



Directorate of Nuclear Cycle and Facilities Regulation

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November 1, 2019

Mr. Stephane Levesque
President
SRB Technologies (Canada) Inc.
320-140 Boundary Road
Pembroke, ON K8A 6W5

Subject: CNSC Compliance Inspection Report No. SRBT-2019-02

Dear Mr. Levesque,

Please find enclosed Canadian Nuclear Safety Commission's (CNSC) final inspection report SRBT-2019-02 for the Compliance Inspection carried out from August 28, 2019 to August 29, 2019 at SRB Technologies (Canada) Inc.'s (SRBT) Tritium Processing Facility in Pembroke.

The inspection team found the licensee to be in compliance with the inspection criteria. One recommendation has been raised as an area of improvement:

- **SRBT-2019-02-R01:** CNSC staff recommend that SRBT includes the review for trends for the 2019 passive air sampling results from duplicates in the 2019 Annual Compliance Report, to identify the changes in the 2019 passive air sampling results from duplicates.

SRBT is requested to submit a response in writing within 60 days from the date of this letter.

If you have any questions, or concerns, please do not hesitate to contact me.

Sincerely,

Lester Posada
Project Officer
Nuclear Processing Facilities Division

Enclosure: CNSC Compliance Inspection Report, SRBT-2019-01 (e-Doc 5990327)

c.c.: R. Fitzpatrick, J. MacDonald (SRBT)
C. Ducros, T. Kalindjian, P. Jayakody-Arachige, N. Surovcevs (CNSC)



CNSC COMPLIANCE INSPECTION REPORT

Inspection No.: SRBT-2019-02

Inspection Title: Type II Environmental Protection Inspection

Prepared by: Lester Posada, Lead Inspector
Nuclear Processing Facilities Division
Directorate of Nuclear Cycle and Facilities Regulation

Report Date: November 1, 2019



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**CANADIAN NUCLEAR SAFETY COMMISSION
COMPLIANCE INSPECTION**

Inspection No.: SRBT-2019-02

Licensee: SRB Technologies (Canada) Inc.

Licence No.: NSPFOL-13.00/2022

Facility / Site Inspected: SRBT

Inspection Date(s): August 28, 2019 – August 29, 2019

Inspector:



Lester Posada,
Lead Inspector, NPF

Approved by:



Caroline Ducros
Director, NPF

Safety and Control Area: Environmental Protection

Inspector Accompanied by: Taline Kalindjian – Environmental Program Officer
Nikita Surovcevs – Technical Co-op Student
Priscilla Jayakody Arachchige – Technical Co-op Student

EXECUTIVE SUMMARY

Pursuant to subsection 30(1) of the *Nuclear Safety and Control Act* (NSCA), Canadian Nuclear Safety Commission (CNSC) staff conducted a Type II inspection at SRB Technologies (Canada) Inc. (SRBT) from August 28, 2019 to August 29, 2019. The purpose of this inspection was to verify SRBT's processes and performances related to the Safety and Control Area (SCA) of Environmental Protection as per the NSCA, its associated regulations, SRBT's operating licence NSPFOL-13.00/2022, and the Licence Conditions Handbook (LCH).

The scope of the inspection was focused on the Safety and Control Area Environmental Protection, specifically the implementation of SRBT's environmental protection program.

CNSC inspectors' preliminary inspection facts and findings were discussed with licensee staff. A Preliminary Inspection Facts and Findings Report was tabled during the closing meeting held on August 29, 2019.

Several areas were identified during the inspection, which had been noted as implementations of good operating practices, and effective implementation of programmatic requirements. The inspection team found the licensee to be in compliance with the inspection criteria. One recommendation has been raised for SRBT to address as an area of improvement identified as part of this inspection. The identified recommendation does not pose an immediate or unreasonable risk to the health and safety of persons.

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Type II Environmental Protection Inspection

1. INTRODUCTION

An inspection at SRB Technologies (Canada) Inc. (SRBT) was conducted from August 28, 2019 to August 29, 2019.

The licensee was assessed against provisions of the NSCA and its associated regulations, the conditions of the licence NSPFOL-13.00/2022 [1] and the LCH for SRBT [2], as well as applicable facility-specific and programmatic governing documentation.

Criteria for this inspection were derived directly from the set of documents described in the notification letter and compiled into a compliance matrix, which had been provided to licensee staff prior to the inspection [3]. Observations, interviews and review of records were undertaken to assess compliance with regulatory expectations.

This report documents the findings and conclusions of the inspection, along with any compliance actions and recommendations arising from these findings. The results of this inspection activity will form part of CNSC staff's evaluation of the licensee's performance.

2. PURPOSE AND SCOPE

The purpose of the inspection was to verify SRBT's processes and performances related to the Safety and Control Area (SCA) of Environmental Protection as per the NSCA, its associated Regulations, SRBT's operating licence NSPFOL-13.00/2022, and the Licence Conditions Handbook.

The scope of the inspection was focused on the Safety and Control Area Environmental Protection, specifically the implementation of SRBT's environmental protection program.

3. DESCRIPTION OF INSPECTION METHODS

The NSCA, CNSC regulations, NSPFOL-13.00/2022 licence conditions, and governing documents were reviewed as part of the preparation for the inspection. Various items were selected for verification and compiled into a compliance matrix. The inspection also included field observations and information provided by licensee staff.

The following method(s) of assessment were used during the inspection:

A. Documentation and record review

- Records were verified to be maintained as required by many of the outlined criteria, and a review of selected documents was performed to ensure their accuracy and completeness.

