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CMD: 12-H7

Date signed/Signé le : APRIL 4, 2012

**Strateco Resources Inc.**

**Ressources Strateco inc.**

**Matoush Project**

**Projet Matoush**

**Application for a Uranium  
Mine Site Preparation and  
Construction Licence**

**Demande de permis de  
préparation de  
l'emplacement et de  
construction d'une mine  
d'uranium**

One-Day Public Hearing

Audience publique d'une journée

Scheduled for:  
June 5 and 7, 2012

Prévue pour :  
Les 5 et 7 juin 2012

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**Request for a Licensing Decision:**

**Demande d'autorisation :**

Regarding:  
A New Licence

Relative à :  
Un nouveau permis

Submitted by:  
CNSC Staff

Soumise par :  
Le personnel de la CCSN

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**Summary**

This Commission Member Document presents information about the following matters of regulatory interest with respect to Strateco Resources Inc. (Strateco) Matoush Underground Exploration Project:

- CNSC staff's review and assessment of Strateco's application for a Licence to Prepare Site and Construct.

The following actions are requested of the Commission:

- Review the attached CMD; and
- Taking into consideration the EA decision, decide whether to issue the proposed Uranium Mine Site Preparation and Construction Licence, UMCL-MINE-MATOUSH.00/2017.

The following items are attached:

- The proposed licence; and
- The proposed licence conditions handbook.

**Résumé**

Ce document aux commissaires (CMD) présente de l'information sur les questions d'ordre réglementaire suivantes qui concernent le projet d'exploration souterraine Matoush de Ressources Strateco inc. :

- L'examen et l'évaluation du personnel de la CCSN de la demande de Strateco pour un permis de préparation de l'emplacement et de construction

La Commission pourrait considérer prendre les mesures suivantes :

- Examiner le CMD ci-joint ; et
- Décider, en tenant compte de la décision sur l'évaluation environnementale, de délivrer ou non le permis de préparation de l'emplacement et de construction d'une mine d'uranium, UMCL-MINE-MATOUSH.00/2017.

Les pièces suivantes sont jointes :

- Le permis proposé
- Le manuel des conditions de permis proposé

**Signed/signé le**

April 4, 2012



Peter Elder

**Director General**

Directorate of Nuclear Cycle and Facilities Regulation

**Directeur général de la**

Direction de la réglementation du cycle et des installations nucléaires

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## EXECUTIVE SUMMARY

Strateco Resources Inc. (Strateco) has applied to the Canadian Nuclear Safety Commission (CNSC) for a licence to authorize underground exploration of the Matoush uranium deposit.

Strateco's proposed project involves the excavation of an exploration ramp, driving two exploration drifts in waste rock, definition drilling of the mineralized zone, and up to three excavations through the mineralized zone. The proposed activities will allow the applicant to further characterize the uranium mineralization and to determine the feasibility of a future mine and mill. There are no plans for mining through the mineralized zone beyond that required to characterize the uranium deposit. No milling activities are proposed nor authorized.

A Comprehensive Study Report was presented to the Commission in July 2011 recommending acceptance of the study findings that the project is not likely to cause significant adverse environmental effects after mitigation measures are implemented.

This CMD describes the results of CNSC staff's review and assessment of the licence application. CNSC staff verified the applicant's compliance with the requirements of the *Nuclear Safety and Control Act*, the *Uranium Mines and Mills Regulations*, and other applicable regulations.

CNSC staff conclude that the project, as described, poses a low overall risk to health, safety and the environment. The proposed activities and related risks are similar to those normally encountered in conventional mining. Mining development would be for the most part through clean rock. The relatively small mass and volume of mineralized rock and wastes associated with the project would result in no measurable radiological risks to the workers and the environment.

CNSC staff further conclude that the applicant is qualified to carry on the activity authorized by the licence and that the applicant will, in carrying out that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security.

CNSC staff recommend that the Commission accept CNSC staff's assessment and conclusions and approve the issuance of the Uranium Mine Site Preparation and Construction Licence, UMCL-MINE-MATOUSH.00/2017, and the associated Licence Conditions Handbook. As described in this CMD, following the issuance of a licence, CNSC staff would establish a Compliance Program including verification, promotion and enforcement to assure itself that Strateco, as a new licensee, is in compliance with the licence and Licence Conditions Handbook.

CNSC staff recommend that the licence be issued for a term of five years.

## PART ONE

This Commission Member Document (CMD) is presented in two parts.

Part One includes:

1. An overview of the matter being presented;
2. Overall conclusions and overall recommendations;
3. General discussion pertaining to the safety and control areas (SCAs) that are relevant to this submission;
4. Discussion about other matters of regulatory interest; and
5. Addenda material that complements items 1 through 4.

Part Two provides all available information pertaining directly to the proposed licence.



# 1. OVERVIEW

## 1.1 Background

### 1.1.1 Introduction

Strateco Resources Inc. (Strateco) has applied for a site preparation and construction licence for the Matoush Advanced Exploration Project (Matoush Project). The objectives of the project are to define the limits of uranium mineralization and the nature of the geological structures of the uranium deposit. This will enable Strateco to collect the information required to determine the feasibility of mining and to support the design of future mine and mill facilities.

The project will involve the excavation of an exploration ramp, driving two exploration drifts in waste rock, and definition drilling of the mineralized zone, up to three excavations through the mineralized zone. Rock from excavations through the mineralized zone will be stored underground. Construction of surface support facilities include a power plant, water treatment facilities, shops, offices, waste storage pads and an upgrade of the temporary camp. The project also includes the decommissioning of the site as it pertains to this phase of licensed activities.

The timeline for the requested licensed activities is approximately four years. This includes three months to develop the mine portal, then six months to construct surface facilities, followed by 18-24 months to develop the mine and 12 months of exploration drilling. This may be followed by decommissioning depending on the result of a mine/mill feasibility study. There are three potential options available at the completion of the licensed activities. These include: a decommission tomorrow scenario, which is the basis of the preliminary decommissioning plan and financial guarantee reviewed for this licensing action; a care-and-maintenance scenario, which can be short term or medium term; and proceed with project development towards a mine and mill operation, which would require a new environmental assessment and licence review. CNSC staff consider a five-year term for the licence duration to be appropriate.

### 1.1.2 Background

The Matoush uranium deposit was first discovered in 1980. Exploration activities to date include line cutting, electromagnetic surveys, aerial geophysical surveys, diamond drilling and drill hole geophysics. As of September 2009, mineral resources of approximately 20 million pounds of uranium at an average grade of 0.57%  $U_3O_8$  has been identified as probable and inferred categories. Surface exploration drilling is continuing.

The Matoush Project is centrally located within the Province of Quebec, situated 210 kilometers (km) north of the aboriginal community of Mistissini, and about 275 km north of the town of Chibougamau. There are no settlements/residences located in the vicinity of the proposed project. The nearest community is

Mistissini. The project lies within the boundaries of 4 to 6 traditional Cree trapping areas.

The site is accessible by air or by a 146 km winter road which connects to Provincial Highway 167. An aircraft landing strip was constructed to the south of the project in 2010 to support the transportation of people and supplies to the region.

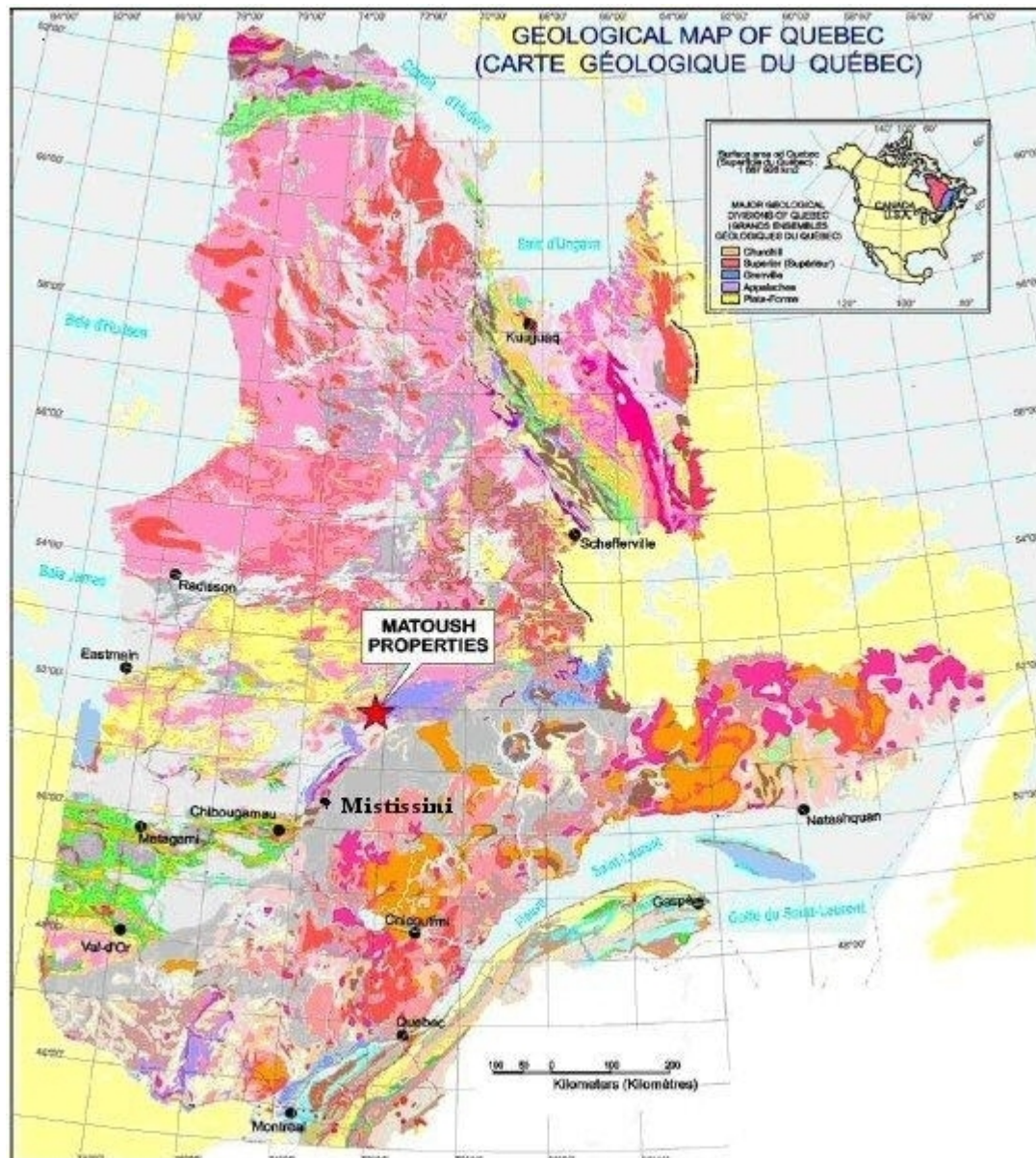


Figure 1-1 Map of Province of Quebec showing the locations and landmarks for orientation.

The proposed surface facilities are shown on the site plan below. The site currently includes a temporary camp including potable water and sewage



## **1.2 Special Concerns or Information**

### **1.2.1 New Uranium Project in the Province of Quebec**

The project is an advanced exploration project designed to gather sufficient information to confirm the mineralized estimates to support a feasibility study for the viability of a potential uranium mine. The applicant has prior mining experience in gold and base metal mines and is familiar with the Quebec mining regulations. However, the applicant is new to uranium mining in Canada and has been required to quickly learn new regulatory processes that are related to nuclear safety at regulated facilities. The conduct of a federal environmental assessment using the James Bay Northern Quebec Agreement (JBNQA) and the Canadian Environmental Assessment Agency (CEAA) is unique and requires separate approval from the Minister of the Environment and the Federal Administrator. The province of Quebec has also conducted an environmental assessment and also has permitting requirements.

In addition, the applicant submitted a licence application which was reviewed in parallel with the environmental assessment. The licence application was developed with the help of consultants familiar with uranium mining in Canada. The applicant also approached CNSC staff to get clarity on regulatory requirements and expectations. The technical documentation provided in support of the licence has addressed the regulatory requirements and have used the good practices from modern Saskatchewan uranium mining experience.

CNSC staff's views on risk prevention and the project's potential for a future mine and mill operation have been integrated into the estimates and assumptions used to assess the expected project impacts. As a result, the project's risk profile is low considering the project plan, construction and implementation of mitigations. The performance projections are therefore conservative and protective.

The profile of this new project was high during the Environmental Assessment process and attracted significant interest from various stakeholders. This was because the project is the first potential uranium mine in Quebec. The applicant must now demonstrate a good understanding of their technical and social responsibilities and become a leading example of nuclear safety for uranium mines in the province.

### **1.2.2 Risk Assessment of Advanced Exploration**

Since the Matoush Project does not involve the mining of uranium, the risks associated with the Matoush Project are similar to those encountered in conventional mining projects in Canada and will be developed using known technology, codes and standards. The activity is advanced exploration where the majority of the development is in clean rock. There is limited development in uranium mineralization resulting in small volumes of mineralized waste rock to be managed.

Adequate ventilation is planned to control mine gases and potential airborne radioactive contaminants. Conventional water treatment technology consisting of pH adjustment, chemical precipitation and clarification will remove contaminants prior to discharge to the environment. Administrative controls for radiation protection and treated effluent discharges have been developed using good practices in the industry and the risks to the workers and the environment are expected to be low.

Should the project not be feasible after the advanced exploration assessment activities are completed, it can be decommissioned after the planned work. The residual impacts are expected to be limited spatially and temporally.

### 1.2.3 Public and Aboriginal Consultations

The Federal and Provincial Review Panels under the James Bay Northern Quebec Agreement held two phases of public hearings on the Environmental and Social Impact Study; the first phase on May 25 and 26, 2010 in Mistissini and Chibougamau, Quebec respectively; and the second phase on November 23 and 25, 2010, also in Mistissini and Chibougamau respectively.

Following the November 23, 2010 public hearing in Mistissini, the Council of the Cree Nation of Mistissini submitted its written intervention. The intervention included a resolution stating opposition to the project.

Strateco announced in a press release dated December 23, 2011, that it had signed a Communications and Information Agreement with the Cree Nation of Mistissini. This communication strategy facilitates the development and implementation of dialogue between the stakeholders during the advanced exploration and development phase of the project. Section 4.2 “Public and Aboriginal Consultation” of this CMD discusses the results of the public and aboriginal consultation process that was followed during the environmental assessment of the project.

### 1.2.4 CNSC Compliance Plan

CNSC staff's expectation is that the licensee will make adequate provisions for the health and safety of workers and to protect the environment during the conduct of its construction and assessment activities. CNSC staff recognize that further effort will be required to completely develop and implement supporting programs and procedures to manage the risk resulting from the construction activity. Strateco has proposed an Action Plan that is based on the project risk to address the identified document deficiencies. The Action Plan has been found acceptable by CNSC staff. If the licence is granted, CNSC staff will conduct verification activities to ensure that processes are sufficiently documented and that workers are adequately trained.

A Licence Conditions Handbook (LCH) has been developed to articulate CNSC staff's expectations for compliance with the *Nuclear Safety and Control Act*, its regulations and the application for the site preparation and construction licence. The LCH will track the elements of the Action Plan.

CNSC staff activities are planned to promote a nuclear safety culture with the applicant, transparency with the local communities, and to establish a working relationship with the provincial departments of labour and environment.

### **1.3 Overall Conclusions**

CNSC staff have concluded the following with respect to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act*, in that the application:

1. Is qualified to carry on the activity authorized by the licence; and
2. Will, in carrying out that activity, 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.

### **1.4 Overall Recommendations**

The Minister of the Environment 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 consideration mitigation measures. CNSC staff recommend the following:

1. That the Commission accept the conclusion of staff that the applicant Strateco Resources Inc. is qualified to carry on the activities authorized by the licence and will make adequate provisions for the protection of the environment, and the health and safety of persons; and
2. That the Commission issue the proposed licence to Strateco Resources Inc. to site and construct the nuclear facility for a term of five years.

## **2. MATTERS FOR CONSIDERATION**

### **2.1 Relevant Safety and Control Areas**

The functional areas of any licensed facility consist of a standard set of Safety and Control Areas (SCAs). Each SCA is comprised of “specific areas” of regulatory interest; however, the specific areas associated with each SCA vary between facility types. See Addendum A, “Safety and Control Areas Framework”, for further information about SCAs.

In the following table:

1. The relevance of each SCA to this CMD is indicated; and
2. The rating level for each relevant SCA indicates the overall compliance with regulatory requirements (refer to Addendum B, “Rating Levels”).

Functional Area	Safety and Control Area	Relevant to this CMD?	Rating Level
Management	Management System	Yes	SA
	Human Performance Management	Yes	SA
	Operating Performance	Yes	SA
Facility and Equipment	Safety Analysis	Yes	SA
	Physical Design	Yes	SA
	Fitness for Service	Yes	SA
Core Control Processes	Radiation Protection	Yes	SA
	Conventional Health and Safety	Yes	SA
	Environmental Protection	Yes	SA
	Emergency Management and Fire Protection	Yes	SA
	Waste Management	Yes	SA
	Security	Yes	SA
	Safeguards	No	
	Packaging and Transport	Yes	SA

## 2.2 Other Matters of Regulatory Interest

The following table identifies other matters that are relevant to this CMD.

OTHER MATTERS OF REGULATORY INTEREST	
Area	Relevant to this CMD?
Environmental Assessment	Yes
Aboriginal Consultation	Yes
Other Consultation	Yes
Cost Recovery	Yes
Financial Guarantees	Yes
Improvement Plans and Significant Future Activities	Yes
Licensee's Public Information Program	Yes
Nuclear Liability Insurance	No

## 2.3 Regulatory and Technical Basis

The Matoush advanced exploration project proposed by Strateco qualifies as an “excavation site” as defined by the *Uranium Mines and Mills Regulations*.

To obtain a licence, a licence application must provide the supporting requirements specified in the regulation for a Licence to Prepare Site and Construct a uranium mine. The licence application requirements from the *Nuclear Safety and Control Act*, *General Nuclear Safety and Control Regulations*, *Uranium Mines and Mills Regulations* and the *Radiation Protection Regulations* were also included in the development of the supporting programs, procedures and regulatory controls.

The regulatory and technical basis for the safety and control areas discussed in this CMD are provided in tabular format in Addendum B to this document. The Safety and Control Areas presented in the tables align with the content of the licence application and are also the basis of the licence and Licence Conditions Handbook.

### **3. GENERAL ASSESSMENT OF SAFETY AND CONTROL AREAS**

#### **3.1 Management System**

The Safety and Control Area “Management System” covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture.

CNSC staff expects the development and implementation of a management system to be graded such that the proposed management and controls are commensurate with the overall risks to be managed.

The applicant has laid out the program requirements in all key areas and has begun the development of detailed procedures and training programs to support its activities.

The applicant is in the early stages of developing and implementing an effective management system that includes the following elements:

- Policies, programs and quality;
- Safety culture;
- Senior management responsibilities and management of contractors;
- Management oversight and quality programs;
- Incident management;
- Contractor selection and control;
- Control of instruments and supplies;
- Worker communications;
- Document management; and
- Change management.



Commensurate with the overall risks, the applicant has committed to ensure that procedures and training are in place prior to the commencement of any activities that will pose a risk to health, safety and the environment. For example, the applicant has submitted detailed program information on its conventional health and safety program and is developing supporting procedures. The applicant has committed to completing the development and implementation of the detailed procedures prior to the commencement of ramp development.

### **Policies**

Strateco has committed to continuously improving occupational health and safety, environmental protection and social responsibility.

It has also endorsed the ALARA (as low as reasonably achievable) principle to keep exposures to radiation and all contaminants as low as reasonably achievable taking into account social and economic factors. The objective of the ALARA program is to continually seek ways to reduce exposure to contaminants. Elements of the program include management of work practices, personnel training and qualifications, monitoring exposures to workers and planning for unusual situations.

### **Development of Safety Culture**

In their application, Strateco has indicated that they will promote a culture of safety by developing safe attitudes and behaviours; making workers aware of their responsibility to adopt safe attitudes and behaviour; continually reviewing safety practices; including workers in the development of safe work practices and investigating to identify and correct causes of any unsafe work practices.

During routine inspections, CNSC staff will verify that a strong safety culture exists and is maintained at the Matoush Project.

### **Management of Contractors**

The objective of the proposed project is to assess the feasibility of developing a uranium mine and mill. It is in the early stages of mine development, and as such, would initially rely on external consultants and contractors to conduct many of its activities. Consistent with other operating uranium mines in Canada, a long-term mining contractor would provide workers and line supervision for the underground mine development. Contractors would be used to operate the Development Ramp Water Treatment Plant. Short-term contractors would also be used to construct surface facilities. Quality control would be carried out by engineering consultants. Construction and commissioning of the Development Ramp Water Treatment Plant would be overseen by the engineering firm that designed the plant.

Although the selected contractors would perform the licensed activities, the applicant retains the ultimate responsibility as licensee under the *Nuclear Safety and Control Act* and its associated Regulations.

The applicant has stated that the Strateco Project Manager would be responsible for overseeing the work of these contractors and ensuring that the health, safety, security of workers, the public and the environment are protected.

Strateco employees, who report to the Project Manager, would oversee the programs and activities associated with radiation protection, health care, geology, engineering and environmental protection.

### **Incident Management and the Corrective Action Program**

Strateco has committed to analyzing events and implementing corrective actions to prevent recurrence. Incidents are understood to mean any accident, near-miss, non-compliance, or changes of various types.

### **Reporting Process**

Applicants are expected to report to the Commission all events required by the *Nuclear Safety and Control Act* and its Regulations, and provide routine reports at a set frequency on the results of Monitoring Programs.

Consistent with other uranium mines and mills in Canada, CNSC staff have proposed licence conditions for routine reporting and reporting on significant events. Additional licence conditions are proposed requiring Strateco to develop, implement and maintain a reporting process during the licence term.

### **Self Evaluation**

Strateco's submission includes a commitment to conduct self-evaluations. These evaluations will be done on a regular basis throughout the life of the project in order to determine effectiveness in meeting objectives and targets. In addition, the self-assessments will identify weaknesses in the management system, as well as any obstacles in achieving objectives and targets.

## **3.1.1 Conclusion**

CNSC staff conclude that the information provided by the applicant regarding its proposed management system and organizational arrangements are sufficient to meet the regulatory requirements under the *Nuclear Safety and Control Act* and associated Regulations for the issuance of a uranium mine construction licence.

The information provided in the application provides a credible demonstration that the applicant would ensure that an effective management system is implemented and maintained.

## **3.1.2 Recommendation**

CNSC staff recommend that the following standard conditions be included in the licence:

The licensee shall implement and maintain a management system for the facility:

- 2.1 *The licensee shall ensure that every contractor working at the facility complies with the applicable conditions of this licence including those relating to the licensee's policies, programs, and procedures with respect to*

*the protection of health, safety, the environment, and, to maintenance of security;*

- 2.2 *The licensee shall implement and maintain safety and control measures for reporting to the Commission or a person authorized by the Commission that includes reporting of all events required by the Nuclear Safety and Control Act and its Regulations.*

## **3.2 Human Performance Management**

The Safety and Control Area “Human Performance Management” covers activities that enable effective human performance through the development and implementation of processes to ensure that licensee staff members are sufficient in numbers in all relevant job areas and have the necessary knowledge, skills, and tools in place to safely carry out their duties.

### **3.2.1 Discussion**

Strateco’s proposed training program was developed following the systematic approach to training.

The information provided by the applicant provides a description of the proposed training program which is designed to ensure that personnel have the required qualifications and competencies. The applicant has committed to developing and implementing training plans and procedures prior to the commencement of the licensed activities.

Orientation training will be provided to new workers the day they arrive on site with a particular focus on conventional health and safety. More detailed environmental awareness and radiation safety training will be provided within 90 days of employment.

Training will be provided for the following topics to identified personnel: first aid, pre-hospital emergency care, automatic defibrillator, CPR, mining trauma, respirators, mine rescue, WHMIS, transport of dangerous goods, radiation protection, radiation protection technician, ALARA program, conduct of monitoring, mobile equipment, emergency measures, health and safety and individual work tasks.

CNSC staff will 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.

#### **Staffing Contingency Plan**

The work rotation for the Matoush Project will be 14 days in and 14 days out. The staffing contingency plan identifies positions that must be staffed at all times. These positions include Project Manager, Environmental Technician, Radiation Technician, Health at Work Coordinator, Security Guard and emergency response team members.

### 3.2.2 Conclusion

CNSC staff conclude that the applicant's proposed measures for personnel qualifications and competencies are sufficient to meet the applicable regulatory requirements under the *Nuclear Safety and Control Act* for the issuance of a uranium mine construction licence.

The information provided in the application provides a credible demonstration that the applicant will ensure that personnel are qualified and competent to perform assigned work while carrying out site preparation activities.

### 3.2.3 Recommendation

CNSC staff recommend that the following standard licence condition be included in the licence:

*3.1 The licensee shall implement and maintain safety and control measures to ensure that personnel are qualified and competent to perform assigned work.*

## 3.3 Operating Performance

The Safety and Control Area "Operating Performance" provides an overview of the conduct of the proposed activities to be licensed and the mitigation measures and controls that will enable effective performance. Because this project is a new-build, no operating performance data is available for discussion. Therefore, this SCA discusses the applicant's existing exploration activities, their performance in carrying out the environmental assessment and licence review, the project design and control for the new facilities to be constructed and CNSC staff's key performance indicators.

### 3.3.1 Existing Exploration Activities

CNSC staff conducted a site visit to the Matoush Project on September 9, 2010. The core logging and sample preparation areas, core storage area, recycled waste storage area, infirmary, offices, and camp were observed. The site was well organized and well kept. Core handling and storage showed clear evidence of good radiation protection controls and practices. This included localized dust control, increased ventilation and personal protective equipment and gamma dosimeters. Brochures and pamphlets on radiation and radiation protection were available to workers. This was a pre-licensing verification and highlighted, in general, that good practices were being followed and there was an overall commitment to safety.

