ supported the proposed project. They said that mining projects have to respect principles of sustainable development so that they generate maximum economic and social benefits, and minimize, as much as possible, negative environmental impact. The CRÉBJ understands that, if this exploration leads to extraction of uranium through a mining operation, another public hearing would be necessary and Strateco would have to conform to all regulatory procedures, which include, among others, a more detailed environmental assessment. CRÉBJ representatives added that the organization has organized consultative meetings and information sessions, has also been actively involved in a number of consultative and informative meetings organized by Strateco, as well as in documenting public questions and distributing information regarding uranium in the communities. The CRÉBJ had also participated in a visit to uranium mines and neighbouring communities in Saskatchewan.
294. Intervenors, including the Cree Health Board Public Health Department and A. Petawabano, expressed concerns on the impact of the project on their traditional way of life and on the consideration of traditional knowledge in the Commission's decision. CNSC staff noted that, in their opinion, the impact of the project on the traditional way

of life of the community should be considered. The Commission confirmed that all information provided during the course of this hearing, including traditional knowledge brought by the elders, would be considered in making a decision on this licence application.

295. The Commission asked what could be done in future to address the widespread concerns about the project among a large number of the Crees. CNSC staff responded that the intervention of the Cree Health Board, with its global vision of the health of the community that includes various aspects related to health, social impacts, traditional way of life and influence of contaminants on these aspects, might offer a good opportunity to work together and present relevant information and answers to the community's questions. CNSC staff also stated that they evaluated the impact of the project on air, water and soil, and then on the plants, fish and other animals. CNSC staff also looked at the controls that Strateco put in place to protect the people and the environment, and how the project could affect the people living in the area. CNSC staff noted that the federal environmental assessment led by the COFEX and the CNSC concluded that, with the right controls in place, the environment, workers and people would be protected.

Conclusion on Aboriginal Consultation

296. The Commission acknowledges the efforts made in relation to the CNSC's obligations regarding Aboriginal consultation and the Legal Duty to Consult. In accordance with its mandate and the authority granted to it, the Commission is of the view that, for project-related matters which may cause concern to rights-holders about potential impacts, which are within the authority of the Commission to address and perhaps accommodate, the Commission has the jurisdiction to deal with consultation on behalf of the Crown, and its process is the appropriate forum in which to deal with such issues.
297. The Commission is satisfied that its process, in addition to the various environmental assessment processes undertaken for this project, have provided sufficient information and opportunities for the intervenors to make submissions and to participate in the regulatory review of this application. The Commission's hearing process provided a forum in which concerns could be expressed and dealt with. The Commission is satisfied that this process has been adequate to address the concerns expressed. Communities received the information required to fully participate and to speak to the issues regarding this specific project. The Commission has heard the intervenors and has considered all of the submissions in making its decision. The Commission is satisfied that, to the extent that a duty to consult was triggered, it was fulfilled by the Commission process and by the opportunities that were afforded for consultation within that process.

Decommissioning Plans and Financial Guarantee

298. The Commission requires that any mine licensee have operational plans for decommissioning and long-term management of waste produced during the life-span of the facility. In order to ensure that adequate resources are available for a safe and secure future decommissioning of the Matoush site, the Commission requires that an adequate financial guarantee for realization of the planned activities be put in place and maintained in a form acceptable to the Commission throughout the licence period.
299. Strateco informed the Commission that they had submitted their decommissioning plan to the provincial and federal authorities and that the site would be decommissioned if the underground exploration activities did not demonstrate adequate results. Strateco noted that their intention was to remediate the site progressively where possible, and any area no longer used at the site would be landscaped and re-vegetated. Strateco representatives added that, upon making a decision to decommission the site, Strateco would submit a detailed decommissioning plan (DDP) to the CNSC.
300. CNSC staff informed the Commission that Strateco had applied for authorization to decommission the underground mine and associated facilities if they decide to not go ahead with the development of a mine and mill at the Matoush Project. The decommissioning plan that Strateco had submitted included all components of the facility, from mining and surface equipment and chemicals, to water monitoring ponds, underground and drilling equipment, contaminated machinery, to removal of water diversion systems and restoration of normal water flows, and complete re-vegetation. The financial guarantee to cover the cost of decommissioning was based on the activities identified in this decommissioning plan.
301. CNSC staff further informed the Commission that Strateco's decommissioning plan met the requirements presented in CSA N294-09, *Decommissioning of Facilities Containing Nuclear Substances*³³ and the guidance presented in Regulatory Guide G-219, *Decommissioning Planning for Licensed Activities*³⁴. Once the decision is made to proceed with decommissioning, Strateco will be required to submit a DDP for CNSC staff approval, which would refine and add procedural and organizational details to the proposed plan. CNSC staff added that a Decommissioning Monitoring Program, approved by CNSC staff, would be required to demonstrate that the site meets decommissioning objectives. CNSC staff recommended that the Commission delegate the approval of the DDP to the CNSC Director General of the Directorate of Nuclear Cycle and Facilities Regulation.
302. Intervenors, including S. Iserhoff, J. Debassige, InnuPower and Sept-Îles sans uranium, and the Coalition Pour que le Québec ait meilleure mine !, commented on Strateco's decommissioning plan. Concerns were expressed that a DDP had not been presented and that Strateco had not demonstrated the financial capacity to conduct the exploration