B. Visual assessment and verification

- A physical inspection of the facility with licensee staff was conducted. Observations based on identified compliance criteria were made for verification purposes.

C. Interviews and discussions with licensee staff

- Interviews and discussions with various licensee staff were conducted during the inspection. Questions were posed based on compliance criteria and responses documented for verification purposes.

Selected documentation and records were reviewed during the field verification component of the inspection. These were reviewed in order to determine whether the various records associated with the areas of the inspection are in compliance with associated regulatory and programmatic requirements.

As per the CNSC process, at the conclusion of the field verification portion of the inspection, a Preliminary Inspection Facts and Findings Report [4] was provided to SRBT representatives. This report was provided for purposes of outlining observations made by the inspection team at an overall level, based on a preliminary review of the criteria set identified in the compliance matrix and observations made.

Based on criteria identified in the compliance matrix, regulatory requirements and compliance expectations were determined to be met or not met, and reported as inspection findings. CNSC staff may identify compliance actions and recommendations in relation to an inspection finding. Appendix A outlines definitions of compliance action categories.

4. INSPECTION RESULTS

The following findings and subsequent compliance actions and recommendations are the result of CNSC staff's inspection at SRBT. This section of the report has been structured to show the link from the initial inspection finding to the resulting compliance action and/or recommendation as shown below:

- Compliance verification criteria used to identify the deficiency;
- A description of the observed deficiency;

- An analysis linking the compliance verification criteria or regulatory requirement to the observed deficiency; and
- Detailed compliance action requiring the licensee to address the deficiency.

The order in which findings are presented in the report does not indicate a ranking of their safety significance.

The findings documented in this report were arrived at by assessing the facts and observations, gathered by CNSC staff during the inspection activities, with the related compliance criteria and regulatory requirements, as detailed in the compliance matrix. Where improvements are necessary, compliance actions and recommendations have been issued as detailed in this section of the inspection report.

Compliance criteria that were met during the inspection are also listed in the compliance matrix. Follow-up activities were also performed on actions issued in previous inspections, the results of which are listed at the end of the compliance matrix.

4.1 SCA: Environmental Protection

4.1.1 Finding 1: Passive Air Sampling Results Duplicates

Criteria

SRBT Environmental Management System, Rev. E, section 5.2 Nonconformity and Corrective Action

Fact(s)

- CNSC staff observed and reviewed three non-conformance reports (NCRs) related to the environmental protection program:
 - NCR # 679 (October 9, 2018);
 - NCR # 741 (June 28, 2019);
 - NCR # 750 (July 24, 2019).
- NCR# 741 and NCR# 750 are non-conformance reports within which the same issue had occurred in two consecutive months.
- The issue described was that the duplicate samples did not meet the acceptance criteria for sample precision for the Environmental Monitoring Program (EMP-013).
- SRBT staff have stated that the likely cause is thought to be a lack of attention of detail during the SE250 (Passive Air Sampler) sample swap by the contractor.

Analysis/Finding(s)

SRBT staff verbally communicated to CNSC staff that issues can be raised by any personnel at SRBT. SRBT staff verbally communicated to CNSC staff the process that is followed for a Non-Conformance Report.

CNSC staff acknowledge that SRBT is following a process for nonconformity and non-compliance within which corrective actions, root cause analyses, as well as action plans were identified and being implemented for all three non-conformance reports.

NCR# 741 and NCR# 750 are non-conformance reports within which the same issue had occurred in two consecutive months. The issue described was that the duplicate samples did not meet the acceptance criteria for sample precision for the EMP (EMP-013). CNSC staff acknowledge that SRBT has taken immediate actions, and has identified the root cause of the issue. SRBT staff have stated that the likely cause is thought to be a lack of attention of detail during the SE250 sample swap by the contractor.

CNSC staff acknowledge that SRBT has an action plan in place and is taking corrective actions, including reviewing trends for future passive air sampler results from duplicates.

CNSC staff note that this finding is of low safety significance and recommend that SRBT provide a follow-up during the next scheduled reporting cycle.

This forms the basis for the following recommendation.

Recommendation

SRBT-2019-02-R01: CNSC staff recommend that SRBT includes the review for trends for the 2019 passive air sampler results from duplicates in the 2019 Annual Compliance Report, to identify the changes in the 2019 passive air sampler results from duplicates.

5. SUMMARY OF COMPLIANCE ACTIONS AND RECOMMENDATIONS ISSUED

One recommendation has been raised for SRBT to address as an area of improvement identified as part of this inspection. The identified recommendation does not pose an immediate or unreasonable risk to the health and safety of persons.

SRBT-2019-02-R01: CNSC staff recommend that SRBT includes the review for trends for the 2019 passive air sampling results from duplicates in the 2019 Annual Compliance Report, to identify the changes in the 2019 passive air sampling results from duplicates.

6. CONCLUDING STATEMENTS

CNSC staff performed an inspection at SRBT in order to verify compliance with the NSCA, its associated regulations, the conditions of the licence and the LCH.

The scope of the inspection was focused on the Environmental Protection SCA, specifically the implementation of SRBT's environmental protection program.

Several areas were identified during the inspection, which had been noted as implementations of good operating practices, and effective implementation of programmatic requirements. The inspection team found the licensee to be in compliance with the inspection criteria. **One** recommendation has been raised for SRBT to address as an area of improvement identified as part of this inspection. The identified recommendation does not pose an immediate or unreasonable risk to the health and safety of persons.

SRBT is requested to submit a response **60** days from the date the report was issued.

CNSC staff extend their appreciation to SRBT for their assistance in conducting this inspection.