### 3.3.2 Follow-up to Environmental Assessment and Licence Review

Strateco submitted a preliminary project proposal for an environmental review to satisfy federal-provincial and territorial legal requirements. This process provided a review of the environmental impact implications of the project and informed the CNSC licensing process with respect to the development of operating and regulatory controls in the environmental protection features and malfunction

areas. CNSC staff presented a Comprehensive Study Report (CSR) in Commission Member Document CMD 11-H120, in July 2011, to the Commission Tribunal. The Commission issued its decision on the CSR on July 29, 2011.

The environmental assessment results and recommendations required Strateco to modify certain aspects of their design to further mitigate projected environmental impacts. In addition, certain assumptions and uncertainties were identified as candidates for further validation in the areas of: treated effluent quality and quantity, waste rock management, conventional health and safety, radiation protection and emergency measures. Although none of these risks were considered elevated by CNSC staff, a conservative and protective approach was adopted in establishing the regulatory controls. These concerns are discussed further in section 3.4 Safety Analysis.

CNSC staff were satisfied with the responses provided by the Strateco team and their consultants on the project modifications. The project program elements are described in Addendum B of this document and are aligned to the CNSC Safety and Control Areas. The summary confirms that the licence application documentation meets the regulatory requirements of the *Nuclear Safety and Control Act* and its regulations.

### **Proposed Advanced Exploration Project**

Strateco's proposed project involves the construction of surface support infrastructure, excavation of an exploration ramp including two exploration drifts in waste rock, definition drilling of the mineralized zone, and up to three excavations through the mineralized zone. The proposed underground exploration drilling will delineate the uranium mineralization. Sampling the mineralized zone by mining 750 tonnes will obtain geotechnical and hydrological information to develop a mining method.

The advanced exploration project schedule includes approximately 27 months of construction activities and 12 months of advanced exploration activities. A decision on the next phase will be made after a feasibility study is completed.

The construction work proposed is to expand existing infrastructure and to build new infrastructure to support the advanced exploration activities. The schedule is sequenced to start with surface works first and then proceeds to underground construction, and finally the advanced exploration activities. The surface work is planned in a sequence to start with the ramp portal excavation in order to minimize potential blast damage from this development.

The descriptions and figures provided in section 3.5 Physical Design presents the project elements.

### **3.3.3 Project Design and Controls**

Strateco has acquired the services of a number of consultants with experience in uranium mining, milling and effluent treatment. The designs of the facilities supporting the advanced exploration project were created by external consultants. The design process considered minimization of radiation doses to workers,

protection of the environment, health and safety of workers and fire prevention and protection systems.

The main consultants/contractors include the following:

- Scott Wilson Roscoe Postle Associates Inc. (design of access ramp, water management, mine ventilation);
- Genivar (General Contractor);
- Thyssen Mining (Mining Contactor);
- Melis Engineering (design of the Development Ramp Water Treatment Plant);
- Golder Associates; and
- Senes Consultants Limited.

Strateco will provide the overall supervision and oversight of the project's execution and provide engineering measurements and control. Strateco has 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 are satisfied that the Strateco team is qualified to carry out the licensed activities.

### **3.3.4 CNSC Staff Compliance Program**

CNSC staff have established a compliance program which consists of on-site inspections, desktop reviews and promotional activities. The compliance plan is determined on an annual basis and is aligned with the Matoush Project schedule. As discussed previously, verification criteria have been established for each licence condition and also include the Safety and Control Areas that are applicable to the licensed activities. The Licence Conditions Handbook provided in Part 2 of this CMD is proposed.

A Licence Conditions Handbook has been developed to articulate and codify the CNSC staff expectations for compliance with the *Nuclear Safety and Control Act*, its regulations and the application for the site preparation and construction licence. CNSC staff activities are planned to promote a nuclear safety culture with the applicant, transparency with the local communities, and establish a working relationship with the provincial departments of labour and environment.

The results of the compliance activities will be presented to the Commission at a meeting to be scheduled at the mid point of the licence term.

### **3.3.5 Conclusion**

In general, for existing exploration activities, good practices were being followed and there was an overall commitment to safety.

CNSC staff were satisfied with the responses provided by the Strateco team and their consultants on the project modifications that resulted from the environmental assessment and licensing review.

The project schedule proposed is well planned and ensures that mitigation measures are in place prior to the construction of the access ramp and the advanced exploration activities.

Adequate provisions have been made for the health and safety of workers and the protection of the environment.

CNSC staff conclude that the applicant's proposed measures for operating performance are sufficient to meet the applicable regulatory requirements under the *Nuclear Safety and Control Act* for the issuance of a uranium mine construction licence.

### 3.3.6 Recommendation

As a result of CNSC staff's review and assessment, the following licensed activities are proposed to be included in Section IV of the proposed licence:

- Prepare a site for and construct a nuclear facility (hereinafter "the facility"). The facility consists of an underground exploration mine, waste management systems and associated site facilities located at what is commonly known as the Matoush Project, Quebec, the location of which is more particularly described in Appendix A to this licence;
- Operate and modify the underground exploration mine to conduct exploration drilling and to mine three excavations through the Matoush uranium deposit;
- Operate an effluent treatment plant and associated facilities; and
- Decommission the nuclear facility.

CNSC staff recommend that the following standard uranium mine licence conditions be included in the licence:

- 2.4 *The licensee shall, where the effluent concentration reaches or exceeds the discharge limits specified in Appendix B to this licence, report to the Commission or a person authorized by the Commission within 24 hours the fact that the discharge limit has been reached or exceeded;*
- 2.5 *The licensee shall, within 24 hours of becoming aware that an action level specified in the Environmental Protection Code of Practice has been reached, notify the Commission or a person authorized by the Commission;*
- 2.6 *The licensee shall, within 24 hours of becoming aware of a release of a hazardous substance into the environment not authorized by the licence, report to the Commission or a person authorized by the Commission, the location and circumstances of the situation, and any action that the licensee has taken or proposes to take with respect to it;*
- 2.7 *The licensee shall, within 24 hours of becoming aware that the action level specified in the Radiation Protection Code of Practice has been*

- reached, notify the Commission or a person authorized by the Commission;*
- 2.8 *The licensee shall issue the records required by subsection 5(1) of the Radiation Protection Regulations to each person referred to in paragraph 27(a) of the Act, the Commission or a person authorized by the Commission, and the National Dose Registry (NDR) within 90 days after the end of each quarter of a calendar year;*
- 2.9 *The licensee shall submit to the Commission or a person authorized by the Commission by an annual report for the facility;*
- 2.10 *The licensee shall submit the results of the Environmental Monitoring Program and the Environmental Assessment Follow-up Program at a frequency and in a form acceptable to the Commission or a person authorized by the Commission; and*
- 2.11 *The licensee shall submit the results of the Radiation Monitoring Program at a frequency and in a form acceptable to the Commission or a person authorized by the Commission.*
- 4.1 *The licensee shall implement and maintain safety and control measures for the safe conduct of the licensed activities.*

### **3.4 Safety Analysis**

The Safety and Control Area “Safety Analysis” includes the systematic evaluation of the potential hazards associated with the proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

#### **3.4.1 Discussion**

##### **Human Health and Ecological Risk Assessment**

The applicant conducted a human health and ecological risk assessment to determine the current state of the environment, pre-development of underground exploration ramp and to assess or predict the potential impact of the underground exploration activities on people and the environment.

The conclusions reached on the effects of the project on the environment have been presented in CMD 11-H120 and are summarized as follows:

a. **Hydrogeology, Hydrology and Water Quality**

The Comprehensive Study Report (CSR) concludes that the infrastructure proposed for the characterization, separation and verification of waste rock is adequate and will reduce the risk of contaminant leaching into groundwater and the aquatic environment. The CSR recommends that further hydrological (surface water quality, flows and volumes) and hydrogeological (groundwater) characterization data should be collected and reported to CNSC staff regularly for review and consideration.



b. Surface Water Quality and the Aquatic Environment

CNSC staff are satisfied, having reviewed the more realistic estimates of effluent contaminant concentrations found in the revised Screening Level Risk Assessment, that discharge of effluent into Lake 5 is not likely to cause significant adverse effects on surface water quality for the probable, 40 m<sup>3</sup>/h or the 100 m<sup>3</sup>/h effluent discharge rates.

CNSC staff conclude that the information provided is sufficient to assess the potential impact of the alternative discharge location and agree with the conclusion that the discharge of the effluent to Stream 4-6 is not likely to result in significant impacts to surface water quality and subsequently to ecological receptors or to human health.

c. Human Health

CNSC staff are satisfied that discharge of effluent into Stream 4-6 is not likely to cause significant adverse effects on human health for the probable (40 m<sup>3</sup>/h) and upper bound (100 m<sup>3</sup>/h) cases of effluent discharge rates.

d. Air Quality

Airborne emissions for the Matoush Project are expected to be very low. Minimal, if any, residual effects are expected. The CSR concludes that after the proposed mitigation measures and follow-up monitoring conditions are in place, the Matoush Project is not likely to cause significant adverse environmental effects to air quality.

e. Terrestrial Environment

Potential sources of impacts to terrestrial plants and wildlife identified by Strateco Resources Inc. include deforestation, dust, lighting, noise, and vibrations. The exploration activities are highly limited spatially and not expected to result in a high degree of disturbance. Following application of appropriate mitigation measures, potential physical and sensory disturbance associated with exploration activities at the Matoush site are not expected to cause significant adverse effects to the terrestrial environment. The primary source of contaminant release from the Matoush Project is via the treated effluent.

Therefore, terrestrial receptors, particularly those with little association to the aquatic environment, are not expected to receive a measurable exposure to releases from the Matoush Project.

CNSC staff conclude that the proposed project is not likely to cause significant adverse environmental effects.

Environmental Risk from Transportation and Surface Operations

The environmental risks associated with transportation and surface operations were examined. The conditions assessed included spillage or loss of containment of hazardous goods during transport or storage, fires/explosions, disturbance of sensitive habitat, vehicle accidents, and interactions with wildlife.

Several moderate risks were identified that require due diligence to prevent and/or mitigate the risks. Many of them are associated with the use and containment of fuels.

None of the operational conditions presented an unacceptable level of environmental risk.

#### **Radiation Doses to Workers**

Radiation doses received by development miners, diamond drillers, and service personnel were calculated based on the proposed mine ventilation system, and reasonable and conservative estimates of host rock composition and water inflows. The potential upset conditions related to small groundwater fluxes and mineralized sources were all well controlled by adequate dilution provided by the proposed ventilation system.

#### **Mine Water Inflow Rate**

Based on information from existing drill holes interpretation by Golder Associates and experience with fully developed uranium mines in competent bedrock similar to the Matoush site, a groundwater inflow rate of 40 m<sup>3</sup>/h is conservatively estimated. Controlling the groundwater source by implementing proper ground control and barriers to groundwater infiltration (e.g., grout curtains, grout injection), lower inflow rates should be achievable.

The proposed development ramp is expected to intersect a fault zone. The rock mass quality in the fault zone is expected to be less competent and could be a preferential flow channel. As a precautionary measure, prior to advancing the mining face through the fault zone, geotechnical probe holes would be drilled to detect the rock mass quality and groundwater conditions of the zone. The potential water inflow would be assessed and ground support and inflow controls would be reviewed and implemented. Strateco has committed to ensuring that the procedures for advancing through any potential fault zones are developed and implemented prior to advancing the ramp through the fault.

#### **Development Ramp Water Treatment Plant Risk Assessment)**

The applicant conducted a systematic review of the Development Ramp Water Treatment Plant using a hazard and operability process. For each piece of equipment, potential adverse conditions were identified and assessed using process flow sheets, a risk matrix and battery limits. The probability of occurrence and severity of consequences were identified for each condition. The risk assessment resulted in a number of recommendations that were addressed in the detailed design of the Development Ramp Water Treatment Plant.

Several recommendations refer to operating procedures, instrumentation control and performance monitoring. The recommendations will be used to inform the development of the trouble shooting section of the DRWTP operating manual.

### **Risk Management Program**

Strateco has committed to developing, implementing and maintaining a risk management process designed to:

- Continually identify, evaluate and manage risks;
- Effectively communicate risks to the workforce;
- Train and encourage workers to identify and report risks;
- Train workers to manage risks; and
- An inventory of known risks has been compiled.

### **3.4.2 Conclusion**

CNSC staff's conclude that the proposed project is not likely to cause significant adverse environmental effects based on the results of the human health and ecological risk assessment.

The risks of transportation accidents can be managed with the current procedures and are considered low risk.

The radiation doses to workers for the advanced exploration activities are estimated to be low and the ventilation design is adequate to manage the sources of airborne radiation expected from this activity.

Procedures for advancing through any potential fault zones are developed and will be implemented prior to advancing the ramp through the fault.

The water treatment system has been designed with considerations to manage the operability risks.

CNSC staff conclude that the applicant has evaluated the potential hazards associated with the facility and has identified preventative measures and strategies to reduce the effects of the hazards. In addition, the applicant has proposed a program to continue to identify, evaluate and minimize risks.

### **3.4.3 Recommendation**

CNSC staff recommend that the licence contain the following standard condition:

*5.1.1 The licensee shall implement and maintain safety and control measures for risk assessment.*

## **3.5 Physical Design**

The Safety and Control Area "Physical Design" includes the process to develop engineered measures to eliminate or mitigate the effects of the project on the health and safety of persons and the environment.

### **3.5.1 Discussion**

The construction work proposed is to expand existing infrastructure and to build new infrastructure to support the advanced exploration activities. The schedule is sequenced to start with surface works first, and then proceeds to underground

construction of the access ramp, sub-levels and ancillary facilities and finally carry out the advanced exploration activities.

CNSC staff review of the physical design process and detailed preliminary design has concluded that the concerns identified from our technical review have been satisfactorily addressed in revised submissions. The physical design proposed meets best industry standards and provides sufficient flexibility to adapt to changing conditions. The safety and control measures proposed are conservative and protective.

### **3.5.2 Surface Construction**

Certain measures will be applied to the site preparation stage to enhance the environmental protection measures. These measures include:

- Organic matter is removed from the construction site and stockpiled for future use;
- Surface runoff collection systems will be installed to divert clean runoff water to minimize the potential for contamination;
- Sediment control traps near containment berms to prevent silt migration to nearby wetlands;
- A hydrology and hydrogeological monitoring program will be implemented which will, in part, monitor the performance of the containment systems; and
- The surface work is planned in a sequence to start with the ramp portal excavation in order to minimize potential blast damage from this development on other future installations.

Construction of surface facilities will be carried out by short-term contractors. Oversight of the contractors and quality assurance will be carried out by Genivar.

#### **Construction of the Mine Portal**

Entry to the underground mine will be through a mine portal. The overburden in the Matoush area consists of glacial till overlying inter-bedded fine and coarse sandstone bedrock. The overburden will be excavated to expose the bedrock. Bedrock will be mined out to create the access and first 30 meters of the underground ramp tunnel. Cable bolting will be used to reinforce the back (roof) of the tunnel until the crown pillar (rock above the tunnel) thickness is at least 10 meters, or more if the rock mass near the surface is not of sufficient quality. Once the excavation is complete, a corrugated steel arch culvert will be constructed over the ramp access.

#### **Clean and Special-waste Rock Pads**

Rock removed from the mine will be classified as clean rock or special-waste rock, based on the uranium content and other mineralogical properties. Clean rock may be used for construction purposes, such as for building roads. The clean rock is stored on the clean rock storage pad. Special-waste rock is stored on the lined special-waste rock storage pad.

Construction of the clean and special-waste rock pads will commence following the completion of construction of the portal. It is not expected that special-waste rock will be encountered during the excavation of the portal, however, if it is, it will be stored on a temporary lined stock-pile until the special-waste storage pad is constructed.

Segregation of waste rock will be based on radiometric scanning and visual observation. Verification monitoring of rock placed on the piles will be carried out by Strateco geological staff to ensure that rock is being placed on the correct pile.

Runoff water from the special-waste rock pad will be collected and directed through ditches to the Development Ramp Water Treatment Plant (DRWTP). The runoff water coming from the clean waste rock pad is collected in a ditch and directed to a catchment basin (catch basin "B"). Depending on its quality, it will be released into the environment or sent to the DRWTP.

The initial review by CNSC staff raised concerns with the quality of construction of impermeable liners for special-waste rock piles, ponds and ditches. To address this concern, quality assurance and quality control for materials and construction of liners will be overseen by professional engineers employed by Genivar and will be regularly inspected by Strateco.

CNSC staff were also initially concerned that the assessment of the geochemical characteristics of waste rock was based on a discrete number of samples from a limited number of borehole locations. To address CNSC staff's concern, Strateco has committed to carrying out a waste rock characterization program during ramp development. As the development ramp descends through different waste rock types, samples will be analysed to increase the certainty of the characterization work. Progress of this work will be reviewed by CNSC staff and the results reported in the annual report to CNSC staff.

#### **Waste Rock Storage Pad**

Waste rock is excavated rock that contains low levels of radiological or non-radiological contaminants. It is estimated that about 130,000 m<sup>3</sup> of waste rock will be removed from the mine. The waste rock will be placed on a 14,300 m<sup>2</sup> unlined compacted till pad which is surrounded by a ditch (Waste Rock Storage Pad). The runoff water coming from the waste rock pad is collected by a ditch and directed to a catchment basin (Catch Basin "B"). Waste rock that meets specific quality requirements may be used for construction of roads and site infrastructure.

#### **Special-waste Storage Pad**

Special-waste rock is excavated rock containing between 0.03% and 0.10% U<sub>3</sub>O<sub>8</sub>. It is estimated that 8,000 m<sup>3</sup> with an average grade of 0.04% U<sub>3</sub>O<sub>8</sub> will be removed from the mine. Special-waste rock will be stockpiled on a pad lined with a High Density Polyethylene (HDPE) membrane (1.5 mm thick), and surrounded by an embankment and a ditch also protected by the liner. Runoff water that has been in contact with the special-waste rock will flow into the ditch and then by gravity to the DRWTP. The total surface of this storage area is 3,000 m<sup>2</sup>.

The design proposed follows best industry practice and incorporates the possibility of expansion, if required.

### **Development Ramp Water Treatment Plant**

The Development Ramp Water-Treatment Plant (DRWTP) includes two mine water storage ponds, the treatment plant building which houses mixing launders and chemical mixing and storage tanks, two treated mine water sedimentation ponds and a pipeline and control structure at the discharge location.

Construction of the DRWTP and the other surface facilities is expected to take six months. Project management for the construction of surface facilities will be carried out by a consultant. Technical oversight of construction, commissioning and development of the operating manual for the DRWTP will be carried out by Melis Engineering. Employees of Thyssen Mining will operate the plant.

Commissioning of the plant must ensure that the plant meets design operating conditions and the final treated effluent will not reach or exceed the effluent discharge limits in the licence.

Operation of the DRWTP will be controlled by the Environmental Code of Practice. The quality of treated water at various locations in the treatment circuit will be measured and adjustments made to plant operations based on this information. Specific values for certain analytes will be identified (administrative levels) that indicate above average conditions but still within the normal range.

Initial treated effluent action levels have been proposed. These parameters, when activated, will indicate a potential loss of control of the effluent treatment process. Upon reaching an action level, the operators must investigate to determine cause, notify CNSC staff and submit a report on the investigation findings.

In addition to the action level controls, a freeboard control of 0.5 meters (distance from water level to top of embankment) must be maintained in the storage and settling ponds to allow adequate storage during a probable maximum precipitation (PMP) event to maintain structural integrity of the containment structures.

CNSC staff will review the construction and commissioning of the DRWTP to verify that the effluent quality will meet design objectives, that plant operators have been trained to operate, maintain and trouble shoot the facility, and that appropriate control monitoring program and administrative and action levels have been identified as part of an on-site inspection.

### **Surface Runoff Collection System**

Surface runoff is collected in two catch basins prior to discharge to Lake 5. Catch Basin “A”, collects surface runoff from the northern side of the portal [6.5 hectares (ha)] and allows suspended solid to settle. This water will not come into contact with radioactive material or other contaminants. After confirmation by water sampling, the water will be released to the environment.

The surface runoff from the southern side of the portal (5.6 ha) flows past the clean rock pad and the DRWTP and could potentially become contaminated. A series of ditches directs this water to the Catch Basin “B”. This water will first be

analyzed and depending on the results, will be directed to the DRWTP or released in the environment.

### **Hazardous Waste Management Facilities**

Hazardous substances consumed or produced at the site include petroleum products, used oil or oil recovered from maintenance or a small spill, glycol, propane, explosives or chemical products.

Hazardous materials will be stored in the following areas:

- Petroleum park for the storage of diesel and gasoline;
- Contractor garage (small amounts of lubricant) and outside containment area for storage of used oil;
- Propane park for storage of propane;
- Containers for the storage of used glycol from generators, and contaminated soils;
- Power plant for the storage of oil and used oil for the maintenance of the generators;
- Megadome warehouse for storage of chemicals required to treat contaminated water and drinking water; and
- Surface and underground magazines for storage of explosives.

Construction of these facilities will be carried out by short-term contractors and managed by a consultant and Strateco.

Drainage from the petroleum park will be monitored prior to release to the environment. Contaminated water will be collected in plastic totes and stored until sent off-site for disposal by an accredited transporter.

Absorbent materials and barrels will be available to clean up small spills. Contaminated materials will be placed in sealed containers and stored at the landfill. If the quantity of contaminated soil is large, the excavated material will be placed on a liner and covered with a second liner to prevent the contaminated soil from coming into contact with water.

Strateco will conduct regular inspections to verify proper storage and disposal.

### **Power Generation**

The power plant will provide electricity for all service and underground operations and installations. The power plant will contain 1,500 kW primary generators. There will also be a 500 kW generator on standby which can be used to provide power when operations are shut down and there is a small power demand. A spare location will be available for the installation of an extra generator should the demand be higher than expected or if a second auxiliary generator is required.

The power system was designed so that there is always a 1,500 kW generator on standby if one of the operating generators fails. This standby generator will allow rotation for maintenance.

### **Fuel Storage**

Petroleum products are stored in tanks within a petroleum storage area (fuel park) that is surrounded by a containment berm. The fuel park was located and designed according to provincial regulations (Loi sur le bâtiment: Code de construction, Code de sécurité; Loi sur la qualité de l'environnement: Règlement sur les matières dangereuses).

The fuel park and the containment berm are covered with a hydrocarbon-resistant liner that will prevent spilled material from seeping into the ground. Tanks in the fuel farm are double walled and equipped with overfill prevention valves. Daily inspection of the fuel farm will include observation of evidence of leaks and spills.

The fuel farm will also have a Programmable Logic Controller (PLC) system that will monitor fuel levels but will not control the filling of the tanks. There will be indicator lights installed on local junction boxes that will warn the operator of low or high levels in the fuel tanks.

### **Other Surface Facilities**

Other surface facilities that will be constructed include:

- Strateco office;
- Power plant;
- Surface run-off diversion ditches and collection ponds;
- Potable water and septic systems;
- A landfill site for domestic solid waste that cannot be recycled or reused (located off-site and authorized by a provincial permit); and
- A composter for kitchen waste.

## **3.5.3 Underground Construction**

Design of the underground mine was carried out by Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA). Adaptive changes to the design of the mine will be carried out by Strateco's Mine Engineering Department. Strateco has committed to implementing and maintaining a design process that will ensure that the design is adapted as required to ensure ongoing protection of workers and the environment.

Major changes to the mine design will be reviewed by Scott Wilson RPA and be submitted to CNSC staff for review and final acceptance.

As an additional measure of construction oversight, it is expected that the Quebec Mining Association will conduct third party audits of the mine activities and safety.



### **Construction of Development Ramp and Mine Infrastructure**

The mine plan is to construct a ramp (decline) to access and develop horizontal diamond drill drifts located 165 meters (m) and 300 m below surface (termed the 165 m level and 300 m level, respectively) and ventilation raises from the bottom of the mine to the surface. First, the entry to the mine (the Portal) will be constructed (3 months). Further development of the ramp will not begin until surface support facilities have been completed (6 months). Surface support facilities include rock storage pads, the mine water treatment plant and associated ponds, and surface mine ventilation fans and heaters. Construction of the ramp and the underground levels will take from 18 to 24 months.

The development ramp will be constructed through waste rock that is not radioactive. It is possible that the excavation will encounter small deposits of radioactive material or that water entering the mine will release radioactive radon gas to the mine workings. Radiation monitoring will be carried out to detect the presence of airborne radon gas, radon progeny and long-lived radioactive dust and gamma radiation. The Radiation Protection Code of Practice specifies the appropriate responses to measured radiation levels that range from investigating the cause to stopping work.

One of the objectives of the underground exploration program is to improve the understanding of hydrogeological and geotechnical conditions, including local fault zones that will affect the inflow and outflow of groundwater to the underground workings and govern the ground stability. Strateco has committed to conducting ongoing monitoring and geological mapping to characterize groundwater and geological conditions and to implementing standard mining practices to provide ground support and control the rate of water inflow.

The following briefly discusses the main features of the mine ventilation, ground support system, and mine dewatering design.

### **Mine Ventilation System**

The mine ventilation system is comprised of fans, heaters, associated ducting and electrical and control systems.

The following criteria were considered when developing the design:

- The design must consider all mining and equipment systems, ventilation air transit time, and total radon emissions from all potential sources;
- Primary airways serving as fresh air intakes should be developed in waste rock;
- Maintaining an appropriate pressure profile in the mine will be critical. The use of a push-pull system will ensure that positive pressure is maintained in the working area to prevent recirculation;
- To ensure that relatively high air velocities can be readily maintained, main airways will be kept as free from mining activity as practicable; and

- The number of personnel required to work or travel in any return airway will be kept to a minimum.