³³ Canadian Standards Association, 2009, PDF EN 2420231, PDF FR 2421166.

³⁴ Canadian Nuclear Safety Commission, 2000.

project or to decommission the site. The Commission asked for more information on the decommissioning plan. CNSC staff responded that a detailed decommissioning plan is a plan that a licensee needs to submit just before the decommissioning activities start, when a licensee submits an application for decommissioning. Such plan would include detailed description of all activities that would take place during the decommissioning. A decommissioning plan required for the licensing process is a preliminary one that provides a general overview of anticipated decommissioning activities and serves as a basis to estimate the cost of these activities that would be reflected in the amount of the required financial guarantee.

303. CNSC staff explained that the financial guarantee is an instrument that cannot be used for any other purpose except for decommissioning, and that the CNSC has the power to invoke it. Every financial guarantee is reviewed after a maximum of five years to ensure that it is always aligned with the scope of the activities approved or licensed by the Commission.
304. CNSC staff informed the Commission that Strateco has proposed a financial guarantee of \$5.5 million. CNSC staff noted that it would continue to review the amount and nature of the financial guarantee. CNSC staff stated that Strateco would have to have the required financial guarantee in place before it is allowed to operate.
305. CNSC staff added that, after reviewing the submitted preliminary decommissioning plan, they were of the opinion that the plan was sufficient for the advanced exploration licence purposes, and that the amount of financial guarantee of \$5.5 million was sufficient to cover the cost of the planned decommissioning activities.
306. Some intervenors, including M.S. Coon-Come, questioned the intention to remediate the site at its closure, and expressed concerns about water contamination due to mine water inflow during the decommissioning. Asked by the Commission to comment, CNSC staff explained that, at this stage of the exploratory project, it was too early for a definite plan for closing the prospective mine, but the common procedure would be to backfill the mine opening and plug it with cement, and to grout any open boreholes. CNSC staff added that studies have shown that it is possible to isolate this water and eliminate any future chemical reactions within the mine so that there should be no impact to the environment. CNSC staff stated that, in this way, the site would return to its original state as much as possible.
307. The Commission considered the sufficiency of the presented decommissioning plan and, based on the presented information, concludes that the decommissioning plan is acceptable for the purpose of the current application for the Matoush Project.
308. The Commission considers the amount of financial guarantee to be acceptable. The Commission states that no activities listed in the licence shall commence before a financial guarantee acceptable to CNSC staff is in place.

309. The Commission delegates the approval of the DDP to the CNSC Director General of the Directorate of Nuclear Cycle and Facilities Regulation.

Cost Recovery

310. CNSC staff reported that Strateco Resources Inc. is in good standing with the CNSC's *Cost Recovery Fees Regulations*³⁵ with respect to the payment of licensing fees for its Matoush Project.

Licence Length and Conditions

311. Strateco has applied for, and CNSC staff has recommended that the Commission issue a Uranium Mine Site Preparation and Construction Licence for the Matoush Advanced Exploration Project for a period of five years.
312. The Commission asked about other regulatory bodies involved in the regulation of this project, and for a list of codes and standards that would be reflected in the licence. CNSC staff responded that several regulatory agencies are already engaged in the monitoring of the site. CNSC regulatory monitoring is done at two levels: through on-site inspections and through review of submitted compliance reports. Construction at the site must conform to the provincial legislation and existing codes and standards. A list of standards to be applied includes standards regarding the fuel on site, electric installations, food and water quality, hygiene, health of workers, and others that would be verified by the Public Health Services. CNSC staff added that they would coordinate with the provincial Ministry of Sustainable Development, Environment and Parks, to achieve conformity in the environmental monitoring and to ensure the protection of the environment through application of standards regarding effluent releases. Strateco representatives commented that there is a chapter named "Laws and Regulations" in all of their programs and enumerated some of the codes and regulations cited in their programs.
313. Based on the above information and considerations, the Commission is satisfied that a 5-year licence is appropriate. The Commission accepts the licence conditions as recommended by CNSC staff, with additions as detailed earlier in this *Record of Proceedings*. The Commission accepts CNSC staff's recommendation regarding the delegation of authority in the draft Licence Conditions Handbook.