7. REFERENCES

- [1] SRB Technologies (Canada) Inc. Nuclear Substance Processing Facility Operating Licence, NSPFOL-13.00/2022, (e-Doc 4522207).
- [2] SRB Technologies (Canada) Inc. Licence Conditions Handbook, (e-Doc 5040052).
- [3] SRBT-2019-02 Compliance Matrix, (e-Doc 5999468).
- [4] SRBT-2019-02 Preliminary Inspection Facts and Findings Report, August 29, 2019, (e-Doc 5969602).

APPENDIX A: **Definitions**

Compliance Action Categories:

Directive

A written request that the licensee or a person subject to enforcement action take action to correct:

- a non-compliance with the NSCA, the applicable regulations, licence conditions, codes, standards; or
- a general or sustained failure to adhere to approved documents, policies, procedures, instructions, programs, or processes that the licensee has established to meet licensing requirements.

Action Notice

A written request that the licensee or a person subject to enforcement action take action to correct a non-compliance that is not a direct contravention of the NSCA, the applicable regulations, licence conditions, codes or standards, but that can compromise safety, security, or the environment and that may lead to a direct non-compliance if not corrected.

Such non-compliances include:

- a failure to satisfy one of the compliance criteria if the criteria are not directly referenced in the applicable regulations or licence conditions; and/or
- a significant but non-systemic failure to comply with the licensee's own policies, procedures, or instructions that have been established to meet licensing requirements (including programs and internal processes submitted in support of a licence application).

Recommendations:

Recommendation

A written suggestion to effect an improvement based on good industry practice.

A recommendation is not:

- an indication of non-compliance with regulatory requirements;
- subject to enforcement action;
- to be issued as a means of suggesting improvements to the licensee's programs outside the mandate of the CNSC.

Recommendations are not required to be implemented.

APPENDIX B: Acronyms and Abbreviations

CNSC	Canadian Nuclear Safety Commission
EMP	Environmental Monitoring Program
EMS	Environmental Management System
LCH	Licence Conditions Handbook
GNSCR	<i>General Nuclear Safety and Control Regulations</i>
NSCA	<i>Nuclear Safety and Control Act</i>
SCA	Safety and Control Area
SRBT	SRB Technologies (Canada) Inc.

APPENDIX C: Attendance Record(s)

Opening Meeting: e-Doc 5969590

Closing Meeting: e-Doc 5969593



Inspection Opening Meeting Attendance Record
Directorate of Nuclear Cycle and Facilities Regulation

Unclassified

Ref. Procedure *How to Conduct DNCFR Inspections*

5969590

e-Doc
Number

Licensee Name: SRB Technologies (Canada) Inc.
Licence Number: NSPFOL-13.00/2022
Licensed Site: SRB Tritium Processing Facility (Pembroke, ON)
Title of Inspection: Type II Environmental Protection Inspection

Inspection Number: SRBT-2019-02
Inspection Date(s): August 28, 2019 to August 29, 2019
Lead Inspector: Lester Posada, NPFD

Meeting Type: Opening Meeting

Name (print)	Role or Job Title	Signature
LESTER POSADA	Lead Inspector, CNSC	
Nikita Sarovcevs	Technical Co-op Student, CNSC	
Priscilla Jayakody Arachinige	Technical Co-op, CNSC	
Taline Kalindjian	Environmental Program Officer	
ROSS FITZPATRICK	VICE PRESIDENT	
Joshua Bull	Health Physics Technician	
JAMIE MACDONALD	MANAGER - HP + RA	
STEPHANIE LEVESQUE	PRESIDENT	



Inspection Closing Meeting Attendance Record
Directorate of Nuclear Cycle and Facilities Regulation
 Ref. Procedure *How to Conduct DNCFR Inspections*

Unclassified

5969593

e-Doc
Number

*Completed after closing meeting, noted all attendees below (P)
 - L.P. 08/29/19
 L.P.*

Licensee Name: SRB Technologies (Canada) Inc.
 Licence Number: NSPFOL-13.00/2022
 Licensed Site: SRB Tritium Processing Facility (Pembroke, ON)
 Title of Inspection: Type II Environmental Protection Inspection

Inspection Number: SRBT-2019-02
 Inspection Date(s): August 28, 2019 to August 29, 2019
 Lead Inspector: Lester Posada, NPFD

Meeting Type: Closing Meeting

Name (print)	Role or Job Title	Signature (P)
Lester Posada		
Nikita Sroucevs		
Priscilla Jayakody Amichy		
Taline Kalindjian		
Ross Fitz Patrick		
Joshua Bull		
Jamie Macdonald		
Stephane Levesque		