As mine development progresses, the ventilation system will progress through six configurations. The ventilation system will be converted to a flow through system before advanced exploration activities begin.

The ventilation requirements and required monitoring and performance objectives are identified in the ventilation code of practice which is part of the Radiation Protection Program.

### **Ground Support System**

The proposed ramp development will be excavated in competent waste rock. On average, rock mass quality for the units encountered during the access ramp development can be classified as good quality with some zones of lower quality such as at rock unit contacts or when intersected by a fault zone. Strateco has conducted preliminary underground stability and pillar stability analyses. Ground support guidelines are provided for each geomechanical domain based on the rock mass quality assessment, the depth and size of excavations, and the stability analyses. Strong rigid support consisting of bolting and screening on a 1.2 m x 1.2 m and 1.6 m x 1.6 m pattern depending on the rock unit will be applied. Shotcreting, cable bolting and bracing may be considered for wide excavations and fault zones depending on local rock mass and hydrogeological conditions.

Strateco has committed to conducting geological mapping during the development of the ramp to confirm the geological conditions and to establish the most suitable ground support for any given ground conditions.

CNSC staff were concerned that the argillaceous fault could provide a significant pathway for groundwater to report to the ramp excavation.

To address CNSC staff's concern, Strateco has committed to drilling geotechnical probe holes to investigate the ground and water conditions prior to advancing the ramp through the argillaceous fault. The information collected will also be used to determine the required ground support measures.

### **Mine Dewatering System**

Design factors for the pumping and dewatering system include flexibility, control of radon emissions, and maintenance of an effective water capture system. Pumping requirements were based on a maximum anticipated combined ground and process water flow of 100 m<sup>3</sup>/h.

Small temporary sumps will be excavated at regular intervals during the development of the exploration ramp. The pumping system during the ramp development will utilize submersible pumps. The temporary sump design will provide approximately 75 m<sup>3</sup> of capacity per sump. These sumps will be ventilated with auxiliary fans and ducting.

The main sump, located below the 300 m level, will consist of four sumps, including a primary sump for initial settling and sludge removal; two dirty water

sumps for further settling and decantation; and a clean water sump from which water will be pumped to the surface storage ponds via a 6-inch steel pipe.

The main sump pumping system will consist of three multi-stage pumps (an operating pump, a backup pump, and a third pump for maintenance requirements) located at the main sump.

Each pump will be capable of pumping 100 m<sup>3</sup>/h. This will ensure continual availability of an operating and back-up pump.

An alarm system will be installed to monitor the pump operation as well as the sump level controls so that mine personnel will be promptly advised of malfunctions. Monitors with high visibility indicator lights will continuously monitor radon progeny.

#### **Sealing or Grouting Exploration Drill Holes**

During past exploration, drill holes have intersected the area where underground mine workings will be developed. If these holes are not grouted or sealed, they can form a pathway for inflow of ground and surface water into future mine openings. This is a potential hazard because it can lead to the inflow water that can disrupt the mining activities. In addition, the water can carry radioactive radon gas and progeny into the mine atmosphere.

Strateco has indicated that drill holes that intersect uranium mineralization will be plugged throughout the length of and immediately above the intersection. Drill holes that do not intersect mineralization will be plugged at the surface. Holes drilled from the underground workings during underground exploration will be capped or plugged.

A standard uranium mine licence condition is recommended that requires the licensee to seal or grout drill holes.

#### **Underground Exploration and Excavations through the Mineralized Zone**

Exploration drilling through the mineralized zone will begin once the ramp and levels are fully developed and flow through ventilation has been established (approximately two and a half years after the licence is issued). During this phase, air will flow down the access ramp, along the lateral developments and up the exhaust air raise to the surface.

CNSC staff have reviewed conceptual plans that describe underground exploration and excavations through the mineralized zone to verify that the appropriate infrastructure will be developed to support those activities. CNSC staff will review the detailed information and work plans prior to the implementation of this phase of the project.

### **3.5.4 Conclusion**

CNSC staff find that the provisions for water diversion, organic storage, sediment traps and construction sequence enhances the environmental protection measures for site preparation.

The quality of construction of impermeable liners for special-waste rock piles, ponds and ditches will be addressed by inspections by qualified professionals and the effectiveness of the installations will be regularly inspected by Strateco.

The assessment of the geochemical characteristics of waste rock will be addressed by a waste rock characterization program during ramp development. The sampling of different waste rock types and the number of samples collected and analysed will increase the certainty of the characterization work.

The action levels and administrative levels proposed will ensure treated effluent quality is protective to the receiving environment. To maintain structural integrity of the containment structures a freeboard control of 0.5 meters will be in place.

A design process will be adapted as required to ensure ongoing protection of workers and the environment. Third-party reviews will be used to confirm on-site assessments.

Ongoing monitoring and geological mapping will be carried out to characterize groundwater and geological conditions. Standard mining practices will be used to provide ground support and control the rate of water inflow.

Drilling geotechnical probe holes to investigate the ground and water conditions prior to advancing the ramp through the argillaceous fault will be carried out.

Adequate ventilation has been designed to control mine gases and any potential radioactive groundwater and mineralization encountered during the ramp development. A flow through ventilation system will be installed for the advanced exploration activities consisting of diamond drilling. The material from the ore testing will be stored underground in a specially designed storage area.

CNSC staff conclude that the proposed physical design of the facility and the mitigative measures described are conservative and protective. The effect of the project on the health and safety of persons and the environment is expected to be low.

### **3.5.5 Recommendation**

CNSC staff recommend that the following standard licence condition be included in the licence:

- 4.2 *The licensee shall ensure that all holes drilled for the purpose of delineating the uranium orebody, from whatever source, are grouted or sealed.*
- 6.1 *The licensee shall implement and maintain safety and control measures for physical design.*

## **3.6 Fitness for Service**

The Safety and Control Area “Fitness for Service” includes activities that impact on the physical condition of systems, components and structures to ensure that they remain effective over time. This includes programs that ensure that all equipment is available to perform its intended function when called upon to do so.

### 3.6.1 Discussion

As a new facility, the physical condition of systems, components and structures are not expected to deteriorate significantly over the proposed licence period. However, an effective preventive maintenance program is required to ensure that critical equipment remains fully functional.

The applicant has committed to carrying out preventative maintenance on equipment including the underground ventilation fans, firefighting equipment, and underground and surface mobile equipment. Additional information on aspects of fitness for service was provided throughout the application. For example, there is a commitment to ensure that vehicles are maintained to ensure emissions of hydrocarbons meet provincial regulations and are ALARA. Information is also provided on testing the mine warning system.

It is CNSC staff's expectation that Strateco will develop within six months of receiving the licence a document describing the fitness for service program for safety critical systems. This includes but is not limited to:

- Testing and calibrating of alarm systems;
- Testing and maintenance of vehicles to control emissions;
- Testing and maintenance of fire protection systems; and
- Calibration and maintenance of monitoring instruments.

### 3.6.2 Conclusion

CNSC staff conclude that the applicant's proposed measures for fitness for service are sufficient to meet the applicable regulatory requirements under the *Nuclear Safety and Control Act* for the issuance of a uranium mine construction licence.

### 3.6.3 Recommendation

CNSC staff recommend that the following standard licence conditions be included in the application:

- 7.1 *The licensee shall implement and maintain safety and control measures for the maintenance of systems, equipment and devices which includes periodic inspections and testing.*

## 3.7 Radiation Protection

The Safety and Control Area "Radiation Protection" includes the implementation of a Radiation Protection Program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination and radiation doses received are monitored, controlled and kept as low as reasonably achievable (ALARA).

### 3.7.1 Discussion

#### ALARA

The applicant has established a policy asserting that they will comply with all applicable regulatory requirements and through the management and control of potential exposures, keep radiological doses as low as reasonably achievable (ALARA). This commitment is supported by an ALARA program that will set up an ALARA team, promote participation and communication between the ALARA team and workers, ensure active participation of workers in the ALARA program and reduce the exposure of workers to all sources of radiation to levels that are ALARA.

#### Radiation Risks

The potential radiation risk to workers from the Matoush Project will be from radon progeny in the underground workings during the advanced exploration activities. Radon could enter the mine workings if the development work unexpectedly encounters mineralized material, be carried into the workings by groundwater or enter the workings through exploration drill holes. Gamma radiation and long-lived radioactive dust could also, to a lesser extent, contribute to workers total effective dose.

Potential radiation doses to workers have been predicted using conservative assumptions. The total effective dose for the most exposed work group (diamond drillers) is predicted to be 2.3 mSv/yr. This is well below the regulatory limits for the effective dose to Nuclear Energy Workers of 50 mSv/yr and 100 mSv over a five-year dosimetry period.

#### Radiation Protection Program

Strateco has proposed a Radiation Protection Program overseen by the Safety Coordinator Radiation Protection. The proposed program includes the monitoring of radiation levels and the radiation doses received by workers. A Code of Practice identifies the required responses and reporting requirements for escalating measurement values for radon progeny, gamma radiation, long-lived radioactive dust, radon gas and uranium concentrations in urine. An action level is a specific dose of radiation or other parameter, that if reached, may indicate a loss of control of part of the licensee's Radiation Protection Program and triggers a requirement for specific action to be taken.

The action levels proposed for the Matoush Project are 0.25 mSv total effective dose in one week and 1.25 mSv total effective dose in three months.

### 3.7.2 Conclusion

CNSC staff conclude that the proposed Radiation Protection Program is comprehensive and more than adequate to manage the radiation risks posed by the activities at the site. The proposed Radiation Protection Program should ensure that radiation exposures and doses received by workers will be kept below regulatory dose limits and as low as reasonably achievable.

### 3.7.3 Recommendation

CNSC staff recommend that the following standard licence condition be included in the licence:

*8.1 The licensee shall implement and maintain safety and control measures for radiation protection.*

## 3.8 Conventional Health and Safety

The Safety and Control Area “Conventional Health and Safety” covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

### 3.8.1 Discussion

CNSC staff expect uranium mines and mills to develop, implement and maintain effective safety programs to promote a safe and healthy workplace for employees and to prevent and reduce to a minimum the incidence of occupational injuries and illnesses.

Licensees are expected to 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. In addition, licensees must have 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.

The regulation of conventional health and safety in uranium mines and mills is the jurisdiction of Human Resources and Skills Development Canada (HRSDC) and the CNSC. In addition, the Commission santé et sécurité au travail (CSST) regulates the health and the safety of mine workers in Quebec.

The proposed Conventional Health and Safety Program is designed to meet the regulatory requirements administered by HRSDC, CNSC and CSST. CNSC staff will use the Joint Regulatory Group format to meet with HRSDC and CSST to identify ways that we can work together.

#### **Health and Safety Risks**

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. The risk assessment conducted on the advanced exploration project has determined a risk inventory.

#### **Conventional Health and Safety Program**

Strateco has proposed a Conventional Health and Safety Program that includes the communication and promotion of safety, health and medical surveillance, personal protective equipment, and safety inspections and surveillance.

It is expected that the Occupational Health and Safety Committee (OHSC) will play a central role in identifying the personal protection measures and conduct

workplace inspection of the site. The OHSC will hold regular meeting and document their findings and recommendations.

### 3.8.2 Conclusion

CNSC staff conclude that the applicant's proposed measures for conventional health and safety are sufficient to meet the regulatory requirements under the *Nuclear Safety and Control Act* and associated regulations for the issuance of a licence. The information provided in the application provides a credible demonstration that the applicant will make adequate provision for the protection of workers while carrying out site preparation and construction activities.

### 3.8.3 Recommendation

CNSC staff recommend that the following standard licence condition be included in the licence.

*9.1 The licensee shall implement and maintain safety and control measures for conventional (occupational) health and safety.*

## 3.9 Environmental Protection

The Safety and Control Area "Environmental Protection" covers programs that identify, control, and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.

### 3.9.1 Discussion

#### *Environmental Protection Program*

The objectives of Strateco's Environmental Protection Program are to:

- Meet regulatory requirements;
- Determine the environmental baseline and potential site contributions to contaminant levels in the receiving environment;
- Verify the quality and quantity of effluent releases from the facility;
- Verify the validity and effectiveness of models used to predict environmental effects;
- Monitor the receiving environment including water, air, soil and biota; and
- Identify potential environmental problems and implement remedial measures.

These objectives will be met by providing environmental awareness training, conducting daily environmental inspections to verify adherence to control practices and conducting an environmental monitoring program.



### **Environmental Baseline**

Baseline environmental data has been collected and reported in the environmental assessment. During the assessment, CNSC staff identified some gaps in the baseline information, in particular, with regards to the aquatic baseline. While CNSC staff determined that the information was sufficient to predict effects of the project on the environment, it is not sufficient to adequately assess possible changes in the environment resulting from the proposed licensed activities.

Strateco has committed to completing a program to collect additional baseline data prior to discharging any treated effluent to the environment. CNSC staff will continue to work with Strateco to finalize monitoring requirements for groundwater and surface water hydrology and quality.

### **Proposed Effluent Discharge Rate and Quality**

The Matoush Project is an underground exploration project and, as such, is not subject to the *Metal Mining Effluent Regulations* (MMER). Despite this, 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 and is below quality objectives for molybdenum, uranium and selenium. CNSC staff recommend including the MMER limits in the licence.

A control monitoring program has been proposed for the operation of the DRWTP. This program is designed to measure pH and total suspended solids at points in the treatment circuit. An Environmental Code of Practice which includes action levels and administrative levels for these elements has been proposed. Reaching or exceeding an administrative level warns the operator that levels are higher than normal and the reasons should be investigated.

The following is the initial administrative and action levels to be applied to the treated effluent being discharged to the environment:

### **Proposed Treated Effluent Administrative Levels**

Administrative levels have been set to approximately two-thirds of Strateco's discharge concentration objectives (Maximum Monthly Mean).

<b>PARAMETERS</b>	<b>ADMINISTRATIVE LEVEL</b>
Total Suspended Solids	10 mg/L
pH	pH ≤ 6.5 or pH ≥ 8.5

In the event that the final effluent administrative level is exceeded, the following actions will be taken:

1. Report the incident via fax or e-mail to the CNSC Project Officer within 72 hours;
2. Investigate immediately to determine the cause of the exceedance;

3. Take the appropriate steps to return and maintain all contaminants in the effluent below the specified administrative levels; and
4. Complete the investigation report and keep it on file. This information will be reported in the annual report to be submitted on September 30<sup>th</sup> of each year.

### **Action Levels**

When an administrative level is triggered on the effluent, a process is initiated to assess whether the treatment process is indicating a loss of control, and thus approaching an action level. This is conducted by analyzing more frequently at the treatment plant for the same parameters of the administrative levels. If the average of the sampling control stations of the treatment plant exceeds the administration level concentrations, then an action level has been reached. This action level would indicate a loss of control in that the effluent treatment process had been unable to return to routine conditions following the initial administrative level exceedance.

In the event that the action level is exceeded, the following actions will be taken:

1. An investigation will be initiated to determine the ongoing cause;
2. Corrective actions will be immediately taken to return and maintain the concentrations of all contaminants in the effluent to levels below the specified level;
3. Notify 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
4. Prepare and provide a summary investigation report to the Quebec Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP) and CNSC staff of the actions taken to remedy the situation and prevent recurrence. This report shall be submitted within 30 days of the incident.

The final effluent discharge can be closed at any time and ponds could be left to slowly fill. If full capacity is reached then overflow will be returned underground.

### **Environmental Monitoring Program**

Strateco has proposed an Environmental Monitoring Program to ensure releases to the environment remain within an acceptable range and that there are no significant adverse effects on the surrounding environment. The program includes monitoring:

- Air;
- Final treated effluent;
- Surface runoff;
- Groundwater;
- Surface water;
- Benthic invertebrates community structure;

- Sediments; and
- Hydrology.

Environmental monitoring results must be submitted to CNSC staff within 90 days of the end of the quarter in which they were collected and an annual assessment of the monitoring results must be submitted to CNSC staff by September 30<sup>th</sup>, each year.

Strateco plans to evaluate and revise the Environmental Monitoring Program annually based on the annual assessment of the environmental monitoring results. Proposed revisions will be reviewed by CNSC staff prior to their implementation.

Environmental effects from the discharge of final treated effluent to the downstream environment will 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 will be compared to baseline data and data collected at unaffected reference stations. If significant differences are identified further studies will be carried out to determine the cause of the differences and their significance. If required, remedial actions will be carried out.

CNSC staff and the Quebec Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP) have provided Strateco with comments on their proposed Environmental Monitoring Program and will continue to provide regulatory oversight as they finalize the program and implement it.

### **3.9.2 Conclusion**

CNSC staff conclude that the applicant's proposed measures for environmental protection are sufficient to meet the regulatory requirements under the *Nuclear Safety and Control Act* and associated Regulations for the issuance of a uranium mine construction licence.

The information provided in the application and commitments to provide further information and analysis is a credible demonstration that the applicant will make adequate provision for the protection of the environment while carrying out authorized activities.

### **3.9.3 Recommendation**

CNSC staff recommend that the following standard conditions be included in the licence:

*10.1 The licensee shall implement and maintain safety and control measures for environmental protection.*

10.2 *The licensee shall where the effluent concentration reaches or exceeds the discharge limits specified in Appendix B to this licence, immediately investigate and take corrective action to ensure that the effluent concentration is maintained below the discharge limits.*

CNSC staff recommend that the following site specific condition be included in the licence:

15.1 *The licensee shall implement and maintain an environmental assessment follow-up program.*

15.2 *The licensee shall compile in a single document the environmental baseline data and submit the document for CNSC staff review within 12 months from the issuance of the licence.*

CNSC staff recommend that the following effluent discharge limits be included as Appendix B to the licence:

**APPENDIX B**  
**AUTHORIZED EFFLUENT DISCHARGE LIMITS**

DELETERIOUS SUBSTANCE	MAXIMUM AUTHORIZED MONTHLY MEAN CONCENTRATION	MAXIMUM AUTHORIZED CONCENTRATION IN A COMPOSITE SAMPLE	MAXIMUM AUTHORIZED CONCENTRATION IN A GRAB SAMPLE
Arsenic (mg/L)	0.50	0.75	1.00
Copper (mg/L)	0.30	0.45	0.60
Lead (mg/L)	0.20	0.30	0.40
Nickel (mg/L)	0.50	0.75	1.00
Zinc (mg/L)	0.50	0.75	1.00
Total Suspended Solids (mg/L)	15.00	22.50	30.00
Radium-226 (Bq/L)	0.37	0.74	1.11
Acid balance (as H <sub>3</sub> O <sup>+</sup> ) reported as pH	In a range of 6.0 to 9.5		
Acutely Lethal Effluent	0 %		

Notes:

- (1) Definition of Units: mg/L = milligrams per liter  
Bq/L = Becquerels per liter
- (2) All concentrations and activities are total values.

- (3) The above limits shall apply to all effluent discharged to the environment from the Development Ramp Water Treatment Plant.
- (4) “Monthly Mean Concentration” means the average value of the concentrations measured in all composite or grab samples collected from the final discharge point during each month when liquid effluent is released.
- (5) “Composite Sample” means:
  - (i) a quantity of effluent consisting of not less than three equal volumes or three volumes proportionate to flow that have been collected at approximately equal time intervals over a period of not less than seven hours and not more than 24 hours; or
  - (ii) a quantity of effluent collected continuously at a constant rate or at a rate proportionate to the rate of flow of the effluent over a sampling period of not less than seven hours and not more than 24 hours.
- (6) “Grab Sample” means a quantity of undiluted effluent collected at any given time.
- (7) “Acutely Lethal Effluent” means an effluent at 100% concentration that kills more than 50% of the rainbow trout subjected to it over a 96-hour period when tested in accordance with the acute lethality test.

### **3.10 Emergency Management and Fire Protection**

The Safety and Control Area “Emergency Management and Fire Protection” covers emergency plans and Emergency Preparedness Programs for emergencies and non-routine conditions. This also includes any results of exercise participation.

#### **3.10.1 Discussion**

Throughout the licence application, a number of design features, operational approaches and management and controls are identified that will contribute to the prevention of emergencies. The applicant has proposed an Emergency Measures Program and a Fire Prevention Program to prepare for emergencies and respond to major events that can impact on health, safety and the environment. The programs identify the roles and responsibilities of key personnel, including the corporate crisis management committee and emergency responders. It identifies the minimum numbers and equipment required for the infirmary, first aiders, fire-fighters, mine rescue personnel, and commits to conducting ongoing training and emergency response drills.

Response procedures have been developed for 30 different events including:

- Ground Failure;
- Mine Water Inflow;
- Spills;

- Fire;
- Road Accident; and
- Airplane Crash.

The Matoush Project will participate in the Quebec Mining Association's "OPERATION CATAMINE". Similar to what is in place in Saskatchewan, Operation CATAMINE is a mutual assistance arrangement for mine rescue and emergency response operations. Strateco may request assistance from other mines to provide trained emergency response personnel and equipment to respond to an emergency and conduct mine rescue operations.

The emergency response plan will be tested through an annual partial evacuation and theoretical simulation and ongoing training and drills for the emergency response teams.

Strateco continues to refine their programs and develop implementing procedures prior to commencing activities.

### 3.10.2 Conclusion

CNSC staff are satisfied that the proposed Emergency Measures and Fire Prevention Programs have been provided in sufficient detail to conclude that the programs meet the requirements of the *Nuclear Safety and Control Act* and Regulations.

### 3.10.3 Recommendation

CNSC staff recommend that the following standard conditions be included in the licence:

*11.1 The licensee shall implement and maintain safety and control measures for emergency management and fire protection.*

## 3.11 Waste Management

The Safety and Control Area "Waste Management" covers internal waste-related programs which form part of the facility's (or licensed activities) operations up to the point where the waste is removed from the facility (or site) to a separate waste management facility. The SCA also includes planning for decommissioning.

### 3.11.1 Discussion

#### Wastes

Strateco has proposed a Waste Management Program that includes the management of the following wastes:

- Solid domestic and industrial waste:
  - Recycling (papers, cans, cardboard and plastic, scrap metals, wood, tires);
  - Composting (kitchen waste);

- Landfill (provincial permit...no burning) (domestic non-recyclable waste);
- Landfill at Chibougamau (plastic bags and packaging material); and
- Incineration (boxes that had contained explosives).
- Waste rock:
  - Unconditional use rock;
  - Waste rock; and
  - Special-waste rock.
- Waste Water:
  - Domestic wastewater;
  - Surface runoff; and
  - Mine water.
- Radioactive waste; and
- Hazardous waste (petroleum products, glycol, propane, explosives, barium chloride, ferric sulphate, lime, zetag, magnafloc, chloride).

#### **Waste Management Facilities**

The waste management facilities to be constructed at the site include:

- Laydown areas for waste shipping containers;
- Landfill;
- Waste rock pile;
- Special-waste rock pile;
- Septic treatment system;
- Surface runoff Catch Basins A and B;
- Minewater Storage Ponds 1 and 2;
- Development Ramp Water Treatment Plant;
- Effluent Settling Ponds 1 and 2;
- Final effluent discharge point;
- Propane park; and
- Fuel park.

Design details for these facilities are described in Section 3.5 Physical Design.

#### **Waste Management Program**

The Waste Management Program includes the following elements: recording and reporting the volume of wastes and their disposition; routine inspection of waste management practices; and the off-site disposal of wastes.

Waste rock segregation and the proposed operation of the Development Ramp Water Treatment Plant and associated ponds and discharge point are described in Section 3.5 Physical Design.

### **Decommissioning Planning**

The applicant has applied for authorization to decommission the underground mine and associated facilities, if, upon completion of exploration, they decide to not go ahead with the development of a mine and mill at the Matoush Project. The preliminary decommissioning plan (PDP) for the facility includes the following provisions:

- Mining and surface equipment will be decontaminated and removed from the site in accordance with approved removal criteria;
- Chemicals, reagents and fuels will be consumed during decommissioning or removed from the site for safe disposal, or, reuse or recycling;
- Materials with salvage value will be removed from site for reuse or recycling as appropriate;
- The water monitoring ponds and catch basins will be filled in and contoured or the berms will be breached to prevent water from collecting in these areas. Sediments that have collected in the ponds and the liners will be disposed of underground. Any contaminated sub-soil will be removed to the underground;
- Concrete floors and foundations will be checked for contamination and all radioactive contaminated material will be disposed of underground. Clean concrete walls will be ripped and buried at the site. Clean concrete foundations will be left on site and backfilled;
- All diamond drill core will be left on site;
- All surface areas and roads not required for post-decommissioning monitoring will be contoured, scarified and re-vegetated as appropriate, unless otherwise specified;
- Radioactive contaminated machinery and materials which cannot be economically cleaned will be disposed of in the underground. All fluids will be drained from any equipment placed in the underground. The drained fluids will be transferred to an appropriate off-site waste management facility;
- Culverts and any water diversion systems will be removed to restore normal water flows to and at the site; and
- Re-vegetation will be completed as required.

The financial guarantee to cover the cost of decommissioning is based on the activities identified in the PDP.



Strateco has indicated that they will progressively remediate areas of the Matoush Project as work in those areas is completed. This would include activities such as building removal, contouring and re-vegetation.

CNSC staff conclude that Strateco's PDP meets the requirements presented in CSA N294-09, *Decommissioning of Facilities Containing Nuclear Substances* and the guidance presented in Regulatory Guide G-219, *Decommissioning Planning for Licensed Activities*.

Once the decision is made to proceed with decommissioning, Strateco will be required to submit a detailed decommissioning plan (DDP) for CNSC staff approval.

The detailed decommissioning plan would refine and add procedural and organizational detail to the preliminary plan. A licence condition is recommended requiring the licensee to submit a detailed decommissioning plan for CNSC approval prior to commencing the final decommissioning of the Matoush Project.