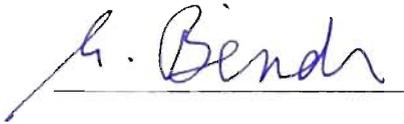
CONCLUSION

314. The Commission has considered the information and submissions of CNSC staff, the applicant and all participants as set out in the material available for reference on the record, as well as the oral and written submissions provided or made by the participants at the hearing.

³⁵ S.O.R. 2003-2012

315. The Commission concludes that the requirements for an environmental assessment of the proposed operation of the facility, pursuant to the *Canadian Environmental Assessment Act*, have been met regarding the advanced exploration project.
316. The Commission is satisfied that Strateco meets the requirements of subsection 24(4) of the *Nuclear Safety and Control Act*. That is, the Commission is of the opinion that Strateco is qualified to carry on the activity that the proposed licence will authorize and that Strateco 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.
317. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, issues Uranium Mine Site Preparation and Construction Licence, UMCL-MINE-MATOUSH.00/2017, to Strateco Resources Inc. for its Matoush Advanced Exploration Project. The licence will be valid from October 16, 2012 to October 31, 2017.
318. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 12-H7. In addition to the recommended licence conditions, the Commission directs CNSC staff to add licence conditions with the following hold points to the Matoush Project:
- the excavation of the exploration ramp and construction of the mine portal will not begin before the Commission is satisfied that all data required for the completion of the aquatic baseline data set are collected and analysed, and the data set is established; and
 - none of the activities associated with releases of effluents into the environment will be allowed to start before a basic monitoring program is fully implemented.
319. The Commission states that no activities listed in the licence shall commence before a financial guarantee acceptable to CNSC staff is in place.
320. The Commission accepts CNSC staff's recommendation regarding the delegation of authority in the draft Licence Conditions Handbook (LCH) and directs CNSC staff to modify the LCH so to accommodate for the additional licence conditions aforementioned in the Decision part of this *Record of Proceedings*. The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.
321. During the course of the hearing, the Commission developed a better understanding of the very deep concerns of the people of the Cree Nation of Mistissini regarding the project. The Commission also noticed that the information provided on the project by Strateco and the scientific information provided by CNSC staff did not change the Cree's perceptions of the project. The Commission understands that there is inadequate social acceptability of the project in the area. While the Commission's mandate does not include social acceptability, the Commission strongly encourages Strateco to do more and to use any available means in making useful and frequent contact with the

population in this area, in order to make the public information program more effective and to provide objective and understandable information to the affected communities. The Commission also understands that the COMEX report to be published will contain an in-depth analysis of the social aspects of the project.

A handwritten signature in blue ink that reads "M. Binder". The signature is written in a cursive style and is positioned above a horizontal line.

OCT 16 2012

Michael Binder
President,
Canadian Nuclear Safety Commission

Date

Appendix A – Intervenors

Intervenors	Document Number
Sophie Coonishish	CMD 12-H7.2
Len Taylor	CMD 12-H7.3
Allen Matoush	CMD 12-H7.4
Conférences régionale des élus de la Baie-James, represented by S. Gamache	CMD 12-H7.5
Azimut Exploration Inc.	CMD 12-H7.6
Osisko Mining Corporation	CMD 12-H7.7
Table jamésienne de concertation minière, represented by P. Folco and R. Simard	CMD 12-H7.8
Dr. Isabelle Gingras and other physicians	CMD 12-H7.9
Canadian Nuclear Association	CMD 12-H7.10
Elaine MacLeod	CMD 12-H7.11
Marie-Julie Bouchard	CMD 12-H7.12
CentricoisES et MauricienNEs pour le déclassement nucléaire, represented by S. Bois	CMD 12-H7.13
Jonathan Genest-Jourdain, MP, Manicouagan	CMD 12-H7.14 CMD 12-H7.14A
Matthew Sandy Coon-Come	CMD 12-H7.15
Andrew J.W. Mianscum	CMD 12-H7.16
Chamber of Commerce of Chibougamau, represented by A. Bradette	CMD 12-H7.17
City of Chibougamau, represented by M. Cyr	CMD 12-H7.18
Regroupement national des conseils régionaux de l'environnement du Québec (RNCREQ), represented by P. Bourque	CMD 12-H7.19
Alain Poirier	CMD 12-H7.20
George Gunner	CMD 12-H7.21
René Savage	CMD 12-H7.22
Direction de la santé publique des Laurentides	CMD 12-H7.23
Mining Watch Canada, represented by R. Hart	CMD 12-H7.24
Élaine Hébert	CMD 12-H7.25
InnuPower and Sept-Îles sans uranium (SISUR), represented by M. Fafard and P. Robinson	CMD 12-H7.26
Ashley Iserhoff	CMD 12-H7.27
Zach Ruitter	CMD 12-H7.28
Matthew Iserhoff	CMD 12-H7.29
Virginia Coonishish	CMD 12-H7.30
Annie Neeposh Iserhoff	CMD 12-H7.31
Charlie Mianscum	CMD 12-H7.32
Johnny Loon	CMD 12-H7.33
Cree Health Board, Public Health Department, represented by J. Coonishish	CMD 12-H7.34
Justice Debassige	CMD 12-H7.35