APPENDIX D: **Compliance Matrix**

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Safety and Control Area: Environmental Protection			
Source: Regulation Section 12(1)(c)(f) of General Nuclear Safety and Control Regulations	<p>Environmental Protection Program <u>Observations</u> to assess that: SRBT is implementing and maintaining an environmental protection program and taking all reasonable precautions to protect the environment, health, and safety of persons, and to maintain the security of nuclear facilities and of nuclear substances.</p> <p>SRBT is taking precautions to control the radioactive and hazardous airborne emissions and liquid effluent discharges.</p>	<ul style="list-style-type: none"> ▪ CNSC staff observed the required air emissions and liquid effluent controls to be functioning during the time of the inspection. ▪ Through observations and discussions with SRBT staff, CNSC staff verified that SRBT continues to implement and maintain an Environmental Protection Program. SRBT is taking all reasonable precautions to protect the environment, health, and safety of persons. 	Met
Source: Regulation Section 14(1) of Class I Nuclear Facilities Regulations	<p>Records of the effluent and environmental monitoring program results <u>Observations/records review</u> to assess SRBT keeps a record of the results of the effluent and environmental monitoring programs referred to in the licence.</p>	CNSC staff observed and verified that SRBT keeps records of the results of the effluent monitoring program (EffMP) and environmental monitoring program (EMP). CNSC staff observed records of the 2018 and 2019 groundwater monitoring program (GMP), EMP, as well as the EffMP.	Met
Source: Regulation Section 4(b) of Radiation Protection Regulations	<p>Quantity and concentration of nuclear substance released <u>Observations/records review</u> to verify:</p> <ul style="list-style-type: none"> ▪ SRBT implements and maintains an environmental protection program to ascertain the quantity and concentration of 	<ul style="list-style-type: none"> ▪ SRBT continues to implement and maintain an environmental protection program to ascertain the quantity and concentration of any nuclear substance released. ▪ SRBT continues to operate and maintain their emission and effluent monitoring equipment. ▪ CNSC staff observed and reviewed maintenance 	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
	any nuclear substance released. <ul style="list-style-type: none"> ▪ SRBT operates and maintains their emission and effluent monitoring equipment. 	records for the emission and effluent monitoring equipment. The records are identified within the compliance matrix for specific SRBT procedures.	
Source: Other Environmental Management System, Rev. E	<p>Nonconformity and Corrective Action <u>Discussion/documents review</u> to verify if SRBT follows a process for nonconformity and non-compliance with the requirements of the EMS and programs.</p>	<ul style="list-style-type: none"> ▪ SRBT staff verbally communicated to CNSC staff that issues can be raised by any personnel at SRBT. SRBT staff verbally communicated to CNSC staff the process followed for a Non-Conformance Report. ▪ CNSC staff observed and reviewed three non-conformance reports (NCRs): <ul style="list-style-type: none"> ○ NCR # 679 (October 9, 2018) ○ NCR # 741 (June 28, 2019) ○ NCR # 750 (July 24, 2019) <p>CNSC staff acknowledge that SRBT is following a process for nonconformity and non-compliance within which corrective actions, root cause analyses as well as action plans were identified and being implemented for all three non-conformance reports.</p> <p>NCR# 741 and NCR# 750 are non-conformance reports within which the same issue had occurred in two consecutive months. The issue described was that the duplicate samples did not meet the acceptance criteria for sample precision for the EMP (EMP-013). CNSC staff acknowledge that SRBT has taken immediate actions, and has identified the root cause of the issue. SRBT staff have stated that the likely cause is thought to be a lack of attention of detail during the SE250 sample swap by the contractor.</p> <p>CNSC staff acknowledge that SRBT has an action plan in</p>	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
		<p>place and is taking corrective actions, including reviewing trends for future PAS results from duplicates. However, CNSC staff recommend that SRBT includes the review for trends for the 2019 PAS results from duplicates in the future Annual Compliance Report, to identify the changes in the 2019 PAS results from duplicates.</p>	
<p>Source: Other Environmental Management System, Rev. E</p>	<p>Objectives and Targets <u>Discussion/review of document</u> to verify if “at least on an annual basis, objectives and targets are reviewed and assessed for applicability as part of the yearly management review”.</p>	<p>SRBT staff verbally communicated to CNSC staff that the Environmental Management System (EMS) Objectives and Targets are reviewed and evaluated the first quarter of every calendar year. CNSC staff observed and reviewed revision G (March 20, 2019) of the EMS Objectives and Targets. The document includes the 2019 EMS objectives and targets.</p>	<p>Met</p>
<p>Source: Other Environmental Monitoring Program, Rev. B</p>	<p>Reporting <u>Discussion/ documents review</u> to verify if SRBT is following the procedures for the internal reporting requirements. “PAS results are generated on a monthly basis. Upon receipt, the raw PAS results, the results are transferred into a spreadsheet that collects and tracks an entire year of PAS data. This report is updated each month during the year”.</p>	<ul style="list-style-type: none"> ▪ SRBT staff verbally communicated to CNSC staff that the PAS data received on a monthly basis is reviewed and transferred into a spreadsheet that collects and tracks an entire year of the PAS data. The PAS table that is included in the Annual Compliance Report is generated from the spreadsheet. ▪ CNSC inspection team observed the 2018 and 2019 (January – July) PAS data entered into the spreadsheet. 	<p>Met</p>