It is recommended that approval of the DDP be delegated to the Director General of the Directorate of Nuclear Cycle and Facilities Regulation.

A Decommissioning Monitoring Program approved by CNSC staff, will be conducted to demonstrate that the site meets decommissioning objectives.

### 3.11.2 Conclusion

CNSC staff conclude that the applicant's proposed measures for waste management and preliminary decommissioning planning are sufficient to meet the applicable regulatory requirements under the *Nuclear Safety and Control Act* for the issuance of a uranium mine construction licence.

The information provided in the application provides a credible demonstration that the applicant will make adequate provisions for the management of wastes and has a credible plan to decommission the facility.

### 3.11.3 Recommendation

CNSC staff recommend that the following standard conditions be included in the licence:

- 12.1 *The licensee shall implement and maintain safety and control measures for waste management; and*
- 12.2 *The licensee shall maintain a preliminary decommissioning plan (PDP) for the facility. The PDP shall be revised every five years or when required by the Commission or person authorized by the Commission.*

CNSC staff recommend that the following facility specific condition be included in the licence:

- 15.3 *The licensee shall receive written approval of the detailed decommissioning plan from the Commission, or a person authorized by the Commission before starting the decommissioning of the facility.*

*15.4 The licensee shall before commencing any authorized activities, provide a financial guarantee acceptable to the Commission which shall be valid and in effect and adequate to fund the preliminary decommissioning plan referenced in licence condition 12.2*

CNSC staff recommend that the Commission delegate the authority to approve the detailed decommissioning plan to the Director General of the Directorate of Nuclear Cycle and Facilities Regulation.

### **3.12 Security**

The Safety and Control Area “Security” covers the programs required to implement and support the security requirements stipulated in the regulations, in their licence, in orders, or in expectations for their facility or activity.

#### **3.12.1 Discussion**

The security risk from the proposed activities, the nature of radioactive materials to be managed (exploration core samples) and the remoteness of the site is low.

Strateco plans to establish site access controls and security checks similar to those used at existing uranium mines in Northern Saskatchewan.

#### **3.12.2 Conclusion**

CNSC staff conclude that the applicant has provided an Industrial Security Plan that satisfactorily meets regulatory requirements.

#### **3.12.3 Recommendation**

CNSC staff recommend that the following standard condition be included in the licence:

*13.1 The licensee shall implement and maintain safety and control measures for nuclear security.*

### **3.13 Safeguards**

The Safety and Control Area “Safeguards” is not within the scope of this CMD as there are no obligations in the Canada/IAEA Safeguards Agreement for underground exploration.

CNSC staff will keep the IAEA apprised of any future plans to develop a uranium mine and mill at the Matoush Project.

### **3.14 Packaging and Transport**

The Safety and Control Area “Packaging and Transport” covers the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility.

### 3.14.1 Discussion

#### *Transport of Dangerous Goods*

Regulation of the transport of dangerous goods, including nuclear substances, to and from the Matoush Project must meet the requirements of the *Transport of Dangerous Goods Regulations* that are administered by Transport Canada.

The following dangerous goods will be transported to site:

- Gasoline, oil and propane;
- Potable water treatment chemicals;
- Explosives;
- Barium chloride (delivered as 25 kg bags of BaCl<sub>2</sub>-2H<sub>2</sub>O crystals);
- Ferric sulphate (delivered as a 45% solution in 1 m<sup>3</sup> plastic totes or eventually in bulk by tank truck);
- Flocculants (delivered as 25 kg bags of powder); and
- Lime (delivered as 25 kg bags of calcium hydroxide [Ca(OH)<sub>2</sub>] powder, hydrated lime).

#### *Transport of Dangerous Goods over the Winter Road*

Strateco has been shipping dangerous goods and equipment and building materials to the Matoush Project over a winter road for the past four years. Procedures have been developed to describe road use practices and to respond to road accidents and spills.

#### *Shipping Exploration Samples to Off-Site Laboratories*

The only radioactive material that will be transported to or from the Matoush Project is uranium exploration drill samples. These samples must be packaged and transported in compliance with the requirements of the *Packaging and Transport of Nuclear Substances Regulations*. Strateco has been shipping exploration samples to off-site laboratories during the surface exploration program. Packaging and shipping requirements are described in a procedure.

### 3.14.2 Conclusion

CNSC staff conclude that the applicant's proposed measures for the packaging and transport of nuclear substances are sufficient to meet the regulatory requirements under the *Nuclear Safety and Control Act* and associated Regulations for the issuance of a uranium mine construction licence.

The information provided in the application provides a credible demonstration that the applicant will make adequate provision for the packaging and transport of radioactive exploration samples.

### 3.14.3 Recommendation

CNSC staff recommend that the following standard condition be included in the licence:

*14.1 The licensee shall implement and maintain safety and control measures for the receipt, packaging and transport of nuclear substances.*

## 4 OTHER MATTERS OF REGULATORY INTEREST

### 4.1 Environmental Assessment

The project is located within the boundaries of the administrative region governed by the James Bay and Northern Quebec Agreement (JBNQA) on category III land and is subject to both a federal and a provincial environmental and social assessment under the JBNQA environmental assessment regime. The President of the Canadian Environmental Assessment Agency (CEA Agency) as the Federal Administrator for 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 project proceeds to the next steps.

In accordance with the *Canadian Environmental Assessment Act* (CEAA) a federal environmental assessment in the form of a Comprehensive Study was carried out for the Matoush Advanced Exploration Project. A Comprehensive Study Report was presented to the Commission in July 2011 in Commission Member Document 11-H120. CNSC staff concluded that the project as proposed, after mitigation, is not likely to result in significant adverse environmental effects.

### 4.2 Public and Aboriginal Consultation

The Matoush Project is the first advanced uranium exploration project in the Province of Quebec.

The communities of Mistissini, Chibougamau and Chapais were identified as the three communities located closest to the proposed project and therefore may have the most interest in the proposed Matoush Project. Mistissini is the closest community to the project, located 210 km to the south and is home to the Cree Nation of Mistissini. The population of Mistissini is approximately 3,600 people.

Through the CEA Agency's Participant Funding Program and the Aboriginal Funding Envelope, there was \$40,000 of funding allocated to the public and to Aboriginal groups to participate in the Environmental Assessment (EA) review process. The Cree Nation of Mistissini, the Cree Nation of Namaska and the Cree Trappers Association each received funding to participate in the EA review under the Aboriginal Funding Envelope. Mining Watch Canada, Canadian Parks and Wildlife Society, and the Réseau québécois des groupes écologistes also received participant funding.

#### 4.2.1 EA Public and Aboriginal Consultation Process

The Canadian Environmental Assessment Agency, Federal Review Panel-South and the Comité provincial d'examen (COMEX) consultations included the following activities:

A two-phased public hearings consultations process was undertaken as follows:

Phase I Public Hearing: Information sessions Mistissini May 25<sup>th</sup> and Chibougamau May 26<sup>th</sup>, 2010, with the aim of informing the public about the project and the EA process. Approximately 100 people attended both sessions. Verbatim transcripts and videos of the meeting are posted on the JBNQA portion of the website.

Phase II Public Hearing: Information sessions to obtain public and Aboriginal opinions were held on November 23<sup>rd</sup>, 2010 in Mistissini and on November 25<sup>th</sup>, 2010 in Chibougamau. These hearings were live audio-casted. Twelve written interventions were received as well as numerous oral interventions (these are all publicly available on the JBNQA portion of the Canadian Environmental Assessment Registry).

Hearings announcements were posted on both the main CEAR website and the JBNQA portion of the CEAR, on the CNSC website, and in local and regional papers. Simultaneous translation was available at both venues and teleconferencing was available for those who were not able to attend in person. FRP-S/COMEX acted as co-leads for these hearings.

CNSC staff made presentations at the Phase I hearings on the role of the CNSC in regulating uranium mines and responded to questions and provided clarification when asked at the Phase II hearings. The proponent, federal authorities, provincial representatives and the Cree Regional Authority also participated in these hearings and were available to answer questions.

The CEAR and, in particular, the JBNQA section of the CEAR also contain records of consultations and information documents on the project, for example, news releases/public notices; hearing documents; FRP-S documents; proponent documents; Federal Administrator documents; public communications and committee advice; as well as the names and contacts from FRP-S, CNSC and CEAA, for the Matoush Project.

#### 4.2.1 Consultation Activities Carried out by Others

The Conférence régionale des élus de la Baie James (CRÉBJ) is the privileged interlocutor of the Government of Quebec on regional development. CRÉBJ has the main task of fostering cooperation among partners in the region, and gives advice to the provincial government on the development of the region.

The CRÉBJ held expert focus groups (municipal, provincial and federal elected officials and their representatives, individuals from regional directorates, representatives from the communities, representatives from the public health sector and the Centre régional de santé et des services sociaux) in October 2009 and February 2010 in Chapais and in Chibougamau. Public meetings were also

held in Chapais and Chibougamau in May 2010. The CRÉBJ also invited, in collaboration with the Cree community of Mistissini, Aboriginal Chiefs from areas where there is uranium mining in Saskatchewan for meetings in Chibougamau and Mistissini in March 2010.

#### **4.2.2 CNSC Consultation Activities**

Since the Matoush Project is the first advanced uranium exploration project in the Province of Quebec, in addition to the 2-phase hearings, CNSC staff engaged in many outreach activities to assist various decision makers and community representatives in understanding the regulation of the uranium mining industry.

CNSC staff made presentations to FRP-S in May 2010, on the environmental effects of uranium mining and milling. In October 2010, CNSC staff met separately with the FRP-S and COMEX to provide them with a detailed overview on how the CNSC regulates uranium mines and mills, and the health, safety and environmental aspects associated with them.

The objective of these information meetings was to provide decision-makers and the public with an understanding of the uranium mining industry and to gain an understanding of public concerns. CNSC staff will continue to respond to public outreach and consultation requests.

#### **4.2.4 Aboriginal Consultation**

The CNSC as an agent of the Government of Canada and as Canada's nuclear regulator recognizes and understands the importance of consulting and building relationships with Canada's Aboriginal peoples. The CNSC ensures that all its licensing decisions under the *Nuclear Safety and Control Act* and environmental assessment decisions under the CEAA uphold the honour of the Crown and consider Aboriginal peoples' potential or established Aboriginal or treaty rights pursuant to section 35 of the *Constitution Act, 1982*. The common law duty to consult with Aboriginal groups applies when the Crown contemplates actions that may adversely affect established or potential Aboriginal and treaty rights.

The proposed project falls within the boundaries of the Cree Territory governed by the JBNQA. The JBNQA states that Aboriginal communities in the territory determine the mechanisms of consultation and participation regarding developmental projects. By sitting on the committees created by Chapter 22 of the JBNQA, the Cree actively participate in the analysis of projects and have had an important voice in the process. In addition, Chapter 22.2.2 c) of the JBNQA states that, where necessary, consultations with Cree communities must take place to ensure their "enhanced" participation and to protect their rights and privileges established by the JBNQA. The Cree Regional Authority (CRA) is the administrative arm of the Cree government. It has responsibilities in respect to environmental protection, the hunting, fishing and trapping regime (Section 22), economic and community development, the Board of Compensation, and other matters as decided by the Board of Directors. The CRA appointed two of the five FRP-S panel members.

In its decision *Quebec (Attorney General) v. Moses*, the Supreme Court of Canada not only affirmed that the CEEA applies to the JBNQA territory, it also confirmed that federal regulatory decisions are subject to the Crown's duty to consult with the Cree in relations that may adversely affect their rights under the agreement.

As described in the Federal Project Agreement (PA) signed by Deputy Heads of the Responsible Authorities and the Federal Authorities, Aboriginal consultations were integrated into the FRP-S process during the EA review and coordinated by the CEA Agency. The PA states:

*according to the terms of delegation by the CNSC to the FRP-S, Aboriginal consultations will be conducted by this committee in collaboration with the CEA Agency, the RA and the expert FAs. To the extent possible, the parties will work together to maintain a common approach to Aboriginal consultation. The CEA Agency, when acting as the Crown Consultation Coordinator, will assess the need for additional Aboriginal consultation. The (federal) parties and FRP-S will work together, to the extent possible to achieve a common and complementary approach to Aboriginal consultation.*

#### **4.2.5 Position of the Cree Nation of Mistissini**

During the EA review period, the Cree Nation of Mistissini engaged consultants to review the Environmental Impact Statement (EIS). They formed a working group with tallymen, community representatives and workers in health and education sectors. CNSC staff were invited by the Cree Community of Mistissini to participate in three public information sessions (September 2009, October 2009, and September 2010), where information was provided on health risks, CNSC regulation of uranium mining and aquatic science. The working group developed a plain language information pamphlet and a frequently asked questions document for distribution to community members.

Throughout this process, community members expressed concerns on the following themes:

- Possible irreversible effects to the environment;
- Potentiality for polluting the rivers;
- Waste rock management;
- Effluent treatment;
- Dispersion of radioactive dust;
- Potential effects on terrestrial species;
- Storage of radioactive waste;
- Emergency measures plan;
- Mineral transportation;
- Radon;

- Historic studies on uranium mining;
- Worker health and safety;
- Cumulative effects;
- Financial guarantees;
- Employment opportunities for the Cree;
- Cree participation in environmental monitoring; and
- Traditional knowledge in the preparation of the impact study.

During the EA Hearing in Mistissini on November 23, 2010, the Chief of Mistissini presented the community's concerns and conclusions to the FRP-S. The presentation was followed up by a written submission to the FRP-S and COMEX in December 2010. The report concluded that the people of Mistissini have "significant concerns that the activities being proposed (will) harm land users, the environment and wildlife they depend on, and the communities downstream of the site". Finally, the report states that they are "strongly recommending that the COMEX and COFEX panels reject the Strateco Resources Inc. proposal on the grounds that the company did not make the necessary efforts to build an acceptable level of social acceptability for this resource development activity within the Cree Nation of Mistissini's traditional territory".

In January 2011, the Cree Nation of Mistissini conducted a door-to-door poll of 657 community members to seek their opinions on the project (143 moratorium, 339 ban, 85 joint venture and 30 other). The results of the poll were cited in a January 24, 2011 resolution by the Council of the Cree Nation of Mistissini and a March 23, 2011 resolution by the Board/Council of the Grand Council of the Cree (Eeyou Istchee), Cree Regional Authority formally supporting the implementation of a moratorium on uranium mining on the traditional lands of the Cree Nation of Mistissini, 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.

The resolutions identified what was perceived as a need to:

- 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 mining companies to build relationships based on mutual benefit and trust.

In June 2011, the James Bay Advisory Committee on the Environment (JBACE), whose mandate is to oversee the environmental and social impact assessment and review procedure of the JBNQA advised that given that the Matoush Project is the first advanced uranium exploration project in Quebec, a precautionary approach is warranted and that special attention must be given to the project's anticipated



environmental and social impacts. The committee deems it essential to release accurate information adapted to the territory's Aboriginal people, especially the Cree community of Mistissini.

In efforts to establish a relationship of trust with the community of Mistissini, Strateco Resources Inc. has been meeting with the Chief of Mistissini and has implemented a communication plan proposed by the Cree Mineral Exploration Board. The primary objective of the plan is to provide unbiased relevant information "in the Cree language, the Cree way" to the Chief and Council and members of the Cree Nation of Mistissini in order to allow them to make an enlightened decision, based on facts, not on fear and misconception of anticipated impacts.

On December 23<sup>rd</sup>, 2011, Strateco announced in a press release that it had signed a Communications and Information Agreement with the Cree Nation of Mistissini. This communication strategy facilitates the development and implementation of dialogue between the stakeholders during the advanced exploration and development phase of the project. Some of the features that are intended to enhance communications include the formation of a committee for information exchange, creation of two new positions and the relocation of a Strateco office to the community of Mistissini. While this agreement reflects the intention of the Cree Nation of Mistissini to receive additional information from the advanced exploration activities, it cannot be considered as support for the construction and operation phases of the mine for the Matoush Project.

#### **4.2.6 Conclusions on Public and Aboriginal Consultations**

It is the opinion of CNSC staff, that the public consultation activities that have been undertaken are sufficient to meet the requirements of the CEAA.

In order to ensure that the CNSC upholds the honour of the Crown and meets its common law duty to consult with Aboriginal groups prior to making a decision that may cause adverse impacts to potential or established Aboriginal or treaty rights, Aboriginal consultation will continue through the licence hearing process.

#### **4.3 Cost Recovery**

Strateco Resources Inc. is in good standing with the Canadian Nuclear Safety Commission's Cost Recovery Fees Regulation 2003 with respect to the payment of licensing fees for its Matoush Project.

#### **4.4 Financial Guarantee**

The applicant has proposed a financial guarantee of \$5.5 million. CNSC staff are continuing to review the amount and nature of the financial guarantee with the applicant.

CNSC staff recommend that the following site specific licence condition be included in the licence:

*15.4 The licensee shall before commencing any authorized activities, provide a financial guarantee acceptable to the Commission which shall be valid and in effect and adequate to fund the preliminary decommissioning plan referenced in licence condition 12.2.*

## **4.5 Improvement Plan and Significant Future Activities**

The following activities planned by Strateco to take place during the licence term will improve compliance with regulatory expectations:

- Increase the level of detail provided in program manuals and develop and implement program procedures;
- Complete the collection of baseline data before operation of the effluent treatment plant;
- Compile baseline data in a consolidated baseline data report;
- Implement a public disclosure program; and
- Conduct environmental studies to provide information to support an environmental assessment of an application for CNSC mining and milling licence.

## **4.6 Applicant's Public Information Program**

### **4.6.1 Discussion**

#### **Information Presented in the Application**

Strateco's Public Information Program (PIP) and related documentation, describes communications and consultation activities that were carried out prior to submission of the licence application.

The applicant met with various audience groups, and sponsored events between December 2006 and October 2009, predominantly in communities of Mistissini and Chibougamau. Meetings also took place with groups in Montreal and Boucherville. Meeting formats included one-on-ones, open-houses and workshops.

Targeted audiences included residents of Chibougamau, Chambers of Commerce, business groups, elected officials, provincial and federal authorities, Crees (i.e., families, Band Council, representatives of the Grand Council of the Crees, Chiefs), and the Tallymen.

Topics covered and feedback from consultation activities are summarized in the PIP with details provided in an Appendix showing support overall for the project from the residents of Chibougamau. It should be noted that further to the submission of the PIP, concerns were expressed to COFEX and COMEX by the Cree Community about the environmental assessment at a meeting in Mistissini

on November 23<sup>rd</sup>, 2010 (see section 4.2 “Aboriginal Consultation” for more details).

Notwithstanding this matter, Matoush responded to some concerns at on-site meetings and addressed others (i.e., economic opportunities, mining waste management, uranium transportation, impact on health and environmental protection) through a number of other public relations and communications activities, including:

- Updating of documents on its Website to provide information about the project’s status and uranium safety, including “Uranium the Facts 2010”;
- Placement of a series of six ads in two local publications, *La Sentinelle* (Chibougamau) and *The Nation* (Mistissini), on a range of themes about uranium (ads placed from January 29<sup>th</sup> to April 21<sup>st</sup>, 2010). These advertisements are on the Strateco Website;
- Improving Web navigation and accessibility to information on topics of interest and EIS documentation, to name a few;
- Optimizing search to its Website;
- Installation of web management tool for Strateco to directly update its Website;
- Opening Strateco offices in Chibougamau and Mistissini (March 2010, June 2010); and
- Appointment of a Community Affairs Manager (January 2010) and a Community Affairs Representative in Mistissini (May 2010).

Other communications activities have included media relations and monitoring about the Matoush Project and other related topics to track public opinion and issues.

Strateco’s proposed PIP for the post EIS and the licensing phases outlines communication objectives, audience targets (same targets as those reached during the pre-EIS phase), key communications channels, program evaluation measures and quality assurance process. Strateco also states commitment to having good relations, being open and pursuing ongoing communication with the Mistissini Cree, as well as the citizens of Chibougamau and Chapais.

The documentation mentions that other meetings (i.e., public consultations, site visits) have been held on a regular basis, will continue to be held with community members and key stakeholders to provide information and seek comments about current and future activities at the Matoush site, including a series of annual public meetings (formal or informal). Additionally, the intent is to update the Website regularly with information about the project’s progress and to respond to concerns identified by the public and stakeholders, as required, including online consultation and placing other advertisements. As part of its Monitoring Program, Strateco will report on PIP activities in its annual report to the CNSC.

### CNSC Staff Assessment

CNSC staff have reviewed and assessed the information provided by Strateco concerning its communications and consultation activities against the CNSC Regulatory Guide G-217, *Licensee Public Information Programs (PIP)*. CNSC staff find that the information reviewed meets the criteria for an acceptable PIP.

Strateco demonstrates having made an effort to communicate and seek input from audience targets, taking into consideration expressed concerns and wanting to continue to do so.

Strateco has committed to making annual compliance reports to the CNSC available to the public. CNSC staff believe that Strateco should also develop a formal public disclosure approach that includes criteria for proactive release of information about non-routine emissions and events. Hence, CNSC staff are proposing a licence condition be added that requires Strateco to develop and implement a public disclosure approach as part of its PIP.

CNSC staff will verify that the licensee keeps its website updated, including communicating specific information about measures taken to respond to consultation feedback and keeping a record of consultation activities.

#### **4.6.2 Conclusion**

The Public Information Program and related activities carried out during the EA licensing provide credible demonstrations that the applicant will make adequate provisions to keep key stakeholders and the public informed and to consult with them while carrying out activities authorized by the licence.

CNSC staff conclude that the applicant's Public Information Program is sufficient to meet the applicable regulatory requirements under the *Nuclear Safety and Control Act* for the issuance of a uranium mine construction licence.

#### **4.6.3 Recommendation**

CNSC staff recommend that the following standard condition be included in the licence:

*2.12 The licensee shall implement and maintain a program for public information for the facility, including a public disclosure protocol.*

## **5 OVERALL CONCLUSIONS AND RECOMMENDATIONS**

CNSC staff have concluded the following with respect to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act*, in that the application:

1. Is qualified to carry on the activity authorized by the licence; and
2. Will, in carrying out that activity, 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.

## REFERENCES

1. Letter, G. Hébert (Strateco Resources Inc.) to B. Howden (CNSC), “Project Description – Preliminary Matoush Underground Exploration Program,” July 15, 2008 (E-Docs #3269696).
2. Letter, G. Hébert (Strateco Resources Inc.) to M. Leblanc (CNSC), “Licence application for the site preparation and construction for the Matoush Project,” November 4, 2008 (E-Docs #3305114).
3. Matoush Advance Uranium Exploration Proposal, Cree Nation of Mistissini Submission to COMEX/COFEX Review Panels, 14 December 2010 (Appendix A to Ref. 4) (E-Docs #3702643).
4. Commission Member Document 11-H120 - Proposed Environmental Assessment Comprehensive Study Report for the Strateco Resources Inc.’s Proposed Underground Uranium Exploration Project, In Matoush, Quebec (E-Docs #3722201).
5. Record of Proceeding, Including Reasons for Decision – Strateco Resources Inc. Comprehensive Study Report regarding the proposed Underground Uranium Exploration Project in Matoush, Quebec, July 29, 2011 (E-Docs #3768212).

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## A. SAFETY AND CONTROL AREAS FRAMEWORK

### A.1 SAFETY AND CONTROL AREAS DEFINED

The safety and control areas identified in section 2.1, and discussed in summary in sections 3.1 through 3.14 are comprised of specific areas of regulatory interest which vary between facility and/or activity types.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	Safety and Control Area	Definition
Management	Management System	Covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives and continuously monitors its performance against these objectives and fostering a healthy safety culture.
	Human Performance Management	Covers activities that enable effective human performance through the development and implementation of processes that ensure that licensee staff are sufficient in number in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.
	Operating Performance	This includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.
Facility and Equipment	Safety Analysis	Maintenance of the safety analysis that supports that overall safety case for the facility. 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 preventative measures and strategies in reducing the effects of such hazards.
	Physical Design	Relates to activities that impact on the ability of systems, components and structures to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.
	Fitness for Service	Covers activities that impact on the physical condition of systems, components and structures to ensure that they remain effective over time. This includes programs that ensure all equipment is available to perform its intended design function when called upon to do so.
Core Control Processes	Radiation Protection	Covers the implementation of a Radiation Protection Program in accordance with the RP Regulations. This program must ensure that contamination and radiation doses received are monitored and controlled.
	Conventional Health and Safety	Covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.
	Environmental Protection	Covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.

<b>SAFETY AND CONTROL AREA FRAMEWORK</b>		
<b>Functional Area</b>	<b>Safety and Control Area</b>	<b>Definition</b>
	Emergency Management and Fire Protection	Covers emergency plans and Emergency Preparedness Programs which exist for emergencies and for non-routine conditions. This also includes any results of exercise participation.
	Waste Management	Covers internal waste-related programs which form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility. Also covers the planning for decommissioning.
	Security	Covers the programs required to implement and support the security requirements stipulated in the regulations, in their license, in orders, or in expectations for their facility or activity.
	Safeguards	Covers the programs required for the successful implementation of the obligations arising from the Canada/IAEA Safeguards Agreement.
	Packaging and Transport	Programs that cover the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility.