B

William Mianscum	CMD 12-H7.36
Cree Trapper's Association	CMD 12-H7.37
James A. MacLeod	CMD 12-H7.38
Rachel MacLeod	CMD 12-H7.39
Luke MacLeod	CMD 12-H7.40
Charlie Loon	CMD 12-H7.41
Maggie Voyageur	CMD 12-H7.42
Philip Petawabano	CMD 12-H7.43
Alice Petawabano	CMD 12-H7.44
Council of the Cree Nation of Mistissini, represented by Chief Shecapio	CMD 12-H7.45
Minganie sans uranium, represented by C. Lussier	CMD 12-H7.46
Michel Duguay	CMD 12-H7.47
Robert Del Tredici, The Atomic Photographers Guild	CMD 12-H7.48 CMD 12-H7.48A
Association de Protection de l'Environnement des Hautes Laurentides (APEHL), represented by	CMD 12-H7.49
Sydon Consulting Inc., C. Natomagan	CMD 12-H7.50
Coalition Pour que le Québec ait meilleure mine !, represented by U. Lapointe	CMD 12-H7.51
Patrick d'Astous	CMD 12-H7.52
Canadian Coalition for Nuclear Responsibility, represented by G. Edwards	CMD 12-H7.53
John Bobbish	CMD 12-H7.54
Victoria Bobbish	CMD 12-H7.55
Darlene Neeposh	CMD 12-H7.56
Ernest Nakogee	CMD 12-H7.57
Helen Petawabano	CMD 12-H7.58
Mary Mark	CMD 12-H7.59
Ronald Blackned	CMD 12-H7.60
Titus Mianscum	CMD 12-H7.61
Annie Pauline Bosom	CMD 12-H7.62
Hattie M.-A. Coonishish	CMD 12-H7.63
Stacy Anderson	CMD 12-H7.64
Moses Brien	CMD 12-H7.65
Annie Mark Blacksmith	CMD 12-H7.66
Giiwedin Matoush	CMD 12-H7.67
Lynn Neeposh	CMD 12-H7.68
Alexandre Brien	CMD 12-H7.69
Clifford Loon	CMD 12-H7.70
Elisabeth Shecapio	CMD 12-H7.71
Matthew Wapachee	CMD 12-H7.72
Emily Shecapio	CMD 12-H7.73
Leonard Brien	CMD 12-H7.74
Matthew J. Shecapio	CMD 12-H7.75
Theresa MacLeod	CMD 12-H7.76

Karen Coonishish	CMD 12-H7.77
Kevin Mianscum	CMD 12-H7.78
Mary Bosum	CMD 12-H7.79
Maverick Loon-Swallow	CMD 12-H7.80
George Coon	CMD 12-H7.81
Prescila Coon-Come	CMD 12-H7.82
Natalie Guttormsson	CMD 12-H7.83
Groupe de recherché en éducation et formation relatives à l'environnement	CMD 12-H7.84
Fédération des chambres de commerce du Québec	CMD 12-H7.85
Québec Minéral Exploration Association	CMD 12-H7.86
Mistissini Youth Council, represented by S. Iserhoff	CMD 12-H7.87
Shawn Iserhoff	CMD 12-H7.88
François Meloche	CMD 12-H7.89 CMD 12-H7.89A
Elizabeth Coon	CMD 12-H7.90

Other Intervenors- Oral Statement (No CMD Filed)
Morley Gunner
T. Jutras Petawabano
Paul Dixon
Jeff Spencer
Robie Nicholls
Paul Linton
Marie-Ève Barbeau
John Matoush