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Source: Other Environmental Monitoring Program, Rev. B	Records <u>Records review of:</u> <ul style="list-style-type: none"> ▪ Sample acquisition records ▪ Sample analysis records ▪ Sample reporting records ▪ Key decisions and determinations relating to the EMP ▪ Training records 	The CNSC inspection team observed and reviewed records of the EMP including the 2018 sample acquisition records, sample analysis records, sample reporting records and training records. The records are identified within the compliance matrix for specific SRBT procedures.	Met
Source: Other Environmental Monitoring Program, Rev. B	Program Review and Audit <u>Document review</u> of the audit completed by the Compliance Manager. "The scope is focused on at least one of the core elements of the EMS."	SRBT staff verbally communicated to CNSC staff that the 2018 EffMP audit was deferred to 2019 due to an unexpected operational challenge. The scope of the 2019 EMS program review and audit covered the 2018 (EffMP) and the 2019 (EMP). CNSC staff observed the audit documents that were completed in 2019. SRBT staff indicated that the results of the audit will be included in the 2019 Annual Compliance Report.	Met
Source: Other Environmental Monitoring Program Procedures, EMP-001, Rev. A	Passive Air Sampling <u>Observations</u> of the passive air samplers (PAS) including sampling, design criteria, and locations.	<ul style="list-style-type: none"> ▪ CNSC staff observed the collection of PAS at locations PA8 (W250), PA4 and PA4 duplicate (250NW), and PA11 and PA11 duplicate (SW250). ▪ The contractor was following the PAS monitoring field sampling procedures. The sample containers were being labelled in the field during the sample swap. SRBT staff and the contractor wore high visibility clothing at all times during the PAS collection. ▪ SRBT staff verbally communicated to CNSC staff that on the day of sampling, SRBT provides to the contractor a copy of the "SRBT EMP Directions: PAS Monitors, EMP tool kit, ladder, and security tie wraps". 	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Source: Other Effluent Monitoring Program, Rev. A	Staff Qualifications and Training <u>Records review</u> of the training program completed by personnel who perform activities in support of the effluent monitoring program: <ul style="list-style-type: none"> ▪ SAT-HP-02 Liquid Effluent Management and Control ▪ SAT-HP-03 Weekly Stack Monitoring 	<ul style="list-style-type: none"> ▪ SRBT staff verbally communicated to CNSC staff that the training requirements in support of the effluent monitoring program are systematic approach training (SAT) based. ▪ CNSC staff observed records of training program SAT-HP-02 and SAT-HP-03 completed by SRBT staff. ▪ CNSC staff observed the excel database within which all the training requirements and records are tracked. 	Met
Source: Other Effluent Monitoring Program, Rev. A	Verification of effluent monitoring results <u>Discussion/document review</u> to assess verification of the effluent monitoring results by at least one other member of the Health Physics Team.	SRBT staff verbally communicated to CNSC staff that the effluent monitoring results undergoes through multiple review process: <ul style="list-style-type: none"> ▪ Data entered by Member of the Health Physics Team ▪ Report Reviewed by one other member of the Health Physics Team ▪ Calculations Review ▪ Calculations review by Health Physics Manager ▪ Emissions reviewed by Human Protection Coordinator ▪ Emissions reviewed by Rig Room Supervisor ▪ Emissions reviewed by Assembly Supervisor CNSC staff observed the March 2019 EffMP records and verified that the report is reviewed by at least one other member of the Health Physics Team.	Met
Source: Other Effluent Monitoring Program, Rev. A	Records and Retention <u>Records review</u> of: <ul style="list-style-type: none"> ▪ Effluent sample analysis ▪ Effluent sample reporting 	CNSC staff observed the March 2019 EffMP sample analysis and sample reporting records. SRBT staff described the process followed for completing the Eff-001-F-02 Stack Monitoring Report Form. CNSC staff reviewed the March 2019 records for the Stack	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
		Monitoring Report Form, the Bubbler Data Worksheet, and the Stack Monitoring Results.	
Source: Other EMP-002, Passive Air Monitoring – Field Sampling, Rev. B	<p>Passive Air Monitoring <u>Observation</u> of the complete switch of the deployed array of the monitors conducted monthly following the written procedures in EMP-002.</p> <p><u>Records review</u> of the 2017 and 2018 PAS completed forms (EMP-002-F-01).</p>	<ul style="list-style-type: none"> ▪ The CNSC inspection team observed the switch of the deployed array of the PAS monitors at locations PA8 (W250), PA4 and PA4 duplicate (250NW), and PA11 and PA11 duplicate (SW250), and PA22. ▪ The contractor was following the PAS monitoring field sampling procedures EMP-002. The sample containers were being labelled in the field during the sample swap. SRBT staff and the contractor wore high visibility clothing at all times during the PAS sample collection. ▪ SRBT staff verbally communicated to CNSC staff that on the day of sampling, SRBT provides to the contractor a copy of the “SRBT EMP Directions: PAS Monitors, EMP tool kit, ladder, and security tie wraps.” ▪ CNSC inspection team observed the 2018 records for the PAS. 	Met
Source: Other EMP-003, Precipitation Monitoring – Field Sampling, Rev. B	<p>Precipitation Monitoring <u>Observation</u> the complete switch of the deployed array of 8 monitors conducted following the written directions in EMP-003.</p> <p><u>Records review</u> of the 2017 and 2018 completed forms for precipitation monitoring/field sampling (EMP-002-F-01).</p>	<ul style="list-style-type: none"> ▪ The CNSC inspection team observed the complete switch of the deployed array of the precipitation monitors. The contractor was following the precipitation monitoring field sampling procedures EMP-003. The sample containers were labelled prior to sampling. SRBT staff and the contractor wore high visibility clothing at all times during the precipitation sample collection. ▪ SRBT staff verbally communicated to CNSC staff that on the day of sampling, SRBT provides to the contractor a copy of the “SRBT EMP Directions: Precipitation Monitors, EMP tool kit, ladder, and 	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
		security tie wraps". ▪ CNSC staff observed the contractor collecting precipitation monitor samples at locations 8P, 4P, 1P, and 22P.	
Source: Other EMP-004, Receiving Water/River Monitoring – Field Sampling, Rev. B	Receiving Water/River Monitoring <u>Observation/records review</u> of the task list initialed indicating the sampling is completed (completed monthly).	▪ CNSC staff observed the contractor collecting surface water sample from the Muskrat River. The contractor followed the Receiving Water/River Monitoring field sampling procedures EMP-004. ▪ CNSC staff observed the 2018 receiving water/river monitoring records and verified the task list was initialed, which indicated that the sampling was completed.	Met
Source: Other EMP-005, Commercial Produce Monitoring – Field Sampling, Rev. A	Commercial Produce Monitoring <u>Observation/document review</u> of the monthly task list initialed indicating the sampling is completed (completed once per year).	CNSC staff observed the 2018 commercial produce monitoring records and verified that the task list was initialed, which indicated that the sampling was completed. CNSC staff observed the records of the 2018 commercial produce monitoring results.	Met
Source: Other EMP-006, Residential Produce Monitoring – Field Sampling, Rev. A	Residential Produce Monitoring <u>Observation/document review</u> the form EMP-006-F-01 to verify if "it provides contact information of residents who have participated in the program in the past, and that the residents are informed of the results of the analysis of samples provided".	CNSC staff observed records of the form EMP-006-F-01 and verified it provides contact information of the residents who have participated in the program in the past. CNSC staff observed and reviewed records of letters sent to residents informing them about the sampling results.	Met
Source: Other EMP-007, Milk Monitoring – Field Sampling, Rev. B	Milk Monitoring <u>Observation/document review</u> the monthly task list initialed indicating the sampling is completed (completed 3 times per year in March, July and November).	CNSC staff observed and reviewed records of the 2018 milk monitoring including the results for March, July and November. CNSC staff verified that the task list was initialed.	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Source: Other EMP-010, Residential Drinking Water – Field Sampling, Rev. B	Residential Drinking Water Monitoring <u>Observation/document review</u> the form EMP-010-F-01, <i>Well Identification and Contact Information</i> to verify if the comments/issues with sampling are noted. The form is also used to contact residents for sampling, and ensure that they are informed of the analysis.	CNSC staff observed 2018 records of the EMP-010-F-01 residential drinking water monitoring. The records included comments that were noted regarding the sampling, as well as a list of contact information of the residents within which residential drinking water samples are collected. CNSC staff observed and reviewed records of letters sent to residents informing them about the residential drinking water sampling results and analysis.	Met
Source: Other EMP-011, Downspout Runoff – Field Sampling, Rev. B	Downspout Runoff Monitoring – Records and Forms <u>Records review</u> of: <ul style="list-style-type: none"> ▪ EMP-011-F-01, Downspout Sample MDA ▪ EMP-011-F-02, Downspout Measurements 	CNSC staff observed the 2018 records of the downspout runoff monitoring including the downspout sample MDA EMP-011-F-01, and the Downspout Measurements EMP-011-F-02.	Met
Source: Other EMP-012, Laboratory Analysis of Environmental Samples, Rev. A	Records of Downspout Runoff samples <u>Records review</u> to verify “table of the results of downspout runoff analysis, which includes the time and date of sampling, meteorological conditions and the measured tritium per unit volume of sample”.	CNSC staff observed and reviewed the 2018 records of downspout runoff samples results. The results were entered in a tabular format, which included information about the time, date of sampling, meteorological conditions and the measured tritium per unit volume of the sample.	Met
Source: Other EMP-014, Interpretation and Reporting Requirements for EMP Data, Rev. A	Tracking of Interpretation and Reporting of EMP Data <u>Discussion</u> regarding the tracking of interpretation and reporting of the EMP data process. <u>Records review</u> of the EMP-013-F-01 form to verify documentation of the comparison of the sample results and benchmark values.	CNSC staff observed the EMP-013-F-01 form for the 2018 PAS and the comparisons between the 2018 sample results and the benchmark values.	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Source: Other EMP-014, Interpretation and Reporting Requirements for EMP Data, Rev. A	<p>Calculation of the effective dose Observations/discussion to verify the calculation of the effective dose to the representative persons/members of the public.</p>	<p>CNSC staff observed and verified records (excel spreadsheet) demonstrating the calculations of effective public dose, and how it is reported into the Annual Compliance Report.</p> <p>SRBT staff described the process and stated that the assessment follows the guidelines and methodologies outlined in CSA standard N288.1-14. The EMP results are used in the calculations.</p> <p>SRBT staff verbally communicated to CNSC staff that calculations are completed in the excel spreadsheet, as well as calculated by hand. The results of the two calculations are compared as verification.</p>	<p>Met</p>
Source: Other EFF-001, Weekly Stack Monitoring, Rev. C	<p>TASC Maintenance <u>Records review</u> to verify that maintenance activities on the bubbler systems are recorded on the “Stack Monitoring Equipment Maintenance Sheet” form (EFF-001-F-03). Tritium in air monitors and sample line flow meters are calibrated on an annual basis in accordance with RSO-011”.</p>	<p>CNSC staff observed the EFF-001-F-03 form “Stack Monitoring Equipment Maintenance Sheet” and verified that maintenance was being completed every two months according to the EFF-001 procedure. CNSC staff observed the EFF-001-F-03 form and verified that the last preventative maintenance check was completed on July 2nd, 2019.</p>	<p>Met</p>
Source: Other EFF-001, Weekly Stack Monitoring, Rev. C	<p>Equipment Inspection of Gaseous Emissions <u>Observations/records review</u> to verify “Inspect and record daily the gaseous emissions monitoring equipment to ensure proper and effective operating condition as per the criteria listed on the ‘Stack Monitoring Equipment Check Sheet’ including but not limited to the following:</p>	<p>CNSC staff observed the Stack Monitoring Equipment Check sheet and verified that the information below was recorded:</p> <ul style="list-style-type: none"> ▪ Date and Time ▪ Initials ▪ Rig Sampler System; flow rate, volume and furnace temperature ▪ Bulk Sampler System; flow rate, volume and 	<p>Met</p>