## A.2 Specific Areas for this Facility and/or Activity

The following table identifies the specific areas that comprise each SCA for this CMD:

SPECIFIC AREAS FOR THIS FACILITY AND/OR ACTIVITY		
Functional Area	Safety and Control Area	Specific Areas
Management	Management System	<ul style="list-style-type: none"> <li>▪ Corporate Oversight</li> <li>▪ Management Structure</li> <li>▪ Commitment to ALARA</li> <li>▪ Safety Culture</li> <li>▪ Management of Contractors</li> <li>▪ Planning</li> <li>▪ Documentation</li> <li>▪ Records Management</li> <li>▪ Reporting Requirements</li> <li>▪ Change Control and Design Control</li> <li>▪ Communications</li> <li>▪ Public Information Programs and Public Disclosure</li> <li>▪ Non-conformance and Corrective Actions</li> <li>▪ Audits and Management Review</li> <li>▪ Continual improvement, Use of Experience</li> </ul>
	Human Performance Management	<ul style="list-style-type: none"> <li>▪ Training Awareness and Competence</li> <li>▪ Systematic Approach to Training</li> <li>▪ Radiation Protection Training</li> <li>▪ Environmental Protection Training</li> <li>▪ Safety Training</li> <li>▪ Work Schedule</li> <li>▪ Ensuring Sufficient Number of Qualified Workers and Emergency Response Personnel</li> </ul>

SPECIFIC AREAS FOR THIS FACILITY AND/OR ACTIVITY		
Functional Area	Safety and Control Area	Specific Areas
	Operating Performance	<ul style="list-style-type: none"> <li>▪ Work Planning</li> <li>▪ Controls; Monitoring and Measurement</li> <li>▪ Management of Hazardous Substances</li> <li>▪ Waste Recycling</li> <li>▪ On site waste disposal</li> <li>▪ Potable Water</li> <li>▪ Septic System</li> </ul> <p><u>Construction of Portal</u></p> <p><u>Construction, Commissioning and Operation of DRWTP</u></p> <ul style="list-style-type: none"> <li>▪ Mine Water Treatment and Final Treated Effluent Discharge (on site analysis)</li> <li>▪ Effluent Quality Limits</li> <li>▪ Environmental Code of Practice</li> </ul> <p><u>Construction of Underground Mine</u></p> <ul style="list-style-type: none"> <li>▪ Mine Engineering Process</li> <li>▪ Mine Development Methods</li> <li>▪ Third Party Ground Control Reviews</li> <li>▪ Mine Ventilation</li> <li>▪ Mine Water Handling</li> <li>▪ Waste Rock classification and storage</li> <li>▪ Excavation through mineralized zone</li> <li>▪ Radiation Protection and Ventilation Code of Practice</li> </ul> <p><u>Underground Exploration</u></p> <ul style="list-style-type: none"> <li>▪ Exploration Methods</li> <li>▪ Excavation Across Uranium Deposit</li> </ul>
Facility and Equipment	Safety Analysis	<ul style="list-style-type: none"> <li>▪ Environmental and Human Health Risk Assessment</li> <li>▪ Mine Risk Assessment</li> <li>▪ Mine Water Treatment Plant Risk Assessment</li> <li>▪ DRWTP Process Identification and Risk Assessment</li> <li>▪ Fire Hazard Assessment</li> <li>▪ Security Risk Assessment</li> </ul>

SPECIFIC AREAS FOR THIS FACILITY AND/OR ACTIVITY		
Functional Area	Safety and Control Area	Specific Areas
	Physical Design	<ul style="list-style-type: none"> <li>▪ Geology</li> <li>▪ Mine Design</li> <li>▪ Mine Ventilation System</li> <li>▪ Power Generation and Fuel Storage</li> <li>▪ Fire Protection Systems</li> <li>▪ Mine Water Collection System</li> <li>▪ Water Treatment Plant Design (includes ponds and pipelines)</li> <li>▪ Waste Rock Pads</li> <li>▪ Surface runoff diversion system</li> <li>▪ Fuel Storage Area Design</li> </ul>
	Fitness for Service	<ul style="list-style-type: none"> <li>▪ Preventative maintenance</li> <li>▪ Monitoring instrument calibration</li> <li>▪ Testing and Calibrating Warning Systems</li> <li>▪ Testing Vehicle Emissions</li> <li>▪ Maintenance and testing of Fire Protection Systems</li> <li>▪ Third Party Fire System Inspections</li> </ul>
Core Control Processes	Radiation Protection	<p><u>Application of ALARA</u></p> <ul style="list-style-type: none"> <li>▪ Status of ALARA program</li> <li>▪ Evidence of benchmarking</li> <li>▪ Performance trending</li> <li>▪ Dose reduction planning</li> </ul> <p><u>Worker Dose</u></p> <ul style="list-style-type: none"> <li>▪ Worker dose data</li> <li>▪ Action levels</li> </ul> <p><u>Contamination Control</u></p> <ul style="list-style-type: none"> <li>▪ Effective monitoring and control</li> <li>▪ Performance trending</li> </ul> <p><u>Control of Worker Exposure</u></p> <ul style="list-style-type: none"> <li>▪ Workplace monitoring and trending</li> <li>▪ Job planning</li> <li>▪ Use of Best Available Technology</li> </ul>
	Conventional Health and Safety	<ul style="list-style-type: none"> <li>▪ Communication and promotion of safety</li> <li>▪ Health and Medical Surveillance Safety training and procedures</li> <li>▪ Safety inspections and monitoring activities</li> <li>▪ Personal Protective Equipment</li> </ul>

<b>SPECIFIC AREAS FOR THIS FACILITY AND/OR ACTIVITY</b>		
<b>Functional Area</b>	<b>Safety and Control Area</b>	<b>Specific Areas</b>
	Environmental Protection	<ul style="list-style-type: none"> <li>▪ Background and baseline studies</li> <li>▪ EA Follow-up Monitoring Program</li> <li>▪ Objectives and targets</li> <li>▪ Environmental Sample Collection and Analysis</li> <li>▪ Inspections</li> <li>▪ Environmental Reporting</li> <li>▪ Responses to non-conformances</li> </ul>
	Emergency Management and Fire Protection	<ul style="list-style-type: none"> <li>▪ Emergency and disaster classifications</li> <li>▪ Notifications</li> <li>▪ Emergency Plans, off-site and on-site</li> <li>▪ Emergency Response Team</li> <li>▪ CATAMINE support</li> <li>▪ Fire Safety Plans</li> <li>▪ Fire Response and Pre-fire Plans</li> </ul>
	Waste Management	<ul style="list-style-type: none"> <li>▪ Inspection of Waste Segregation, Storage and disposal</li> <li>▪ Waste Minimization, Reuse, recycle</li> <li>▪ Waste disposal</li> <li>▪ Control and Inspection</li> <li>▪ Preliminary Decommissioning Plan</li> <li>▪ Progressive Remediation</li> <li>▪ Financial Guarantee</li> </ul>
	Security	<ul style="list-style-type: none"> <li>▪ Control of Access to site</li> <li>▪ Prevention of Sabotage</li> </ul>
	Safeguards	▪ NOT APPLICABLE
	Packaging and Transport	<ul style="list-style-type: none"> <li>▪ Transport of dangerous goods over winter road</li> <li>▪ Emergency preparedness and response for off-site transport accidents</li> <li>▪ Shipping radioactive exploration samples to laboratories</li> </ul>

### A.3 SCA Comparison with Current Uranium Mines Construction Licence

COMPARISON OF SAFETY AND CONTROL AREAS	
New SCA Framework	Previous Safety Areas
Management System	Quality Management
Human Performance Management	Training
Operating Performance	Mine Operations Construction Operations Fire Protection
Safety Analysis	Operations <ul style="list-style-type: none"> <li>▪ Mine Operations</li> <li>▪ Construction Operations</li> <li>▪ Fire Protection</li> </ul>
Physical Design	Operations <ul style="list-style-type: none"> <li>▪ Mine Operations</li> <li>▪ Construction Operations</li> <li>▪ Fire Protection</li> </ul>
Fitness for Service	Operations <ul style="list-style-type: none"> <li>▪ Mine Operations</li> <li>▪ Construction Operations</li> <li>▪ Fire Protection</li> </ul>
Radiation Protection	Radiation Protection
Conventional Health and Safety	Non-Radiological Health and Safety
Environmental Protection	Environmental Protection
Emergency Management and Fire Protection	Emergency Preparedness
Waste Management	Operations <ul style="list-style-type: none"> <li>▪ Waste Management</li> </ul>
Security	Nuclear Security
Safeguards	Safeguards
Packaging and Transport	Operations <ul style="list-style-type: none"> <li>▪ Transport and Packaging</li> </ul>

## B. RATING LEVELS

The following rating levels reflect a recent transition in the rating terminology used by the CNSC.

PREVIOUS RATING LEVEL	DESCRIPTION (CMD 02-M5)	NEW RATING LEVEL	DESCRIPTION
<b>A</b>	Exceeds expectations	<b>FS</b>	Fully Satisfactory
<b>B</b>	Meets expectations	<b>SA</b>	Satisfactory
<b>C</b>	Improvement is required	<b>BE</b>	Below Expectations
<b>D</b>	This area is seriously compromised	<b>UA</b>	Unacceptable
<b>E</b>	Breakdown		

*Note: For SCAs with a security classification of “PROTECTED B” or higher, the classification is indicated in place of the rating level.*

### **Fully Satisfactory (FS)**

Compliance with regulatory requirements is fully satisfactory. Compliance within the area exceeds requirements and CNSC expectations. Compliance is stable or improving, and any problems or issues that arise are promptly addressed.

### **Satisfactory (SA)**

Compliance with regulatory requirements is satisfactory. Compliance within the area meets requirements and CNSC expectations. Any deviation is only minor, and any issues are considered to pose a low risk to the achievement of regulatory objectives and CNSC expectations. Appropriate improvements are planned.

### **Below Expectations (BE)**

Compliance with regulatory requirements falls below expectations. Compliance within the area deviates from requirements or CNSC expectations to the extent that there is a moderate risk of ultimate failure to comply. Improvements are required to address identified weaknesses. The licensee or applicant is taking appropriate corrective action.

### **Unacceptable (UA)**

Compliance with regulatory requirements is unacceptable, and is seriously compromised. Compliance within the overall area is significantly below requirements or CNSC expectations, or there is evidence of overall non compliance. Without corrective action, there is a high probability that the deficiencies will lead to an unreasonable risk. Issues are not being addressed effectively, no appropriate corrective measures have been taken, and no alternative plan of action has been provided. Immediate action is required.

## **PART TWO**

Part Two provides all available information pertaining directly to the licence, including:

1. The proposed licence; and
2. The proposed licence conditions handbook.

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## PROPOSED LICENCE

The proposed licence is provided on the following pages of the document.

E-Docs #: 3666236 (WORD)

E-Docs #: 3907051 (PDF)

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## PROPOSED LICENCE

Directorate of Nuclear Cycle  
and Facilities Regulation

Our file Notre référence

2.04 Strateco-A

### URANIUM MINE SITE PREPARATION AND CONSTRUCTION LICENCE STRATECO RESOURCES INC. MATOUSH UNDERGROUND EXPLORATION PROJECT

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**I) LICENCE NUMBER:** UMCL-MINE-MATOUSH.00/2017

**II) LICENSEE:** Pursuant to section 24 of the *Nuclear Safety and Control Act*, (hereinafter, “the Act”), this licence is issued to:

**Strateco Resources Inc.**  
**1225 Gay-Lussac**  
**Boucherville, Quebec**  
**J4B 7K1**

**III) LICENCE PERIOD:** This licence is valid from date signed to \_\_\_\_\_, 2017, unless otherwise suspended, amended, revoked, or replaced.

**IV) LICENSED ACTIVITIES:**

This licence authorizes the licensee to:

- a) prepare a site for and construct a nuclear facility (hereinafter “the facility”). The facility consists of an underground exploration mine, waste management systems and associated site facilities located at what is commonly known as the Matoush Underground Exploration Project, Quebec, the location of which is more particularly described in Appendix A to this licence;
- b) operate and modify the underground exploration mine to conduct exploration drilling and to mine three excavations through the mineralized zone;
- c) operate an effluent treatment plant and associated facilities; and
- d) decommission the nuclear facility.

**Proposed Licence**

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**V) EXPLANATORY NOTES:**

- a) Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the *Nuclear Safety and Control Act* and associated Regulations.
- b) The content of Appendix B, “Authorized Effluent Discharge Limits,” attached to this licence forms part of the licence.
- c) The *UMCL-MINE-MATTOUSH.00/2017 Licence Conditions Handbook* identifies the criteria that will be used by CNSC staff to assess the licensee’s compliance with the conditions listed in the licence.

**VI) CONDITIONS:****1. GENERAL**

- 1.1 The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis.
- 1.2 The licensee shall give written notification to the Commission, or person authorized by the Commission of any changes made to the documents needed to support the licence application.
- 1.3 The licensee shall, in the event of any conflict or inconsistency between licence conditions, codes or standards or regulatory documents referenced in this licence, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission, for resolution.

**2. MANAGEMENT SYSTEM**

- 2.1 The licensee shall implement and maintain a management system for the facility.
- 2.2 The licensee shall ensure that every contractor working at the facility complies with the applicable conditions of this licence including those relating to the licensee's policies, programs, and procedures with respect to the protection of health, safety, the environment, and, to maintenance of security.
- 2.3 The licensee shall implement and maintain safety and control measures for reporting to the Commission or a person authorized by the Commission that includes reporting of all events required by *the Nuclear Safety and Control Act* and its Regulations.
- 2.4 The licensee shall, where the effluent concentration reaches or exceeds the discharge limits specified in Appendix B to this licence, report to the Commission or a person authorized by the Commission within 24 hours the fact that the discharge limit has been reached or exceeded.

**Proposed Licence**

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- 2.5 The licensee shall, within 24 hours of becoming aware that an action level specified in the Environmental Code of Practice has been reached, notify the Commission or a person authorized by the Commission.
- 2.6 The licensee shall, within 24 hours of becoming aware of a release of a hazardous substance into the environment not authorized by the licence, report to the Commission or a person authorized by the Commission, the location and circumstances of the situation, and any action that the licensee has taken or proposes to take with respect to it.
- 2.7 The licensee shall, within 24 hours of becoming aware that the action level specified in the Radiation Protection Code of Practice has been reached, notify the Commission or a person authorized by the Commission.
- 2.8 The licensee shall issue the records required by subsection 5(1) of the *Radiation Protection Regulations* to each person referred to in subsection 27(a) of the *Nuclear Safety and Control Act*, the Commission or a person authorized by the Commission, and the National Dose Registry (NDR) within 90 days after the end of each quarter of a calendar year.
- 2.9 The licensee shall submit to the Commission or a person authorized by the Commission an annual report for the facility.
- 2.10 The licensee shall submit the results of the environmental monitoring program and the environmental assessment follow-up program at a frequency and in a form acceptable to the Commission or a person authorized by the Commission.
- 2.11 The licensee shall submit the results of the radiation monitoring program at a frequency and in a form acceptable to the Commission or a person authorized by the Commission.
- 2.12 The licensee shall implement and maintain a program for public information for the facility, including a public disclosure protocol.

**3. HUMAN PERFORMANCE MANAGEMENT**

- 3.1 The licensee shall implement and maintain safety and control measures to ensure that personnel are qualified and competent to perform assigned work.

**4. OPERATING PERFORMANCE**

- 4.1 The licensee shall implement and maintain safety and control measures for the safe conduct of the licensed activities.
- 4.2 The licensee shall ensure that all holes drilled for the purpose of delineating the uranium orebody, from whatever source, are grouted or sealed.

**Proposed Licence**

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**5. SAFETY ANALYSIS**

- 5.1 The licensee shall implement and maintain safety and control measures for risk assessment.

**6. PHYSICAL DESIGN**

- 6.1 The licensee shall implement and maintain safety and control measures for physical design.

**7. FITNESS FOR SERVICE**

- 7.1 The licensee shall implement and maintain safety and control measures for the maintenance of systems, equipment and devices which includes periodic inspections and testing.

**8. RADIATION PROTECTION**

- 8.1 The licensee shall implement and maintain safety and control measures for radiation protection.

**9. CONVENTIONAL HEALTH AND SAFETY**

- 9.1 The licensee shall implement and maintain safety and control measures for conventional (occupational) health and safety.

**10. ENVIRONMENTAL PROTECTION**

- 10.1 The licensee shall implement and maintain safety and control measures for environmental protection.
- 10.2 The licensee shall where the effluent concentration reaches or exceeds the discharge limits specified in Appendix B to this licence, immediately investigate and take corrective action to ensure that the effluent concentration is maintained below the discharge limits.

**11. EMERGENCY MANAGEMENT AND FIRE PROTECTION**

- 11.1 The licensee shall implement and maintain safety and control measures for emergency management and fire protection.

**Proposed Licence**

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**12. WASTE MANAGEMENT**

- 12.1 The licensee shall implement and maintain safety and control measures for waste management.
- 12.2 The licensee shall maintain a preliminary decommissioning plan (PDP) for the facility. The PDP shall be revised every five years or when required by the Commission or person authorized by the Commission.

**13. SECURITY**

- 13.1 The licensee shall implement and maintain safety and control measures for nuclear security.

**14. TRANSPORT AND PACKAGING**

- 14.1 The licensee shall implement and maintain safety and control measures for the receipt, packaging and transport of nuclear substances.

**15. SITE SPECIFIC**

- 15.1 The licensee shall implement and maintain an environmental assessment follow-up program.
- 15.2 The licensee shall compile in a single document the environmental baseline data and submit the document for CNSC review within 12 months from the issuance of the licence.
- 15.3 The licensee shall receive written approval of the detailed decommissioning plan from the Commission, or a person authorized by the Commission before starting the decommissioning of the facility.
- 15.4 The licensee shall before commencing any authorized activities, provide a financial guarantee acceptable to the Commission which shall be valid and in effect and adequate to fund the preliminary decommissioning plan referenced in licence condition 12.2.

SIGNED at OTTAWA, this \_\_\_\_\_ day of \_\_\_\_\_, 2012.

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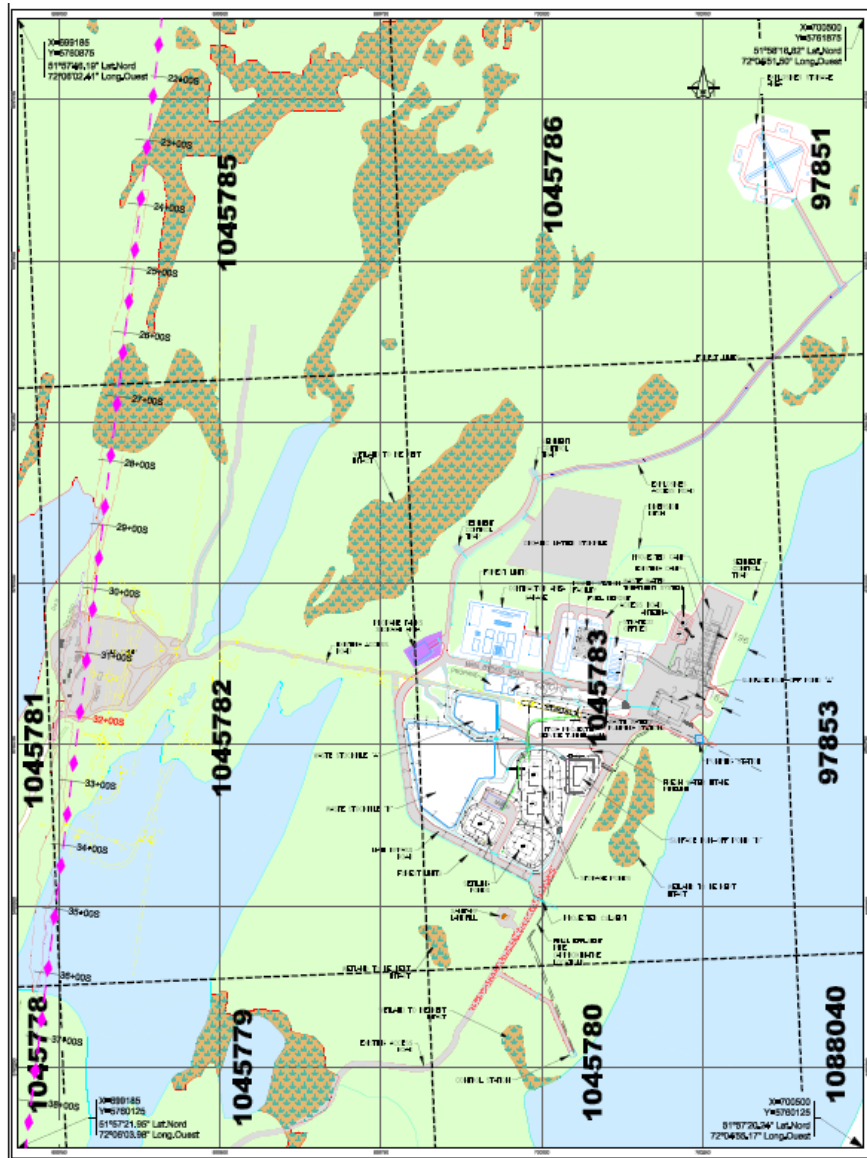
Michael Binder, President  
on behalf of the Canadian Nuclear Safety Commission

APPENDIX A

The Matoush Underground Exploration Project is located approximately 260 kilometres northeast of Chibougamau, Quebec. The Matoush Underground Exploration Project’s location is detailed on Strateco Resources Inc. plan B-MT-501-G00021-0A shown below.

The coordinates for the four corners of the licensed area boundary are:

NW; 51°57'46.19" Lat. North 72°06'02.41" Long. West	NE; 51°58'16.82" Lat. North 72°04'51.50" Long. West
SW; 51°57'21.95" Lat. North 72°06'03.98" Long. West	SE; 51°57'20.24" Lat. North 72°04'55.17" Long. West





## APPENDIX B

## AUTHORIZED EFFLUENT DISCHARGE LIMITS

Deleterious Substance	Maximum Authorized Monthly Mean Concentration	Maximum Authorized Concentration In a Composite Sample	Maximum Authorized Concentration In a Grab Sample
Arsenic (mg/L)	0.50	0.75	1.00
Copper (mg/L)	0.30	0.45	0.60
Lead (mg/L)	0.20	0.30	0.40
Nickel (mg/L)	0.50	0.75	1.00
Zinc (mg/L)	0.50	0.75	1.00
Total Suspended Solids (mg/L)	15.00	22.50	30.00
Radium-226 (Bq/L)	0.37	0.74	1.11
Acid balance (as H <sub>3</sub> O <sup>+</sup> ) reported as pH	In a range of 6.0 to 9.5		
Acutely Lethal Effluent	0 %		

Notes: (1) Definition of Units: mg/L = milligrams per litre  
Bq/L = Becquerels per litre

- (2) All concentrations and activities are total values.
- (3) The above limits shall apply to all effluent discharged to the environment from the Development Ramp Water Treatment Plant.
- (4) "Monthly Mean Concentration" means the average value of the concentrations measured in all composite or grab samples collected from the final discharge point during each month when liquid effluent is released.

- (5) “Composite Sample” means:
- (i) a quantity of effluent consisting of not less than three equal volumes or three volumes proportionate to flow that have been collected at approximately equal time intervals over a period of not less than seven hours and not more than 24 hours; or
  - (ii) a quantity of effluent collected continuously at a constant rate or at a rate proportionate to the rate of flow of the effluent over a sampling period of not less than seven hours and not more than 24 hours.
- (6) “Grab Sample” means a quantity of undiluted effluent collected at any given time.
- (7) “Acutely Lethal Effluent” means an effluent at 100% concentration that kills more than 50% of the rainbow trout subjected to it over a 96-hour period when tested in accordance with the acute lethality test.

## PROPOSED LICENCE CONDITIONS HANDBOOK

The proposed Licence Conditions Handbook is provided on the following pages of the document.

E-Docs #: 3870014 (WORD)

E-Docs #: 3909923 (PDF)

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**Licence Conditions Handbook  
(LCH-Strateco-SMP-R000)**

**Effective date: \_\_\_\_\_, 2012**

## **PROPOSED**

**Strateco Resources Inc.,  
Matoush Underground Exploration Project  
Uranium Mining Facility Site Preparation and Construction Licence**

**UMCL-MINE-MATOUSH.00/2017**

**Effective: \_\_\_\_\_, 2012**

SIGNED at OTTAWA this \_\_\_\_ day of \_\_\_\_\_, 2012

---

**J. LeClair**  
**Director, Uranium Mines and Mills Division**  
**Directorate of Nuclear Cycle and Facilities Regulation**  
**CANADIAN NUCLEAR SAFETY COMMISSION**

**Revision History:**

<b>Effective Date</b>	<b>Rev. #</b>	<b>Section(s) Changed</b>	<b>Description of the Changes</b>	<b>DCR E-DOC</b>
2012	000-DRAFT	N/A	DRAFT document prepared for public hearing.	N/A

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## **1. INTRODUCTION**

### **1.1 BACKGROUND**

The objective of this Licence Conditions Handbook (LCH) is to identify criteria that will be used by CNSC staff to assess licensee compliance with the licence conditions listed in the Uranium Mine Site Preparation and Construction Licence UMCL-MINE-MATOUSH.00/2017. To support this objective, the LCH contains the following information:

- A description of each section of the UMCL;
- Background information and compliance verification criteria for each licence condition;
- Delegation of authority to CNSC staff where applicable;
- Reference to licensee documentation with version control; and
- Reference to applicable CSA standards or CNSC regulatory documents with version control.

The LCH is intended for use by both the licensee and CNSC staff and should be read in conjunction with UMCL-MINE-MATOUSH.00/2017.

### **1.2 CNSC ADMINISTRATIVE CONTROL PROCESS**

#### **1.2.1 LCH Change Control Procedure**

A change control process is applied to the LCH to ensure that:

- Preparation and use of this document is properly controlled;
- All referenced documents are correctly identified and maintained; and
- Procedures for modifying this document are clear.