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
	<ul style="list-style-type: none"> ▪ Date and Time ▪ Initials ▪ Rig Sampler System; flow rate, volume and furnace temperature ▪ Bulk Sampler System; flow rate, volume and furnace temperature ▪ Rig Real Time Monitor flow rate ▪ Bulk Real Time Monitor flow rate ▪ Battery Backup Status” 	<p>furnace temperature</p> <ul style="list-style-type: none"> ▪ Rig Real Time Monitor flow rate ▪ Bulk Real Time Monitor flow rate ▪ Battery Backup Status 	
<p>Source: Other EFF-001, Weekly Stack monitoring, Rev. C</p>	<p>Stack Monitoring Report Form <u>Observations/discussion</u> regarding the review of the excel spreadsheet “Stack Monitoring Report Form”. Reviewed by six employees having different methods.</p> <ul style="list-style-type: none"> ▪ “Data entered by member of Health Physics team ▪ Emissions reviewed by Human Protection Coordinator ▪ Calculations review ▪ Report reviewed by member of Health Physics Team ▪ Emissions reviewed by Rig Room Supervisor ▪ Emissions reviewed by Assembly Supervisor” 	<p>CNSC staff observed the March 2019 EffMP records and verified that the report was reviewed by six personnel at SRBT.</p> <ul style="list-style-type: none"> ▪ Data entered by member of Health Physics team ▪ Emissions reviewed by Human Protection Coordinator ▪ Calculations review ▪ Report reviewed by member of Health Physics Team ▪ Emissions reviewed by Rig Room Supervisor ▪ Emissions reviewed by Assembly Supervisor 	<p>Met</p>