A request to change this LCH can be initiated by either CNSC staff or the licensee. To update the LCH, CNSC staff will take the following steps:

- Initiate a change request using the Change Request Form in Appendix A of this LCH;
- Coordinate a review by the identified subject matter expert, if required;
- Obtain endorsement from the Director of the Uranium Mines and Mills Division (UMMD);
- Consult the licensee. In case of disagreement on the proposed change, the dispute resolution process outlined in section 1.2.2 will apply;
- Obtain approval from the Director General (DG) of the Directorate Nuclear Cycle and Facilities Regulation (DNCFR); and
- Update the LCH in accordance with the approved Change Request Form and send the updated document to the parties identified on the distribution list (see section 1.2.4).

The Commission has delegated authority to approve changes to this LCH to the DG of DNCFR.

### **1.2.2 Dispute Resolution**

In case of a dispute between the licensee and CNSC staff regarding changes to the LCH, both parties will meet to discuss the dispute and reach a decision on the path forward. The decision, including its rationale will be documented. If any party is not satisfied with the decision, the resolution process will proceed up to the Director, DG or Executive Vice President (EVP) level. If any party is still not satisfied with the decision, the issue will be brought to the attention of the Commission at a Commission meeting. The decision made by the Commission will be final.

### **1.2.3 Records Management**

In order to track changes to the LCH, the completed Document Change Request (DCR) Form (Appendix A of this LCH) and accompanying documentation will be archived in records and referenced in the revision history of the LCH. Electronic communication related to the change, such as comments from reviewers will be stored in the CNSC Information Management System (E-Access).

### **1.2.4 Distribution**

A copy of the updated version of the LCH will be distributed to the following parties:

- Project Officer, Uranium Mines and Mills Division; and
- Strateco Resources Inc. (Strateco).

### **1.2.5 Document Version Control**

During the licensing period, the licensee may make improvements to internal programs or procedures referenced in this LCH. CNSC staff will review these changes in accordance with the criteria set out in Appendix B of this LCH. To capture these changes, a document version control table has been provided for each licence condition, where applicable. A consolidated list of all version control documents is provided in Appendix C of this LCH. This appendix also includes guidance for notifying CNSC staff of proposed changes to licensee documents.

## **1.3 DELEGATION OF AUTHORITY BY THE COMMISSION**

For licence conditions that stipulate “person authorized by the Commission”, the delegation of authority by the Commission to act as a “person authorized by the Commission” applies to the incumbents of the following positions:

- Director, Uranium Mines and Mills Division;
- Director General, Directorate of Nuclear Cycle and Facilities Regulation; and
- Executive Vice President and Chief Regulatory Operations Officer, Regulatory Operations Branch.

## 1.4 ACTIVITIES AUTHORIZED UNDER OTHER REGULATORY APPROVALS

Additional authorizations/permits from other regulatory agencies may be required to undertake the proposed project activities. It is Strateco’s responsibility to meet all applicable federal, provincial and municipal regulatory requirements and obtain the appropriate authorizations from other regulatory authorities which exist outside of the context of the *Nuclear Safety and Control Act*.

## 2. DESCRIPTION OF THE SECTIONS IN THE UMCL

### 2.1 SECTION I – LICENCE NUMBER

The alpha numeric expression UMCL-MINE-MATOUSH.00/2017 stems from the CNSC standard convention for identifying licences. The following table provides a description of each identifier used in the expression:

Identifier	Description
UMCL	Uranium Mine Site Preparation and Construction Licence
MINE	Refers to type of facility (MINE, MILL, MINEMILL)
MATOUSH	Refers to facility name
00	Licence version number (00 = Initial licence, 01 = Amendment No.1, etc.)
2017	Expiration year

### 2.2 SECTION II - LICENSEE

This section provides the name and the address of the person or the corporate entity that holds the licence, which is referred hereinafter as the “licensee”, which is Strateco Resources Inc.

### 2.3 SECTION III – LICENCE PERIOD

This section identifies the duration for which the licence is valid. The licence period for which UMCL-MINE-MATOUSH.00/2017 is from \_\_\_\_\_, 2012 to \_\_\_\_\_, 2017, unless suspended, amended, revoked, or replaced.

### 2.4 SECTION IV – LICENCED ACTIVITIES

This section of the licence identifies the activities that are being licensed. The box below contains a copy of the text in the licence. The authorized activities are from the list of activities described in section 26 of the *Nuclear Safety and Control Act*.

**This licence authorizes the licensee to:**

- |   |
|---|
| <p>a) <b>Prepare a site for and construct a nuclear facility (hereinafter “the facility”). The facility consists of an underground exploration mine, waste management systems and associated site facilities located at what is commonly known as the Matoush Underground Exploration Project, Quebec, the location of which is more particularly described in Appendix A to this licence;</b></p> <p>b) <b>operate and modify the underground exploration mine to conduct exploration drilling and to mine three excavations through the mineralized zone;</b></p> <p>c) <b>operate an effluent treatment plant and associated facilities; and</b></p> <p>d) <b>decommission the nuclear facility.</b></p> |
|---|

Strateco is authorized to prepare the site and construct the Matoush underground exploration mine and associated facilities. This includes the underground mine, offices and shops, a lined special waste rock storage pad, a waste rock pad, surface run-off diversion ditches and collection ponds.

Strateco is authorized to operate the underground exploration mine, to conduct exploration drilling and to mine up to three excavations through the Matoush uranium deposit to conduct tests to assess water and ground conditions.

Strateco is authorized to construct, commission and operate a mine water treatment plant (DRWTP - Development Ramp Water Treatment Plant) and associated ponds.

If, after evaluating the results of the exploration program, Strateco decides not to proceed with the development of uranium mine, Strateco is authorized to decommission the underground exploration mine and associated facilities.

## **2.5 SECTION V – EXPLANATORY NOTES**

This section provides guidance on the terminology used in the licence, inclusion of Appendices in the licence and provides a link to the LCH. The LCH is associated with the UMCL without making it a specific licence condition.

- |  |
|--|
| <p>a) <b>Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the <i>Nuclear Safety and Control Act</i> and associated Regulations.</b></p> |
|--|

- b) **The content of Appendix B, “AUTHORIZED EFFLUENT DISCHARGE LIMITS,” attached to this licence forms part of the licence.**
- c) **The *UMCL-MINE-MATOUSH.00/2017 Licence Conditions Handbook* identifies the criteria that will be used by CNSC staff to assess the licensee’s compliance with the conditions listed in the licence.**

## 2.6 SECTION VI - CONDITIONS

This section lists the mandatory licence conditions. Section 3 of the LCH provides compliance verification criteria for each licence condition.

### 3. COMPLIANCE FRAMEWORK FOR EACH LICENCE CONDITION

The licence conditions have been grouped, to the extent possible, under the most appropriate Safety and Control Area (SCA). A definition of the SCA is given at the beginning of each subsection below. The explanation of each licence condition is organized in the following manner:

#### **Preamble**

Provides background history and/or the regulatory context related to the licence condition.

#### **Compliance Verification Criteria**

Provides further technical details and guidance to clarify how to achieve and determine compliance against the licence condition.

#### **Document Version Control**

The versions of documents that will be used to assess compliance with licence conditions are identified. These documents include licensee produced documents such as programs, procedures, standards, or plans and also include applicable Canadian Standards Association (CSA) standards and/or CNSC regulatory documents. If one of the noted documents is revised, a new sub-entry will be added for the revised document and the previous revision will be shaded. Further information regarding the version control of documents is provided in Section 1.2.5 of this LCH.

During the licensing period, CNSC staff will execute compliance activities to independently verify that the licensee is conducting the licensed activities in accordance with the requirements of the *Nuclear Safety and Control Act*, its associated Regulations and the licence. Verification of the licensee’s implementation of programs may reveal issues or non-compliances that will be managed through the CNSC’s compliance program.

### 3.1 GENERAL

#### 3.1.1 LC 1.1 – According with the Licensing Basis

##### Licence Condition

**The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis.**

##### Preamble

As defined in CNSC Information Document INFO-0795, *Licensing Basis Objective and Definition*, the licensing basis for a nuclear facility or activity is a set of documents or requirements comprising:

- (i) the regulatory requirements set out in the applicable laws and regulations;
- (ii) the conditions and safety and control measures described in the facility’s or activity’s licence and the documents directly referenced in that licence; and
- (iii) the safety and control measures described in the licence application and the documents needed to support that licence application.

Appendix C.1.3 of the LCH lists the key Strateco documents which are deemed to contain the safety and control measures that are considered to form item (iii) of the licensing basis.

##### Compliance Verification Criteria

Strateco shall conduct the licensed activities in accordance with items (i), (ii), and (iii) of the licensing basis as defined above.

##### Document Version Control

Version control of most of the above documents is found under the appropriate safety and control area. The remaining documents are listed below.

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-1 Licence Application for the Underground Exploration Program of the Matoush Project	N/A	November 2009	3455291

### 3.1.2 LC 1.2 – Changes to Supporting Documents

#### Licence Condition

**The licensee shall give written notification to the Commission, or person authorized by the Commission of any changes made to the documents needed to support the licence application.**

#### Preamble

During the course of the licensed activities, it is expected that the licensee will periodically make changes to improve the safety and control measures initially described in the licence application and management system documents.

While provisions have been made under this licence condition to allow the licensee to make changes to the safety and control measures, CNSC staff must verify that the changes are made in the safe direction and are still within the licensing basis. This licence condition requires written notification of any changes to the documents listed in Appendix C.1.3.

#### Compliance Verification Criteria

Appendix C.1.3 of the LCH lists the key Strateco documents which are deemed to contain the safety and control measures for the licensed activities that form part of the licensing basis. Strateco is expected to follow its Document Management Plan and Change Management Procedure, for any changes related to a documents listed in Appendix C.1.3. Should Strateco make any changes to these documents, CNSC notification is required as follows:

Notification Requirement	Description
“N”	written notification is required as the revised document is implemented (comes into effect).
“P”	written notification prior to implementation is required at least 30 days before the revised document comes into effect.

CNSC staff will review the noted changes to the documents in accordance with the guidance provided in Appendix B. Any concerns regarding the document revision for the “P” documents will be brought to the attention of Strateco for resolution prior to the document coming into effect.

#### Document Version Control

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	70-709-003-A-1 Change Management		2011	3559190
STR	<i>Document Management Plan*</i>		2011	3455309

\**Document Management Plan* referred to in Section 8.2 of Quality Control and Assurance Manual.

### 3.1.3 LC 1.3 – Resolution of Conflicts or Inconsistencies

#### **Licence Condition**

**The licensee shall, in the event of any conflict or inconsistency between licence conditions, codes or standards or regulatory documents referenced in this licence, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission, for resolution.**

#### **Preamble**

The licensee and CNSC staff will discuss conflicts and inconsistencies between licence conditions, codes or standards or regulatory documents referenced in this licence to ensure a common understanding of CNSC expectations. The resolution of these conflicts and inconsistencies will be documented by CNSC staff and acknowledged by the licensee.

In case of a conflict between CSA standards, CNSC will consult with the CSA before finalizing the resolution.

A list of resolutions made pursuant to this licence condition will be recorded in Appendix E of this LCH. This Appendix will list the subject of the conflict or inconsistency and will give the reference to the electronic record (E-Docs #) documenting the resolution.

CNSC staff will ensure through their compliance activities that Strateco is complying with the resolution, as formally communicated by the CNSC.

#### **Compliance Verification Criteria**

Not Applicable.

#### **Document Version Control**

Not Applicable.

### 3.2 MANAGEMENT SYSTEM

The Safety and Control Area “Management System” covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives and fosters a healthy safety culture.



### 3.2.1 LC 2.1 – Management System

#### Licence Condition

**The licensee shall implement and maintain a management system for the facility.**

#### Compliance Verification Criteria

The adequacy of the Management System shall be evaluated against the following principles and elements:

- Safety is the paramount consideration, guiding all decisions and actions (safety culture);
- The business is defined, planned, and controlled. The required quality and the means of achieving it are defined;
- The organization is defined and understood;
- Resources are managed;
- Communication is effective;
- Information is managed. The preparation and use of documents is controlled. Essential records are maintained;
- Problems are identified and resolved. Deficiencies will be identified and remedied;
- Purchased goods are evaluated to identify, assess, eliminate and control the risk associated with the use of these goods;
- Changes to accepted items, processes and practices are controlled;
- Managers at all levels will regularly assess the management processes for which they are responsible; and
- Senior management reviews the management system at planned intervals to ensure its continuing adequacy and effectiveness. Experience is sought, shared, and used. The management system is continually improved.

Strateco's Management System policies and program are described in the following documents:

- Mining Facility Licensing Manual;
- Quality Control and Assurance Manual;
- Gestion Documentaire; and
- Worker Communications.

It is expected that the implementation of the Management System will be compliant with the information contained in these documents.

### **Document Version Control**

<b>Strateco Management System</b>				
<b>Source</b>	<b>Description of Revision Change</b>	<b>Revision</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-0-002, Mining Facility Licensing Manual		2011	3559193
STR	70-709-A-001 Quality Control and Assurance		2011	3455309
STR	70-709-F-0-002 Gestion Documentaire		2011	3455416
STR	70-705-A-0-002 Worker Communications		2011	3455477
STR	Responses to CNSC Inquiries Regarding the Exploration Ramp, June 2010	May 2010		3559190
STR	70-709-003-A-1 Change Management Procedure		2011	3559235

### **3.2.2 LC 2.2 – Management of Contractors**

#### **Licence Condition**

**The licensee shall ensure that every contractor working at the facility complies with the applicable conditions of this licence including those relating to the licensee's policies, programs, and procedures with respect to the protection of health, safety, environment, and, to maintenance of security.**

#### **Preamble**

While Strateco will retain overall corporate responsibility and control, the selected long-term mining contractor will provide workers and line supervision for the project. The contractor will report to Strateco’s Project Manager. Short-term contractors will be employed to construct the surface facilities and conduct periodic maintenance activities.

Although contractors perform the licensed activities, Strateco retains the ultimate responsibility as licensee under the *Nuclear Safety and Control Act* and associated Regulations. As such, Strateco is accountable to the CNSC to provide the required assurances that the health, safety, and security of the public and workers, and the environment are protected. This accountability to the CNSC cannot be delegated through contractual arrangements.

#### **Compliance Verification Criteria**

The management of contractors shall be evaluated against the following elements and principles:

- The risks to contractors and risks to the organization from the use of contractors are evaluated to identify, assess, and eliminate or control hazards;
- Contractors are adequately trained to up-to-date procedures and are qualified and competent (e.g. education, certification, designation, training, knowledge, skills, experience, abilities, and attitudes);
- Only qualified and competent personnel and contractors shall be allowed to carry out duties of their employment; and
- Work carried out by the contractor is approved and monitored by a qualified and competent member of the licensee’s staff, particularly work on safety-related structures, systems, and/or components.

Strateco’s contractor management policies and program are described in the following documents:

- Mining Facility Licensing Manual; and
- Quality Control and Assurance.

It is expected that the management of contractors will be compliant with the information contained in these documents.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	70-709-A-001 Quality Control and Assurance		2011	3455309

The licensee is required to report to the Commission on the performance of the facility. This includes submission of monitoring results, periodic performance assessments and the occurrence and response to unusual events.

**3.2.3 LC2.3 – LC 2.11 – Reporting to the Commission**

**Licence Condition 2.3 – Reporting Process**

**The licensee shall implement and maintain safety and control measures for reporting to the Commission or a person authorized by the Commission that includes reporting of all events required by the *Nuclear Safety and Control Act* and its Regulations.**

**Licence Condition 2.4 – Reporting - Reaching Effluent Limits**

The licensee shall, where the effluent concentration reaches or exceeds the discharge limits specified in Appendix B to this licence, report to the Commission or a person authorized by the Commission within 24 hours the fact that the discharge limit has been reached or exceeded.

**Licence Condition 2.5 – Reporting – Environment Action Level**

The licensee shall, within 24 hours of becoming aware that an action level specified in the Environmental Code of Practice has been reached, notify the Commission or a person authorized by the Commission.

**Licence Condition 2.6 – Reporting – Release of Hazardous Substance**

The licensee shall, within 24 hours of becoming aware of a release of a hazardous substance into the environment not authorized by the licence, report to the Commission or a person authorized by the Commission, the location and circumstances of the situation, and any action that the licensee has taken or proposes to take with respect to it.

**Licence Condition 2.7 – Reporting – Radiation Action Level**

The licensee shall, within 24 hours of becoming aware that the action level specified in the *Radiation Protection Code of Practice* has been reached, notify the Commission or a person authorized by the Commission.

**Licence Condition 2.8 – Reporting – Radiation Doses**

The licensee shall issue the records required by subsection 5(1) of the *Radiation Protection Regulations* to each person referred to in subsection 27(a) of the *Nuclear Safety and Control Act*, the Commission or a person authorized by the Commission, and the National Dose Registry (NDR) within 90 days after the end of each quarter of a calendar year.

**Licence Condition 2.9 – Reporting – Annual Report**

The licensee shall submit to the Commission or a person authorized by the Commission an annual report for the facility.

**Licence Condition 2.10 – Reporting - Environmental Measurements**

The licensee shall submit the results of the environmental monitoring program and the environmental assessment follow-up program at a frequency and in a form acceptable to the Commission or a person authorized by the Commission.

## **Licence Condition 2.11 – Reporting – Radiation Measurements**

**The licensee shall submit the results of the radiation monitoring program at a frequency and in a form acceptable to the Commission or a person authorized by the Commission.**

### **Preamble**

These licence conditions require the licensee to implement and maintain a process for reporting information to the CNSC and stipulate specific reporting requirements.

The regulatory foundation for expectations associated with reporting includes the following:

- Section 27 of the *Nuclear Safety and Control Act* stipulates the prescribed records that the licensee must keep and report in the prescribed manner;
- Section 29 of the *General Nuclear Safety and Control Regulations* prescribes a number of situations that must be reported to the Commission;
- Subsection 29(2) prescribes that reports must be submitted within 21 days and provides the information to be included in the reports; and
- Subsection 29(3) allows for the prescription of alternative reporting requirements in licence conditions.

### **Compliance Verification Criteria**

Reports of failures or events should be made verbally within 24 hours of becoming aware of the event and followed up with an e-mail to confirm the occurrence.

In accordance with LC 2.9 Strateco shall submit to the CNSC an annual compliance report by September 30 of each year, covering the operation for the 12 month period from July 1 of the previous year to June 30 of the reporting year. This reporting period aligns with provincial reporting requirements. Guidance on information to be contained in the annual report will be adapted from the current guidance provided for Saskatchewan uranium mines CNSC-*Saskatchewan Harmonized Annual Reporting Requirements*.

In accordance with LC 2.10 Strateco shall prepare and submit to the CNSC on a quarterly basis, within 90 days after the end of each quarter of a calendar year, the results of the Environmental Monitoring Program including quality assurance and quality control information. More frequent reporting may be requested on a case by case basis.

In accordance with LC 2.11 Strateco shall prepare and submit to the CNSC on a quarterly basis, within 90 days after the end of each quarter of a calendar year, the results of the Radiation Monitoring Program including quality assurance and quality control information. More frequent reporting may be requested on a case by case basis.

CNSC staff will review the information provided in the reports to assess performance and compliance with the licensing basis.

### **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
CNSC	Information Request – Environmental Monitoring Program	October 2010	NA	3712375
CNSC	CNSC-Saskatchewan Harmonized Annual Reporting Requirements	August 2010		3678482

### **3.2.4 LC 2.12 – Public Information and Disclosure**

#### **Licence Condition**

**The licensee shall implement and maintain a program for public information for the facility, including a public disclosure protocol.**

#### **Preamble**

The primary goal of the public information program is to ensure that information related to the health and safety of persons and the environment and other issues associated with the lifecycle of the nuclear facility is effectively communicated to the public. In addition, the program shall include a commitment to and protocols for ongoing, timely communications regarding emissions, effluent releases, unplanned events and other incidents and activities related to the licensed facility that may be of interest to the public during the course of the licence period.

#### **Compliance Verification Criteria**

The Public Information and Disclosure Program shall be evaluated against the regulatory requirements and guidance in RD-99.3, Requirements for Public Information and Disclosure, and GD-99.3, Guide to the Requirements for Public Information and Disclosure. Together, RD-99.3 and GD-99.3 will be replacing the guidance provided in Regulatory Guide G-217, Licensee Public Information Programs.

Strateco’s public information program is described in the following documents:

- Mining Facility Licensing Manual; and
- Programme d’information publique.

CNSC staff expects that Strateco will implement a public information and disclosure program according to the information contained in these documents.

CNSC staff will verify compliance by observing licensee public information and disclosure activities including public information meetings and tracking media releases.

### **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	<i>15-153-A-0-002</i> Mining Facility Licensing Manual		2011	3559193
STR	<i>15-128-F-0-001</i> Programme d'information publique		2011	3464575
CNSC	Regulatory Guide G-217 <i>Licensee Public Information Programs</i>	January 2004		

### **3.3 HUMAN PERFORMANCE MANAGEMENT**

The Safety and Control Area “Human Performance Management” covers activities that enable effective human performance through the development and implementation of processes to ensure that licensee staff members are sufficient in numbers in all relevant job areas and have the necessary knowledge, skills, and tools in place to safely carry out their duties.

#### **3.3.1 LC 3.1 - Training**

##### **Licence Condition**

**The licensee shall implement and maintain safety and control measures to ensure that personnel are qualified and competent to perform assigned work.**

##### **Preamble**

This licence condition requires that the licensee implement and maintain a program to provide training to ensure that employees and contractors are trained and assessed to confirm that they have acquired the knowledge, skills, and competencies to safely perform their work assignments.

##### **Compliance Verification Criteria**

CNSC staff’s expectations are that detailed training plans and procedures include controls for:

- The definition of qualifications and competencies required for each task including site specific requirements;

- The verification of personnel qualifications and competencies against defined qualification and competency requirements prior to permitting personnel to perform work on the site; and
- The documentation and maintenance of personnel qualification and competency records.

The CNSC endorses a Systematic Approach to Training (SAT) as an effective method to establish and maintain training for workers. The training program will be evaluated against the following elements of SAT:

- A clear commitment to establishing and adopting a SAT-based training system is demonstrated;
- All personnel and contractors have been adequately trained to up-to-date procedures and are qualified and competent (e.g. education, certification, designation, training, knowledge, skills, experience, abilities, and attitudes). Only qualified and competent personnel and contractors are allowed to carry out duties of their employment;
- Personnel and contractors have a level of training related to nuclear safety, radiation safety, fire safety, environmental protection, on-site emergency arrangements, and conventional health and safety corresponding to the duties of their employment;
- The initial and continuing training programs for all personnel and contractors are established, documented, implemented, maintained and evaluated in accordance with a Systematic Approach to Training (SAT), and have clearly defined and documented entry-level qualification and competency requirements for all positions;
- Performance requirements of a capability, job, or other activity are identified by conducting a job analysis to determine all of the tasks, sub-tasks and task elements involved;
- The necessary initial and continuing qualification and competency requirements for all personnel and contractors are defined and identified based on an analysis of the knowledge, skills, and abilities/attitudes required to perform the tasks of their position;
- Appropriate training is designed, developed and delivered to meet the qualification and competency requirements;
- Trainers meet and maintain documented qualification and competency requirements, particularly subject matter expertise and instructional skills;
- Formal evaluations, whose confidentiality is protected by adequate precautions, confirm and document that, each trained person is qualified and competent to perform the duties of their employment;
- A systematic method is used to evaluate and revise training programs that is based on a comprehensive evaluation system integrating the performance of trained personnel in their positions, and activities related to training and evaluation;
- A change management process systematically analyzes procedural and equipment changes, changes in job description, operating experience feedback, including facility and industry-wide events, to identify changes to the tasks and task lists, and identify required modifications to training; and
- Qualification and competency records are established and maintained for all personnel and contractors.



Strateco’s training program is described in the following documents:

- Mining Facility Licensing Manual;
- Formation; and
- Radiation Protection Training.

It is expected that the implementation of the training program will be compliant with the information contained in these documents.

CNSC staff will observe training sessions and will check training records to verify that training is delivered in a timely manner. In addition CNSC staff will assess the effectiveness of training by observing workers as they go about their duties.

CNSC staff will verify that Nuclear Energy Workers, understand the risks associated with radiation and the radiation risks that they may encounter at the Matoush Project.

### **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	<i>15-153-A-0-002</i> Mining Facility Licensing Manual		2011	3559193
STR	<i>70-701-F-0-001</i> Formation		2011	3455474
STR	<i>70-704-A-0-008</i> Radiation Protection Training		2011	3455471

## **3.4 OPERATING PERFORMANCE**

The Safety and Control Area “Operating Performance” includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

### **3.4.1 LC 4.1 – Operating Performance**

#### **Licence Condition**

<b>The licensee shall implement and maintain safety and control measures for the safe conduct of the licensed activities.</b>
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#### **Compliance Verification Criteria**

Operating Performance shall be evaluated against the following elements and principles:

- Health, safety and environmental protection objectives and targets are identified for relevant functions and levels within the organization;
- Work is planned and controlled to achieve objectives and targets. The right items, processes and practices are used. Work is verified to confirm that it is correct. Those who verify work are independent from those who do the work;
- Planning identifies and prioritizes hazards, risks, legal requirements, other requirements, management system deficiencies, and opportunities for improvement;
- Infrastructure and resources needed to achieve health and safety objectives and targets are provided;
- Preventative and protective measures are implemented to address identified hazards and risks;
- Operating experience is analyzed in a systematic way to identify and apply lessons learned to activities at the site;
- The process for constructing structures, systems and components follows accepted construction and project management practices;
- Equipment and systems are commissioned in accordance with documentation prepared prior to commissioning. The commissioning documentation is reviewed for conformity to the design;
- Commissioning reports identify the acceptability of the commissioning results;
- The turnover of structures, systems, components, and documents to operations is controlled;
- The mine and associated facilities are operated, monitored, and maintained in accordance with documentation that is consistent with the design and licensing;
- Operational activities are controlled through the use of and adherence to operational documents;
- Flammable liquids, combustible liquids, compressed gases are safely stored and handled;
- Sources of ignition are controlled;
- Good housekeeping prevents the creation of fire and tripping hazards; and
- Fire safety is managed during work activities.

It is expected that operating performance will be compliant with the information contained in the documents listed.

Strateco has identified operating limits and targets for the following:

- Design effluent quality guidelines;
- Effluent concentration release objectives;
- Radiation protection action levels;
- Radioactive decontamination criteria;
- Final effluent administrative and action levels; and
- Material cut-off grades.

CNSC staff will review operating performance during inspections and review unusual occurrence reports. Specific areas identified for verification include:

- Provision of ventilation to underground operations;
- Implementation of the waste rock segregation and verification procedure;
- Implementation of the waste rock characterization program;
- Excavation through the Argillaceous Fault;
- Commissioning results for the DRWTP;
- Control monitoring program for DRWTP;
- The operating manual and operator training program for the DRWTP;
- Implementation of operating procedures provided by the mining contractor; and
- Quality assurance of the construction of pond and special waste rock pile liners.

### **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	Mining Facility Licensing Manual		April 2011	3559193
STR	Licence Application			3455291
STR	Response to Canadian Nuclear Safety Commission Inquiries Regarding the Exploration Ramp	January 2010		3559190
STR	Quality Control and Assurance		2011	3455309
STR	Waste Management Program		2011	3455467
STR	DRWTP Operating Manual		2011	
CNSC	Regulatory Guide G-221, <i>A Guide to Ventilation Requirements for Uranium Mines and Mills</i>	June 2003		

### **3.4.2 LC4.2 – Grouting Exploration Drill Holes**

#### **Licence Condition**

**The licensee shall ensure that all holes drilled for the purpose of delineating the uranium orebody, from whatever source, are grouted or sealed.**

#### **Preamble**

During exploration, drill holes intersect the area where eventually underground mine tunnels may be developed. If these holes are not grouted or sealed, they can form a pathway for inflow of ground and surface water into future mine openings. This is a significant hazard because intersection of a drill hole can lead to the inflow of large volumes of water.

This licence condition requires that the licensee ensure that holes drilled during past and future exploration are grouted or sealed to eliminate or reduce the potential risks from water inflow to a future mine.

**Compliance Verification Criteria**

It is expected that the grouting or sealing of drill holes will be compliant with the information contained in these documents.

Strateco has indicated that drill holes that intersect uranium mineralization will be plugged throughout the length of and immediately above the intersection. Drill holes that do not intersect mineralization will be plugged at the surface. Holes drilled from the underground workings during underground exploration will be capped or plugged.

CNSC staff will verify that surface drill holes have been grouted or sealed and review the implementation of underground exploration procedures to verify that drill holes are grouted or sealed.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	Responses to CNSC Inquiries Regarding the Exploration Ramp	May 2010		3559190

**3.5 SAFETY ANALYSIS**

The Safety and Control Area “Safety Analysis” includes the systematic evaluation of the potential hazards associated with the proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

**3.5.1 LC 5.1 – Risk Assessment**

**Licence Condition**

**The licensee shall implement and maintain safety and control measures for risk assessment.**

**Preamble**

This licence condition requires that the licensee implement and maintain a process to identify and assess hazards and risks on an ongoing basis. The results of this process will be used to set objectives and targets and to develop preventative and protective measures.

**Compliance Verification Criteria**

The following risk assessments were carried out to support the Matoush Project licence application:

- Human Health and Ecological Risk Assessment;
- Management of Environmental Risk;
- Mine Risk Assessment (see Risk Management Program);
- DRWTP Risk Assessment;
- Fire Hazard Assessment;
- Security Threat Risk Assessment; and
- Risk Management Program, Inventory of Risks.

CNSC staff expects that Strateco will assess operating performance against these risk assessments and periodically revise the risk assessments based on operating conditions to ensure that the risks associated with the facility are adequately assessed and controlled.

It is expected that the implementation of the risk assessment program will be compliant with the information contained in these documents.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	<i>Development Ramp Water Treatment Plant Risk Assessment</i>	July 2009		3455488
STR	<i>Screening Level Human Health and Ecological Risk Assessment</i>	April 2011		3715833
STR	<i>Management of Environmental Risk for the Matoush Underground Exploration Ramp Project, Senes Consultants Ltd.</i>	October 2009		3455489
STR	7-707-006-A-0 Risk Management Program		2011	3559242

### 3.6 PHYSICAL DESIGN

The Safety and Control Area “Physical Design” includes activities that impact on the ability of systems, structures, and components to meet and maintain their design basis given new information arising over time, and taking changes in the external environment into account.

#### 3.6.1 LC 6.1 – Design Process

##### Licence Condition

<b>The licensee shall implement and maintain safety and control measures for physical design.</b>
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##### Preamble

This licence condition requires that the licensee implement and maintain a design process that ensures that the design intent of the engineered structures is maintained when changes are proposed.

##### Compliance Verification Criteria

Strateco is encouraged to make continuous improvements to the design of facilities and equipment, but at all times shall remain within the licensing basis authorized by the Commission.

It is expected that design of the Matoush Project will be compliant with the information contained in these documents.

The licensee is expected to design, build, modify, and otherwise carry out work related to the facility with potential to impact protection from fire in accordance with the *National Building Code, 2010* and the *National Fire Code, 2010*.

The design of the underground mine must adapt to conditions encountered as development advances. A design process must be implemented and maintained to ensure that the design meets design criteria.

CNSC staff will review records of changes to assess the process followed to ensure that the original design intent was considered in the change.

CNSC staff will review the mine engineering design process and procedures to verify that the design process takes into account information collected during development to verify or modify the design to address risks.

**Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-0-002 Mining Facility Licensing Manual	April 2011	2011	3559193
STR	Development Ramp Water Treatment Plant Process Package, Melis Engineering Ltd.	June 2009		3455354
STR	Mine Design, Scott, Wilson, Roscoe, Postle and Associates Inc.	July 2009		3455402
STR	Ramp Pumping System Design, Scott, Wilson, Roscoe, Postle and Associates Inc.	July 2009		3455403
STR	Ramp Ventilation System Design	October 2009		3455483
STR	Technical Memorandum, Computer simulation results, fan requirements estimate, GENIVAR	September 2010		3679589
NRC	<i>National Building Code</i>	2010		
NRC	<i>National Fire Code</i>	2010		

**3.7 FITNESS FOR SERVICE**

The Safety and Control Area “Fitness for Service” covers activities that impact on the physical condition of systems, components and structures to ensure that they remain effective over time. This includes programs that ensure all equipment is available to perform its intended design function when called upon to do so.

**3.7.1 LC 7.1 – Maintenance Program**

**Licence Condition**

**The licensee shall implement and maintain safety and control measures for the maintenance of systems, equipment and devices which includes periodic inspections and testing.**

**Preamble**

This licence condition requires the licensee to implement safety and control measures to ensure that the operating condition of systems, equipment and devices is preserved so that they can

perform their function reliably. Accuracy is maintained by planning and carrying out periodic adjustments, calibrations, repairs and replacement.

**Compliance Verification Criteria**

It is expected that the licensee will conduct routine maintenance, inspection and testing to ensure that the availability, reliability and effectiveness of facilities and equipment that may impact health, safety and protection of the environment.

It is CNSC staff’s expectation that once a licence is issued a document will be developed describing in more detail the fitness for service program for safety critical systems. CNSC staff expects this to be completed within six months of receiving the proposed licence. This includes but is not limited to:

- Testing and calibrating of alarm systems;
- Testing and maintenance of underground vehicles to control emissions;
- Testing and maintenance of fire protection systems; and
- Calibration and maintenance of monitoring instruments.

The program should document the frequency that the various maintenance, inspection and testing are performed.

Strateco’s preventative maintenance program is described in the following documents:

- Mining Facility Licensing Manual;
- Emergency Measures Program; and
- Maintenance Program (to be developed).

It is expected that the implementation of the maintenance program will be compliant with the information contained in these documents.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	<i>15-153-A-0-002</i> Mining Facility Licensing Manual		2011	3559193
STR	<i>70-703-A-0-001</i> Emergency Measures		2011	3559245
STR	Maintenance Program		2011	
NFC	<i>National Fire Code</i>	2010		



### **3.8 RADIATION PROTECTION**

The Safety and Control Area “Radiation Protection” covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination and radiation doses received are monitored and controlled.

#### **3.8.1 LC 8.1 – Radiation Protection Program**

##### **Licence Condition**

<p><b>The licensee shall implement and maintain safety and control measures for radiation protection.</b></p>
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##### **Preamble**

This licence condition requires that the licensee implement and maintain a Radiation Protection Program that will ensure that radiation doses to workers and the public are below the regulatory dose limits and as low as reasonably achievable.

##### **Compliance Verification Criteria**

The Radiation Protection (RP) Program will be assessed against the advice provided in CNSC Regulatory Guides G-228, Developing and Using Action Levels; G-218, Preparing Codes of Practice to Control Radiation Doses at Uranium Mines and Mills; G-129, Keeping Radiation Exposures and Doses “As Low As Reasonably Achievable” (ALARA) and CNSC Regulatory Standard S-106, Technical and Quality Assurance Requirements for Dosimetry Services in Canada.

In addition the RP Program will be evaluated against the following elements and principles:

- The organization and administration of RP provides effective implementation and control of radiation protection activities. The roles, responsibilities and qualification requirements of all persons involved in the RP Program are clearly defined. All levels of management and workers are committed to RP requirements and practices within their level of responsibility. A performance review process is established to evaluate the RP Program;
- Workers, supervisors, contractors, and visitors have the qualifications (knowledge, skills, experience) needed to effectively perform radiation protection practices associated with their work. A re-qualification program is implemented to maintain this qualification;
- Radiation protection personnel and radiation protection supervisors have the qualifications (knowledge, skills, experience) needed to effectively implement and conduct the RP Program;
- Radiological conditions are monitored and sources of external and internal radiation exposures are controlled. Access and work in radiological areas are controlled so that collective and individual radiation exposures are kept ALARA;

- Radiation protection instrumentation and equipment is calibrated, maintained, and used so that radiation levels are accurately determined;
- The personnel dosimetry program ensures that external and internal radiation doses to individuals are accurately determined and recorded; and
- Appropriate contamination control measures are implemented to control and minimize the contamination of areas, equipment and personnel.

Strateco’s RP policies and program are described in the following documents:

- Mining Facility Licensing Manual
- Radiation Protection; and
- ALARA.

It is expected that the implementation of the RP Program be compliant with the information contained in these documents. It is not expected that all program elements be implemented at the beginning of the licence period. Strateco is expected to develop a strategy for the implementation of the RP Program to ensure that program elements are implemented as required.

The following effective doses to individuals have been identified as radiation protection action levels. Reaching or exceeding the action level indicates a potential loss of control of the radiation protection program. The weekly action level will be assessed with engineering monitoring data as the reporting periods for official dosimetry are monthly. Estimates of the quarterly radiation dose will be based on the official dosimetry results.

<b>Action Level – Effective Dose to an Individual</b>	<b>Action Required When Action Level Reached</b>
0.25 mSv in one week	1. Notify immediately : <input type="checkbox"/> Project Manager; <input type="checkbox"/> Health and Safety Director; <input type="checkbox"/> Safety Coordinator, Radiation Protection.
1.25 mSv in a quarter	2. Send a Fax Notification to CNSC within 24 hours and submit a complete report as soon as possible but no later than 21 days; 3. Investigate, take immediate corrective action as appropriate and initiate the Non-conformance Procedure.

Radiation and dosimetry monitoring results must be submitted to the CNSC for review within 90 days of the end of the quarter in which they were collected. An annual assessment of the monitoring results must be submitted to the CNSC by September 30. The report period will cover from July 1 of the previous year to June 30 of the reporting year (see Licence Conditions 2.9 – 2.11). Because radiation dose limits are aligned with the calendar year radiation dosimetry results must also be assessed against the calendar year. The five-year dosimetry period begins January 1, 2011. Strateco’s dosimetry report for the fourth quarter of each year must include an assessment of the annual dosimetry results.

Routine compliance verification activities will include on-site inspections and review radiation monitoring data and unusual occurrence reports. Verification of elements of the RP Program will be included in every compliance inspection. Initially inspections will focus on verification that radiation levels and radiation doses are being monitored correctly and that the work force understands the radiation risks and how to work in a manner that will reduce these risks.

**Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	70-704-A-0-001 Radiation Protection		2011	3455471
STR	70-702-A-0-002 ALARA		2011	3455476
CNSC	G-228, <i>Developing and Using Action Levels</i>		March 2001	
CNSC	G-218, <i>Preparing Codes of Practice to Control Radiation Doses at Uranium Mines and Mills</i>		November 2003	
CNSC	G-129, <i>Keeping Radiation Exposures and Doses “As Low As Reasonably Achievable (ALARA)”</i>	1	October 2004	
CNSC	S-106, <i>Technical and Quality Assurance Requirements for Dosimetry Services in Canada</i>	1	May 2006	

**3.9 CONVENTIONAL HEALTH AND SAFETY**

The Safety and Control Area “Conventional Health and Safety” covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

**3.9.1 LC 9.1 – Conventional Health and Safety Program**

**Licence Condition**

**The licensee shall implement and maintain safety and control measures for conventional (occupational) health and safety.**

**Compliance Verification Criteria**

Conventional health and safety will be assessed against the following principles:

- Employees, contractors and suppliers understand the Conventional Health and Safety Program;
- Employees and contractors actively participate in the management of conventional health and safety;
- Management verifies that employees and contractors actively participate in the management of health and safety in their workplace;
- Procedures have been established and are maintained to communicate information about conventional health and safety;
- A process has been established and maintained to monitor, measure and record conventional health and safety performance and the effectiveness of the Conventional Health and Safety Program on a regular basis;
- Routine inspections are performed by supervisors, senior staff and/or safety coordinator to identify any potential safety issues;
- A process has been implemented and maintained to identify, assess, and eliminate or control health and safety risks associated with new processes or changes to work procedures, equipment, organizational structure, staffing, products, services and suppliers. The process should include training for workers as appropriate;
- The causes for injuries are investigated, corrective actions implemented, and the effectiveness of corrective actions verified;
- Procedures have been implemented and maintained for reporting and investigating work-related injuries, illnesses, fatalities and conventional health and safety incidents including near misses; and
- A preventative and corrective action procedure has been established and maintained to address non-conformances and inadequately controlled risks.

It is expected that the implementation of the Conventional Health and Safety Program will be compliant with the information contained in these documents.

CNSC staff will assess the effectiveness of the Conventional Health and Safety Program by reviewing unusual occurrence reports and by observing workers as they go about their duties. CNSC will assess the correct care, maintenance and usage of personal protective equipment during inspections. CNSC staff will conduct joint inspections with inspectors from Human Resources and Skills Development Canada and CSST.

**Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	70-702-F-0-001 Hygiène Industrielle		2011	3455306
STR	70-702-F-0-001 Santé au Travail		2011	3455478
STR	70-707-F-0-001 Sécurité au Travail		2011	3455479
CAN/CSA	Z94.4-02 Selection, Use and Care of Respirators	2002		

### 3.10 ENVIRONMENTAL PROTECTION

The Safety and Control Area “Environmental Protection” covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.

#### 3.10.1 LC 10.1 - Environmental Protection Program

##### Licence Condition

**The licensee shall implement and maintain safety and control measures for environmental protection.**

##### Compliance Verification Criteria

The Environmental Protection Program will be assessed against the advice provided in CNSC Regulatory Guide G-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills*, March 2006 including the following principles:

- All releases of radioactive and hazardous substances from the nuclear facility are controlled, monitored and recorded;
- Employees and contractors actively participate in protection of the environment;
- Management verifies that employees and contractors comply with environmental protection practices;
- Information is communicated about the protection of the environment;
- The effectiveness of environmental protection performance is monitored, measured and recorded on a regular basis;
- Routine inspections are performed to identify any potential environmental protection issues;
- A process has been implemented and maintained to identify, assess, and eliminate or control environmental risks associated with new processes or changes to work procedures, equipment, organizational structure, staffing, products, services and suppliers;

- The causes for environmental incidents are investigated, corrective actions implemented, and the effectiveness of corrective actions verified; and
- A preventative and corrective action procedure has been established and maintained to address non-conformances and inadequately controlled risks.

It is expected that the implementation of the Environmental Protection Program will be compliant with the information contained in these documents.

CNSC staff expects that additional aquatic baseline data will be collected prior to the discharge of final treated effluent to the environment. CNSC staff will verify that adequate data has been collected prior to approving the discharge. This information and monitoring results from control stations will provide a basis for comparison of monitoring results to identify any impacts the Matoush Project has on the environment.

Environmental monitoring results must be submitted to the CNSC for review within 90 days of the end of the quarter in which they were collected. An annual assessment of the monitoring results must be submitted to the CNSC by September 30. The report period will cover from July 1 of the previous year to June 30 of the reporting year (see Licence Conditions 2.9 and 2.10).

Strateco will evaluate and revise the environmental monitoring program annually based on the finding of the annual assessment of the environmental monitoring results. Proposed revisions will be reviewed by CNSC staff prior to their implementation.

The Environmental Code of Practice and action levels are based on control of the quality of the final treated effluent discharged to the environment. They are discussed under Licence Condition 10.2.

### **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	<i>Screening Level Human Health and Ecological Risk Assessment</i> , Senes Consultants Ltd.	October 2009		3455487
STR	<i>Management of Environmental Risk</i> , Senes Consultants Ltd.	October 2009		3455489
STR	75-753-A-0-001 Environmental Protection Program		2011	3455466
STR	75-753-A-0-003 Environmental Monitoring Program		2011	3455469

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	75-753-F-0-004 Program d'Urgence Environnementale		2011	3455461
CNSC	G-296, <i>Developing Environmental Protection Policies, Programs and Procedures at Class 1 Nuclear Facilities and Uranium Mines and Mills</i>	March 2006		
CNSC	S-296, <i>Environmental Protection Policies, Programs and Procedures at Class 1 Nuclear Facilities and Uranium Mines and Mills</i>	March 2006		

### 3.10.2 LC 10.2 – Reaching or Exceeding an Effluent Discharge Limit

#### Licence Condition

**The licensee shall where the effluent concentration reaches or exceeds the discharge limits specified in Appendix B to this licence, immediately investigate and take corrective action to ensure that effluent concentration is maintained below the discharge limits.**

#### Preamble

This licence condition requires the licensee to investigate and take corrective action if measured parameters in the final treated effluent exceed the authorized effluent discharge limits. Associated reporting requirements are stipulated in Licence Condition 2.4.

#### Compliance Verification Criteria

The authorized discharge limits are contained in Appendix B of the licence.

#### Authorized Effluent Discharge Limits

Deleterious Substance	Maximum Authorized Monthly Mean Concentration	Maximum Authorized Concentration In a Composite Sample	Maximum Authorized Concentration In a Grab Sample
Arsenic (mg/L)	0.50	0.75	1.00
Copper (mg/L)	0.30	0.45	0.60

<b>Deleterious Substance</b>	<b>Maximum Authorized Monthly Mean Concentration</b>	<b>Maximum Authorized Concentration In a Composite Sample</b>	<b>Maximum Authorized Concentration In a Grab Sample</b>
Lead (mg/L)	0.20	0.30	0.40
Nickel (mg/L)	0.50	0.75	1.00
Zinc (mg/L)	0.50	0.75	1.00
Total Suspended Solids (mg/L)	15.00	22.50	30.00
Radium-226 (Bq/L)	0.37	0.74	1.11
Acid balance (as H <sub>3</sub> O <sup>+</sup> ) reported as pH	In a range of 6.0 to 9.5		
Acutely Lethal Effluent	0 %		

Notes:

- (1) Definition of Units:                   mg/L = milligrams per litre  
  Bq/L = Becquerels per litre
- (2) All concentrations and activities are total values.
- (3) The above limits shall apply to all effluent discharged to the environment from the Development Ramp Water Treatment Plant.
- (4) “Monthly Mean Concentration” means the average value of the concentrations measured in all composite or grab samples collected from the final discharge point during each month when liquid effluent is released.
- (5) “Composite Sample” means:
  - (i) a quantity of effluent consisting of not less than three equal volumes or three volumes proportionate to flow that have been collected at approximately equal time intervals over a period of not less than seven hours and not more than 24 hours; or
  - (ii) a quantity of effluent collected continuously at a constant rate or at a rate proportionate to the rate of flow of the effluent over a sampling period of not less than seven hours and not more than 24 hours.
- (6) “Grab Sample” means a quantity of undiluted effluent collected at any given time.
- (7) “Acutely Lethal Effluent” means an effluent at 100% concentration that kills more than 50% of the rainbow trout subjected to it over a 96-hour period when tested in accordance with the acute lethality test.



### **Effluent Quality Discharge Objectives**

Strateco has set the following effluent quality discharge objectives which are more stringent than the effluent quality limits.

Analyte	Unit	Strateco's Objective		
		Maximum Monthly Mean Concentration	Maximum Concentration Composite Sample	Maximum Concentration Grab Sample
pH	units	6.0 – 9.5	6.0 – 9.5	6.0 – 9.5
<sup>226</sup> Ra	Bq/L	0.25	0.38	0.50
<sup>210</sup> Pb	Bq/L	0.2	0.3	0.4
As	mg/L	0.02	0.03	0.04
Cu	mg/L	0.004	0.006	0.008
Fe	mg/L	0.02	0.03	0.04
Mn	mg/L	0.922	1.4	1.9
Mo	mg/L	0.003	0.0045	0.006
Ni	mg/L	0.117	0.17	0.23
Pb	mg/L	0.0013	0.002	0.0026
Se	mg/L	0.05	0.08	0.10
U	mg/L	0.1	0.15	0.20
Zn	mg/L	0.1	0.15	0.20
TSS	mg/L	15	22.50	30

CNSC staff will assess the performance of the DRWTP against the effluent quality discharge objectives.

### **Environmental Code of Practice and Action Levels**

Strateco's Environmental Code of Practice contains administrative and action levels for parameters measured at control stations during the treatment of contaminated water. An administrative level is a measured value of an effluent quality parameter that is outside the usual range of measured values. Administrative levels have been set for the following parameters because they are subject to variation in the water treatment process and are good indicators of an upset condition.

### **Final Effluent Administrative Levels**

Parameters	Administrative Level
Total Suspended Solids	10 mg/L
pH	pH ≤ 6.5 or pH ≥ 8.5

**Note:** Administrative levels have been set to approximately two-thirds of Strateco's discharge concentration objectives (maximum monthly mean concentration).

A field lab will be set up on site for the daily sampling/monitoring/QA/QC. Administrative levels will be applied to the results obtained from the field lab.

In the event that the final effluent administrative level is exceeded, the following actions will be taken:

1. Report the incident via fax or e-mail to the CNSC Project Officer within 72 hours;
2. Investigate immediately to determine the cause of the exceedance;
3. Take the appropriate steps to return and maintain all contaminants in the effluent below the specified administrative levels; and
4. Complete an investigation report and keep it on file. This information will be reported in the annual report to be submitted on September 30th of each year.

When an administrative level is triggered, the frequency of analysis is increased at the control stations. If the average of the sampling control stations of the treatment plant continues to exceed the administrative levels, then an action level has been reached. This action level would indicate a loss of control in that the effluent treatment process had been unable to return to routine conditions following the initial administrative level exceedance.

In the event that the action level is exceeded, the following actions will be taken:

1. An investigation will be initiated to determine the ongoing cause;
2. Corrective actions will be immediately taken to return and maintain the concentrations of all contaminants in the effluent to levels below the specified level;
3. Notify the CNSC and the MDDEP within 24 hours of the action level being triggered; and
4. Prepare and provide a summary investigation report to the CNSC and the MDDEP of the actions taken to remedy the situation and prevent recurrence. This report shall be submitted within 30 days of the incident.

### **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193

### **3.11 EMERGENCY MANAGEMENT AND FIRE PROTECTION**

The Safety and Control Area “Emergency Management and Fire Protection” covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. It also includes any results of exercise participation.

### 3.11.1 LC11.1 – Emergency Management and Fire Protection Program

#### Licence Condition

**The licensee shall implement and maintain safety and control measures for emergency management and fire protection.**

#### Preamble

This licence condition requires the licensee to implement and maintain an emergency management program that includes fire protection.

#### Compliance Verification Criteria

The Emergency Management and Fire Protection Program will be assessed against the guidance provided in CNSC Guide Document G-225 *Emergency Planning at Class 1 Nuclear Facilities and Uranium Mines and Mills* and the following principles:

- Potential emergency situations have been identified;
- Potential hazards/risks from fire have been identified;
- Organization and responsibilities are identified for emergency management and fire protection programs;
- Procedures have been implemented and maintained to prevent, prepare for, and respond to emergencies;
- Pre-incident plans have been developed to respond to emergencies;
- Pre-fire plans and fire safety plans have been developed and are maintained;
- Resources, including facilities and equipment required to respond to emergencies have been identified and are maintained;
- Emergency plans are periodically tested;
- Workers are trained to fulfill duties and responsibilities with respect to emergency management and fire plans and procedures; and
- Emergency communication protocols have been established.

The fire protection program shall be implemented in all operational modes of the facility in order to reduce the occurrence of fires and limit their consequences and severity. The adequacy of the fire protection program will be assessed against the requirements of the *National Fire Code 2010*, *National Building Code 2010*, good engineering practice and the following principles:

- The fire protection organization and their responsibilities are identified;
- Staff and training to carry out fire protection responsibilities are provided;
- Specific features such as administration controls and personnel requirements are described for:
  - a) preparing and maintaining documentation related to fire protection (e.g. design of the facility, fire safety plan, fire hazard assessment);

- b) managing changes that affect fire protection;
- c) managing the storage and handling of flammable liquids, combustible liquids, compressed gases, and radioactive materials;
- d) housekeeping;
- e) inspection, testing, and maintenance of fire protection design features and equipment;
- f) controlling transient combustible material and non-combustible material;
- g) managing fire safety during work activities;
- h) fire reporting;
- i) controlling sources of ignition;
- j) preparing, implementing and maintaining pre-fire plans and fire safety plan;
- k) fire emergency response;
- l) conducting drills;
- m) performance monitoring; and
- n) providing quality assurance for the activities specified in the Fire Protection Program.