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Source: Other EFF-003, Real-time Stack Monitoring, Rev. A	Real-time Stack Monitoring <u>Records review</u> of the “Rig Room Operations Log” to verify “the log is used and ensure that chart recorder reading are below 10,000 microcuries/m ³ . After an operation is completed and written in this log the individual completing the information will check the chart recorders to ensure that the level is below 10,000 microcuries/m ³ and will check the appropriate box on the Rig Room Operations Log”.	CNSC staff observed the Rig Room Operations Log and verified the reading of the chart recorder was below 10,000 microcuries/m ³ . The chart recorders were verified by SRBT staff and the Rig Room Operations Log was checked ensuring that the level is below 10,000 microcuries/m ³ .	Met
Source: Other EFF-003, Real-time Stack Monitoring, Rev. A	Real-time Stack Monitoring <u>Records review</u> to verify “the paper chart is torn off of the roll and added as a formal record of the release trend for the previous monitoring period when weekly stack monitoring is performed”.	CNSC staff observed records of the paper charts for the March 2019 weekly real-time stack monitoring.	Met
Source: Other EFF-003, Real-time Stack Monitoring, Rev. A	Quarterly System Verification <u>Observations/records review</u> to verify that once per quarter, the system is verified for alignment of readings and recorded data, and that the form is completed and filed as a record.	CNSC staff observed records of the real time stack monitoring quarterly verification check form for the Rig and Bulk Stack, which stated that it was completed on June 5, 2019.	Met
Source: Other EFF-003, Real-time Stack Monitoring, Rev. A	Annual Monitor Calibration <u>Observation</u> to verify the Overhoff tritium in air monitors are calibrated annually.	CNSC staff observed calibration records for the Overhoff 357RM real time stack monitoring for the Rig and Bulk Stack. <ul style="list-style-type: none"> ▪ The Overhoff 357RM for the Rig Stack real time monitoring was last calibrated on November 17, 	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
		2018. The next calibration is due November 2019. <ul style="list-style-type: none"> ▪ The Overhoff 357RM for the Bulk Stack real time monitoring was last calibrated on November 18, 2018. The next calibration is due November 2019. 	
Source: Other EFF-002, Liquid Effluent Assessment, Rev. A	<p>Liquid Effluent <u>Observations/records review</u> of the form EFF-002-F-01 to verify:</p> <ul style="list-style-type: none"> ▪ “The average concentration of the three samples obtained, in Bq/L ▪ The concentration of the water, in Bq/L ▪ The total activity to be released, in Bq ▪ The average concentration in daily effluent from the site boundary, in Bq/L, given an assumption of 10,000 litres of non-contaminated effluent released per day. ▪ The number of days over which the total activity would need to be released in order to maintain the average concentration in daily effluent at less than or equal to 7,000 Bq/L. This is the average concentration calculated in the previous bullet, divided by 7,000 Bq/L. Round up to determine integer of days. ▪ The calculated concentration of effluent from the facility over the number of days, as a confirmation that this value is less than 7,000 Bq/L. ▪ The volume of water in litres to be sent to sewer per release, assuming three equal 	CNSC staff observed and verified the 2019 March Liquid Effluent Assessment EFF-002-F-01 for the Weekly liquid effluent releases. The form contained all the required components.	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
	<p>releases per day from the storage drum. This is given by dividing the volume of the water by the number of days to release, and then once again by 3.</p> <ul style="list-style-type: none"> ▪ The calculated daily release to sewer from this activity, in Bq. This is given by dividing the total tritium activity of the drum by the number of days that it will be released.” 		
<p>Source: Other EFF-002, Liquid Effluent Assessment, Rev. A</p>	<p>Weekly Effluent Summary Sheet <u>Observations/records review</u> to verify, “Once a week is completed, form Eff-002-F-02 (Weekly Effluent Summary Sheet) shall be completed to document the daily effluent values. The final week total effluent is then input into EFF-002-F-04 (Annual Liquid Effluent Tracking Table)”.</p>	<p>CNSC staff observed and verified the 2019 March Weekly Effluent Summary Sheet.</p>	<p>Met</p>
<p>Source: Other EFF-04, Sample Line Leak Check, Rev. A</p>	<p>Leak Check <u>Records review</u> of the form EFF-004-F-01 “GEMS Sample Line Leak Check Record”. “The leak check shall be performed at least once every three calendar years.”</p>	<p>CNSC staff observed the EFF-004-F-01 “GEMS Sample Line Leak Check Record”. CNSC staff verified that the leak check was completed on May 25, 2017 for both the Rig Stack, as well as the Bulk Stack. The form indicated that the next leak check is scheduled for May 2020.</p>	<p>Met</p>
<p>Source: Other ENG-014, Differential Pressure Measurements, Rev. E</p>	<p>Differential Pressure Measurements <u>Records review</u> of the “Daily Differential Pressure Checks Form” ENG-014-F-01.</p>	<p>CNSC staff observed and verified the ENG-014-F-01 “Daily Differential Pressure Checks Form”.</p>	<p>Met</p>
<p>Source: Other ENG-014, Differential</p>	<p>Differential Pressure Measurements <u>Observations</u> to verify “the pressures in the</p>	<p>CNSC staff observed the pressures in the gauges and verified that the pressure for the Rig Stack was above 0.27 inches of water, and above 0.38 inches of water</p>	<p>Met</p>