Annual review of compliance with the requirements of the *National Fire Code*, 2010 are carried out by an independent external third party agency with specific expertise with such reviews.

It is expected that the implementation of the Emergency Management and Fire Protection Program will be compliant with the information contained in these documents.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC
	Responses to CNSC Inquiries, January 2010		May 2010	3559190
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	7-707-006-A-0 Risk Management Program		2011	3559242
STR	70-703-A-0-001 Emergency Measures		2011	3559245
STR	75-752-A-1-001 Answers to EA Questions – COFEX and federal departments			3599029(E), 3599031(F)
STR	75-753-F-0-004 Program d’Urgence Environnementale		2011	3455461
STR	70-710-A-0-001 Fire Prevention Program		2011	3559247

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	<i>Management of Environmental Risk</i>		October 2009	3455489
CNSC	<i>G-225, Emergency Planning at Class 1 Nuclear Facilities and Uranium Mines and Mills</i>	August 2001		
	<i>National Building Code of Canada</i>	2010		
	<i>National Fire Code of Canada</i>	2010		

### 3.12 WASTE MANAGEMENT

The Safety and Control Area “Waste Management” covers internal waste-related programs which form part of the facility’s operations up to the point where the waste is removed from the facility. It also covers the planning for decommissioning.

#### 3.12.1 LC12.1 – Waste Management Program

##### Licence Condition

**The licensee shall implement and maintain safety and control measures for waste management.**

##### Compliance Verification Criteria

The waste management program will be assessed against the following principles:

- A radioactive waste management program is implemented to control and minimize the volume of radioactive waste;
- The volume of waste is minimized by applying the “reduce, reuse, recycle and recover” principle;
- Work, including selecting and purchasing environmentally preferable material and equipment, is carried out in a manner that minimizes waste and prevents pollution;
- Waste is stored or disposed of in the appropriate manner;
- All wastes produced at the site, either domestic or industrial, are recycled to the extent practicable;
- Information is communicated about waste minimization;
- Management verifies that employees and contractors comply with waste management practices;
- The effectiveness of waste management practices is monitored, measured and recorded on a regular basis;
- Routine inspections are performed to identify any potential waste management issues;

- Records are kept of the quantities of waste generated and the method of its disposal or management;
- Routine inspections are carried out to verify the condition of containment structures;
- Wastes are managed to prevent their spread and contamination of the surrounding environment; and
- Surface run-off is managed to prevent it becoming contaminated by waste materials.

It is expected that the implementation of the Waste Management Program will be compliant with the information contained in these documents.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	75-753-A-0-002 Waste Management Program.		2011	3455467
STR	75-753-A-0-001 Environmental Protection Program		2011	3455466

**3.12.2 LC 12.2 – Preliminary Decommissioning Plan (PDP)**

**Licence Condition**

**The licensee shall maintain a preliminary decommissioning plan (PDP) for the facility. The PDP shall be revised every five years or when required by the Commission or person authorized by the Commission.**

**Compliance Verification Criteria**

It is expected that the PDP will be continually revised as the conditions at the facility change.

The PDP forms the basis for the determination of the cost of decommissioning and the value of the required financial guarantee. Once every five years the PDP must be updated to reflect conditions at the facility and the cost of implementing the revised PDP revised based on updated costing values.

The revised PDP will be assessed against guidance provided in CNSC Guide Document G-219, *Decommissioning Planning for Licensed Activities*.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	75-754-A-0-001 Preliminary Decommissioning Plan		2011	3455507 3559238
CNSC	G-216, Decommissioning Planning for Licensed Activities	June 2000	June 2000	

**3.13 SECURITY**

The Safety and Control Area “Security” covers the programs required to implement and support the security requirements stipulated in the regulations, in their licence, or in expectations for their facility or activity.

**3.13.1 LC 13.1 – Security Program**

**Licence Condition**

**The licensee shall implement and maintain safety and control measures for nuclear security.**

**Preamble**

This licence condition requires the licensee to implement and maintain security measures to prevent the loss of nuclear substances or prevent acts of sabotage at the facility.

**Compliance Verification Criteria**

The Security Program will be assessed against the following principles:

- The Security Program addresses the risks identified in the industrial security threat and risk assessment;
- Measures are implemented and maintained to prevent the loss of nuclear substances or prevent acts of sabotage at the facility;
- Measures are taken to prevent unauthorized access to the mining facility and to areas within the facility where nuclear substances are stored; and
- The industrial security threat and risk assessment is periodically reviewed and updated.

It is expected that the implementation of the waste management program will be compliant with the information contained in these documents.

### **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	70-708-A-0-001 Industrial Security		2011	3559249
STR	70-708-004 Threat and Risk Assessment		November 2010	3638949
CNSC	SRP-2.01-SP-11NNNN-025 Site Selection Threat and Risk Assessment	000	October 2008	3250457

### **3.14 PACKAGING AND TRANSPORT**

The Safety and Control Area “Packaging and Transport” covers the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility.

#### **3.14.1 Packaging and Transport Program**

##### **Licence Condition**

**The licensee shall implement and maintain safety and control measures for the receipt, packaging and transport of nuclear substances.**

##### **Preamble**

This licence condition requires the licensee to implement and maintain the necessary program, procedures, materials and equipment to properly package and transport nuclear substances, and to label the transport containers as required to accurately document their contents.

##### **Compliance Verification Criteria**

The only nuclear substances that will be transported to or from the Matoush Project are uranium exploration samples.

The adequacy of the packaging and transport program will be assessed against the following principles:

- All radioactive materials are transported in accordance with applicable procedures and regulations;



- Procedures describe requirements for the choice of appropriate packages, preparation of transport documentation, packaging, storage and transport of radioactive exploration samples; and
- The licensee verifies that carriers and consignees have implemented radiation protection programs prior to shipment of radioactive materials in accordance with CNSC Regulatory Guide G-314 *Implementation of Radiation Protection Programs by Consignors, Carriers and Consignees of Radioactive Material*, March 2004.

It is expected that the implementation of the Packaging and Transport Program will be compliant with the information contained in these documents.

### **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	70-704-A-0-009 Off-Site Transport of Radioactive Material		2011	3455471
STR	20-210-001-A-1 SRC Sending Procedure		2011	3559230
STR	20-210-002-A-1 Selective Sampling Procedure		2011	3559231
TC	<i>Transportation of Dangerous Goods Regulations</i>			
CNSC	<i>G-314, Implementation of Radiation Protection Programs by Consignors, Carriers and Consignees of Radioactive Material.</i>	March 2004		

### **3.15 SITE SPECIFIC**

This section contains the site specific licence conditions.

#### **3.15.1 LC 15.1 – EA Follow-up Program**

##### **Licence Condition**

**The licensee shall implement and maintain an environmental assessment follow-up program.**

## **Preamble**

A follow-up program under the *Canadian Environmental Assessment Act* is a program for verifying the accuracy of the environmental assessment and determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project. The EA Follow-up Program is described in Appendix D of the LCH.

## **Compliance Verification Criteria**

CNSC staff will verify that the program requirements are documented, completed on schedule and submitted to the appropriate authority for dissemination to the public.

CNSC staff will review the results of the follow-up program and if required initiate appropriate responses to the findings.

## **Document Version Control**

<b>Source</b>	<b>Document Title</b>	<b>Rev. #</b>	<b>Effective Date</b>	<b>E-DOC</b>

### **3.15.2 LC 15.2 – Environmental Baseline Report**

#### **Licence Condition**

**The licensee shall compile in a single document the environmental baseline data and submit the document for CNSC review within 12 months from the issuance of the licence.**

#### **Compliance Verification Criteria**

Baseline environmental data has been collected and reported in the environmental assessment. During the assessment of the Environmental Impact Statement (EIS) and licence application, CNSC staff identified some gaps in the baseline information, in particular, with regards to the aquatic baseline. While CNSC staff determined that the information was sufficient to determine the predicted effects of the project on the environment, it is not sufficient to adequately assess possible changes in the environment resulting from the proposed licensed activities.

CNSC staff expects that additional aquatic baseline data will be collected prior the discharge of final treated effluent to the environment and will verify that adequate data has been collected prior to recommending approval of the discharge.

The baseline information and monitoring results from control stations will provide a basis for comparison of monitoring results to identify impacts on the environment.

Consolidation of the baseline data in a single document will facilitate the comparison of monitoring data to the environmental baseline.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC

**3.15.3 LC 15.3 – Detailed Decommissioning Plan**

**Licence Condition**

**The licensee shall receive written approval of the detailed decommissioning plan from the Commission, or a person authorized by the Commission before starting the decommissioning of the facility.**

**Preamble**

If at the end of the underground exploration program, Strateco decides to decommission the facility they must submit a Detailed Decommissioning Plan (DDP) for CNSC review and approval prior to starting the decommissioning of the facility. The DPP would refine and add procedural and organizational detail to the Preliminary Decommissioning Plan (PDP).

**Compliance Verification Criteria**

The DDP will be assessed against guidance provided in CNSC Guide Document G-219, *Decommissioning Planning for Licensed Activities*. Approval of the DDP will be provided by the Director General of the Directorate of Nuclear Cycle and Facilities Regulation.

**Document Version Control**

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	Detailed Decommissioning Plan			
CNSC	G-219, Decommissioning Planning for Licensed Activities	June 2000		

### 3.15.4 LC 15.4 – Financial Guarantee

#### Licence Condition

**The licensee shall before commencing any authorized activities, provide a financial guarantee acceptable to the Commission which shall be valid and in effect and adequate to fund the Preliminary Decommissioning Plan referenced in licence condition 12.2.**

#### Compliance Verification Criteria

It is expected that the financial guarantee will be established and maintained in accordance with the guidance provided in CNSC Regulatory Guide G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*, June 2000.

The value of the financial guarantee is based on the cost of implementing the PDP. When the PDP is revised the cost of decommissioning must be reviewed. At a minimum the value of the financial guarantee must be reassessed every five years when the PDP is reviewed.

#### Document Version Control

Source	Document Title	Rev. #	Effective Date	E-DOC
STR	15-153-A-0-002 Mining Facility Licensing Manual		2011	3559193
STR	75-754-A-0-001 Preliminary Decommissioning Plan		2011	3714142
STR	Decommissioning Cost Estimation	April 2011		3714142
CNSC	G-206, Financial Guarantees for the Decommissioning of Licensed Activities	June 2000		

## DEFINITIONS

### **Accept/ed/able/ance**

Meets regulatory requirements, which means it is in compliance with regulatory documents or technical standards referenced in the licence.

### **Compliance Verification Criteria**

Are measures of conformity to the regulatory requirements. CNSC staff use these criteria to confirm that the licensee is meeting the corresponding licence condition.

### **Consent**

Permission to proceed, given by CNSC delegated authority, for situations or changes where the licensee would:

- Comply with a regulatory requirements set out in applicable laws and regulations;
- Comply with a licence condition; and
- Not adversely impact the licensing basis.

### **Graduated Enforcement**

A process for escalating enforcement action. If initial enforcement action does not result in timely compliance, gradually more severe enforcement actions may need to be used. It takes into account such things as:

- The risk significance of the non-compliance with respect to health, safety, security, the environment and international obligations;
- The circumstances that lead to the non-compliance (including acts of willfulness);
- Previous compliance record;
- Operational and legal constraints (for example, Directive on the Health of Canadians); and
- Industry specific strategies.

[*“Assure Compliance” CNSC process document: “Select and Apply Enforcement Tools”*]

### **Licensee-Produced Licensing Documents**

Documents containing the safety and control measures described in the licence application and the documents needed to support that licence application.

### **Licensing Basis**

The licensing basis for a regulated facility or activity is a set of requirements and documents comprising:

- The regulatory requirements set out in the applicable laws and regulations;
- The conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence; and
- The safety and control measures described in the licence application and the documents needed to support that licence application.

### **Person Authorized by the Commission**

For the purpose of the UMCL and LCH, it means CNSC staff fulfilling the following positions:

- The Director, Uranium Mines and Mills Division;
- The Director General, Directorate of Nuclear Substances and Facilities Regulation; and
- The Executive Vice President and Chief Regulatory Operations Officer, Regulatory Operations Branch.

### **Program(s)**

A documented group of planned activities, procedures, processes, standards and instructions coordinated to meet a specific purpose.

### **Programmatic Failure**

A programmatic failure (or programmatic non-compliance), arises under one or more of the following circumstances:

- Failure to establish a required program or program element;
- Failure of a program or program element to meet a mandated standard;
- Failure to comply with a specific, objective provision of a program; and
- Aggravated or systemic failure(s) to adhere to applicable procedures.

### **Safe Direction**

Means changes in safety levels which would not result in:

- A reduction in safety margins;
- A breakdown of barrier;
- An increase in risk;
- An increase in the risk of spills of hazardous substances;
- Injuries to workers or members of the public; and
- Introduction of a new hazard.

**Written Notification**

A physical or electronic communication between a CNSC delegated authority and a person authorized to act on behalf of the licensee.

**Written Notification Prior to Implementation**

CNSC must receive the written notification for the proposed changes within a reasonable time prior to the implementation. This will allow sufficient time for CNSC staff to review the submission and determine the acceptability.

## ACRONYMS

The following is the list of acronyms used in this document:

ALARA	As low as reasonably achievable, social and economic factors taken into consideration
CMD	Commission Member Document
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
DCR	Document Change Request
DDP	Detailed Decommissioning Plan
DG	Director General
DNCFR	Directorate of Nuclear Cycle and Facilities Regulation
DRWTP	Development Ramp Water Treatment Plant
EVP	Executive Vice President
HRSDC	Human Resources and Skills Development Canada
LCH	Licence Conditions Handbook
MASL	Meters Above Sea Level
MFLM	Mining Facility Licensing Manual
NRC	National Research Council
PDP	Preliminary Decommissioning Plan
SCA	Safety and Control Area
TC	Transport Canada
UMCL	Uranium Mines Site Preparation and Construction Licence
UMMD	Uranium Mines and Mills Division



**APPENDIX A**

**LICENCE CONDITIONS HANDBOOK  
DOCUMENT CHANGE REQUEST (DCR) FORM**

<b>E-Docs File Plan No. 2.01 DCR E-Docs No.</b>			
<b>Document Title</b>	<b>Current Rev No.</b>	<b>Document's E-Docs No.</b>	
<b>REVISION REQUEST INFORMATION</b>			
<b>Requestor</b>	<b>Division</b>	<b>Date of Request: MM / DD / YY</b>	
<b>Line Manager</b>	<input type="checkbox"/> <b>Concur with request</b> <input type="checkbox"/> <b>Do Not Concur</b>		
<b>Description of Problem to be Resolved: (additional space on reverse of form)</b>			
<b>Proposed Changes: (additional space on reverse of form)</b>			
<b>Other Documents Potentially Affected by Proposed Changes</b>			
<b>SUBJECT MATTER EXPERT (SME) ASSESSMENT OF DCR</b>			
<b>SME</b>	<input type="checkbox"/> <b>Concur with request</b> <input type="checkbox"/> <b>Do Not Concur</b>		<b>Date: MM / DD / YY</b>
<b>Assessment Comments:</b>			
<b>Revisions to be Reviewed by: (Check off all applicable divisions)</b>			
<b>Director General – Directorate of Nuclear Cycle and Facilities Regulation</b>			
<b>Name</b>	<b>Change Request Approved</b> <input type="checkbox"/> YES <input type="checkbox"/> NO	<b>Date: MM / DD / YY</b>	<b>Signature</b>

## **APPENDIX B**

### **CNSC REVIEW CRITERIA FOR PROPOSED CHANGES TO LICENSING BASIS DOCUMENT**

The CNSC requires written notification from the licensee prior to their implementation of proposed changes to key licensee documents.

CNSC staff (the person exercising authority) will assess the proposed changes against the following criteria:

1. The submission includes the appropriate level of information with regards to the proposed changes or action, to the extent relevant:
  - A summary description of the proposed changes or action;
  - An indication of the duration (temporary or permanent);
  - A justification for the proposed changes or actions;
  - Any relevant documentation in support to the proposed changes or actions;
  - An evaluation of the impact on health, safety, security, and the environment; and
  - An evaluation to determine if the effects of the proposed changes or action remain within the licensing basis.
2. The person exercising the authority is satisfied that the proposed change or action will be made or made in accordance with the licensee's change control processes.
3. The person exercising the authority is satisfied that with the proposed changes or action, the licensee remains in compliance with the requirements set out in the applicable laws, regulations and licence conditions.
4. The person exercising the authority is satisfied that with the proposed changes or action, the licensee:
  - Remains qualified to carry out the licensed activity; and
  - Has adequate provision for the protection of the health and safety of persons, protection of the environment, maintenance of national security and measures required to implement international obligations to which Canada has agreed.

## APPENDIX C

### LISTS OF VERSION CONTROLLED DOCUMENTS

#### C.1 VERSION CONTROLLED DOCUMENTS DEFINING THE LICENSING BASIS

##### C.1.1 Canadian Standards Association (CSA) Documents

Document #	Document Title	Version	L.C.	E-DOC

##### C.1.2 Canadian Nuclear Safety Commission (CNSC) Documents

Document #	Document Title	Version	L.C.	E-DOC
	Licence Conditions Handbook, Follow-up Monitoring Program, Appendix D.	000	15.2	

##### C.1.3 Strateco Resources Incorporated (Strateco) Documents

Document #	Document Title	S1	Version	L.C.	E-DOC
<b>LICENCE APPLICATION DOCUMENTS AND CORRESPONDENCE</b>					
15-153-A-1	Licence Application	n/a		1.1,4.1, 6.1	3455291
	Response to Canadian Nuclear Safety Commission Inquiries Regarding the Exploration Ramp	n/a	January 2010	2.1,4.1, 4.2, 11.1	3559190
B-MT-501-G-0021-0A	Projected Surface and Underground Installation Claim Limits	P		Appendix A	3484618
<b>MANAGEMENT SYSTEM DOCUMENTS</b>					
15-153-A-0-002	Mining Facility Licensing Manual	P		All	3559193
15-158-F-0-001	Programme D'information public	N		1.1, 2.12	3464575
70-709-A-0-001	Quality Control and Assurance	N		1.1, 1.2, 2.1, 2.2, 4.1	3455309
70-709-A-0-003	Change Management Procedure	N		1.2, 2.1	3559190

<sup>1</sup>S means status of the notification requirement:

N = **written notification** is required as the revised document is implemented (comes into effect)

P = **written notification prior to implementation** is required at least 30 days before the revised document comes into effect

Document #	Document Title	S1	Version	L.C.	E-DOC
70-709-F-0-002	Gestion Documentaire	N		2.1	3455416
70-705-A-0-002	Worker Communication	N		2.1	3455477
70-701-F-0-001	Formation	N		3.1	3458474
70-707-006-A-0	Risk Management Program	N		5.1, 11.1	3559242
	Reporting to the CNSC	P	TBD	2.3 – 2.11	
	Maintenance Program	N	TBD	7.1	
	DRWTP Operating Manual	N	TBD	4.1, 15.1	
75-753-F0-004	Programme d'urgence environnementale	N		10.1, 11.1	3455461
70-704-A-0-001	Radiation Protection	N		3.1, 8.1	3455471
70-702-A-0-002	ALARA	N		8.1	3455476
70-706-F-0-001	Santé au travail	N		9.1	3455478
70-707-F-0-001	Sécurité au travail	N		9.1	3455479
70-702-F-0-001	Hygiène Industrielle	N		9.1	3455306
75-753-A-0-001	Environmental Protection Program	N		10.1, 12.1, 15.1	3455466
	Environmental Monitoring Program	P		10.1	3712375
	Environmental Baseline Report	n/a	TBD	15.3	
75-753-A-0-002	Waste Management Program	N		4.1, 12.1	3455467
75-760	Matoush Preliminary Decommissioning Plan	N		12.2, 15.5	3714142
70-703-A-0-001	Emergency Measures	N		7.1, 11.1	3559245
70-710-A-0-001	Fire Prevention Program	N		11.1	3559247
70-708-A-0-001	Industrial Security	N		13.1	3559249
	Threat Risk Assessment	N		13.1	3638949
70-704-A-0-009	Off-site Transport of Radioactive Material	N		14.1	3455471
20-210-001-A-1	SRC Sending Procedure	n/a		14.1	3559230
20-210-002-A-1	Selective Sampling Procedure	n/a		14.1	3559231
	Decommissioning Cost Estimation	N		15.5	3714142
<b>ENVIRONMENTAL ASSESSMENT</b>					
	Screening Level Human Health Risk and Ecological Risk Assessment for the Matoush Exploration Project, Senes Consultants Ltd.	N	April 2011	5.1, 10.1	3715833
	Management of Environmental Risk for the Matoush Underground Exploration Ramp Project, Senes Consultants Ltd.	N	October 2009	5.1, 10.1, 11.1	
75-752-A-1	Environmental Impact Study Volume 1	N	October 2009		3459009
75-752-A-1	Environmental Impact Study Volume 2, Appendices A - D	N	October 2009		3458998

Document #	Document Title	S1	Version	L.C.	E-DOC
75-752-A-1	Environmental Impact Study Volume 3, Appendix E	N	October 2009		3459002
75-752-A-1	Environmental Impact Study Volume 4, Appendices F-K	N	October 2009		3459004
75-752-A-1-001	Answers to Questions... Volume 1	N	August 2010	11.1	3599031
75-752-A-1-001	Answers to Questions... Volume 2	N	August 2010	11.1	3499032
<b>DESIGN INFORMATION</b>					
	Geotechnical Site Investigation for Exploration Ramp Design, Golder Associates	N	Sept. 2009	6.1	3480859
	Geochemistry of Underground Development Rock, Golder Associates	N	Sept. 2009	6.1	3484620
	Development Ramp Water Treatment Plant Risk Assessment, Melis Engineering Ltd.	N	July 2009	5.1	3455488
	Development Ramp Water Treatment Plant Process Package, Melis Engineering Ltd.	N	June 2009	6.1	3455354
	Mine Design, Scott Wilson Roscoe Postle Associates, Inc.	N	July 2009	6.1	3455402
	Ramp Pumping System Design, Scott Wilson Roscoe Postle Associates, Inc	N	July 2009	6.1	3455403
	Ramp Ventilation System Design, Scott Wilson Roscoe Postle Associates, Inc.	P	October 2009	6.1	3455483
	Technical Memorandum, Computer Simulation Results, Fan requirements estimate, GENIVAR	N	Sept. 2010	6.1	3679589

**C.2 VERSION CONTROLLED DOCUMENTS USED AS GUIDANCE OR CRITERIA**

**C.2.1 Canadian Standards Association documents referenced in the LCH  
(for licensee guidance or criteria used by CNSC staff in their assessment)**

Document #	Document Title	Version	L.C.	E-DOC
CAN/CSA ISO-14001	Environmental management systems – requirements with guidance for use	2004	10.1	<a href="#">3661810</a>
CAN/CSA Z94.4-02	Selection, Use and Care of Respirators	2002	9.1	
CAN/CSA N286	Management system requirements for nuclear facilities		2.1	

**C.2.2 Other CNSC documents referenced in the LCH  
(for licensee guidance or criteria used by CNSC staff in their assessment)**

Document #	Document Title	Version	L.C.	E-DOC
	CNSC – Saskatchewan Harmonized Annual Reporting Requirements	August 2010	2.3 – 2.11	3678482
G-221	A Guide to Ventilation Requirements for Uranium Mines and Mills	June, 2003	4.1, 6.1	
G-228	Developing and Using Action Levels	March 2001	8.1	
G-218	Preparing Codes of Practice to Control Radiation Doses at Uranium Mines and Mills	Nov. 2003	8.1	
G-129	Keeping Radiation Exposures and Doses “As Low As Reasonably Achievable (ALARA)”	October 2004	8.1	
S-106	Technical and Quality Assurance Requirements for Dosimetry Services in Canada	May 2006	8.1	
S-296	Regulatory Guide: Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills.	March 2006	10.1	
G-296	Regulatory Guide: Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills.	March 2006	10.1	<a href="#">CNSC Website</a>
G-219	Regulatory Guide, Decommissioning Planning for Licensed Activities, issued June 2000	June 2000	10.1	<a href="#">CNSC Website</a>
G-206	Regulatory Guide, Financial Guarantees for the Decommissioning of Licensed Activities, issued June 2000.	June 2000	15.5	<a href="#">CNSC Website</a>

<b>Document #</b>	<b>Document Title</b>	<b>Version</b>	<b>L.C.</b>	<b>E-DOC</b>
S-224	Environmental Monitoring Program at Class I Nuclear Facilities and Uranium Mines and Mills		10.1	
G-225	Emergency Planning at Class 1 Nuclear Facilities and Uranium Mines and Mills	2003	11.1	
SRP-2.01-SP.	Site Selection Threat and Risk Assessment	October 2008	13.1	3250457
G-314	Implementation of Radiation Protection Programs by Consignors, Carriers and Consignees of Radioactive Material	March 2004	14.1	
G-217	Licence Public Information Programs	January 2004	2.12	
GD-99.3	Guide to the Requirements for Public Information and Disclosure	March 2012	2.12	

**APPENDIX D**

**RESOLUTION OF CONFLICTS OR INCONSISTENCIES**

<b>L.C.</b>	<b>Subject of Conflict or Inconsistency</b>	<b>E-DOCS #</b>	<b>Identifier</b>	<b>Approved Date</b>