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Pressure Measurements, Rev. E	gauges are above 0.27 inches of water for the rig stack and 0.38 inches of water for the bulk stack.”	for the Bulk Stack. CNSC staff observed the calibration stickers. <ul style="list-style-type: none"> ▪ The Bulk Stack instrument was calibrated on March 18, 2019 (ID # C262399-00-02) ▪ The Rig Stack instrument was calibrated on March 18, 2019 (ID # C262399-00-01) 	
Source: Other Groundwater Monitoring Program, Rev. A	Routine Inter-laboratory Performance Testing <u>Document review</u> of the assessment results (typically arranged for May sample set) obtained for the inter laboratory exercise for the assessment of groundwater sampling performance.	SRBT staff verbally communicated to CNSC staff that the inter laboratory exercise for the assessment of groundwater sampling performance was completed in May.	Met
Source: Other GMP-001, Groundwater Level Measurements, Rev. A	Groundwater Level Measurements <u>Records review</u> of GMP-001-F-01 and GMP-001-F-02. “Completed GMP-001-F-01 are to be retained until the information is incorporated into GMP-001-F-02, at which point they may be disposed of”.	CNSC staff observed the completed records of the 2018 GMP-001-F-01 and GMP-001-F-02. The records included information on the groundwater level measurements measured at the different groundwater monitoring sampling locations.	Met
Source: Other GMP-003, Groundwater Field Sampling, Rev. A	Groundwater Field Sampling <u>Records review</u> of the 2017 and 2018 forms (GMP-003-F-01) to verify forms are completed and signed by the qualified sampler.	CNSC staff observed the records for the 2018 Groundwater Field Sampling (GMP-003-F-01). CNSC staff verified the forms were completed and signed.	Met
Source: Other GMP-003, Groundwater Field Sampling, Rev. A	Groundwater Field Sampling <u>Observations</u> of personnel collecting groundwater samples to verify groundwater field sampling procedures are being followed.	CNSC staff observed SRBT staff collecting groundwater samples. One day prior to groundwater sample collection, CNSC staff observed SRBT staff measuring groundwater levels as per GMP-001, Groundwater Level Measurements. CNSC staff observed the	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
		<p>measurements of groundwater level at locations MW07-15, MW06-9, MW07-16, MW07-18, MW07-29, MW07-34, MW07-19, MW07-26, MW06-3 and MW06-10.</p> <p>The following day, CNSC staff observed SRBT staff collecting groundwater samples at locations MW06-3, MW07-26, MW07-27, MW07-28, MW07-35. CNSC staff observed the caps of the vials were labelled prior to sample collection. CNSC staff observed SRBT staff adhering to the GMP-003, Groundwater Field Sampling procedures.</p>	

Items for Follow Up

#	Item	Status
1	<p>Follow up on corrective actions from SRBT-2019-01-A1: <i>SRBT shall ensure that all eye wash stations are free of obstructions and accessible for immediate use by employees.</i></p> <p>Verify: <i>Since then, a dedicated eyewash station has been installed in Zone 3, as was committed in our email of February 28, 2019, and a spare eyewash station was procured and stored if needed in the future.</i></p>	<p>CNSC staff verified that the dedicated eyewash station has been installed.</p>
2	<p>Follow up on corrective actions from SRBT-2019-01-A4: <i>SRBT shall ensure that records are complete according to SRBT's Quality Manual.</i></p> <p>Confirm with SRBT: <i>Going forth, the Manager- Safety and Security shall closely review these records with staff upon completion and ensuring that all fields are completed.</i></p>	<p>CNSC staff noted that Minor Injury/First Aid Record Form HAS-005-F-01 has been revised (Rev C) to address comments from the corrective actions. CNSC staff confirmed that Manager – Safety and Security reviews the records upon staff completion.</p>
3	<p>Follow up on corrective actions from SRBT-2019-01-R2: <i>SRBT should ensure that internal audits are completed as planned.</i></p> <p>Verify: Check completion status of planned internal audits for 2019.</p>	<p>CNSC staff noted that planned internal environmental program audit for 2019 have been completed as well as the missed environmental audit carried over from 2018.</p>
4	<p>Follow-up on SRBT's research project on extending the filling cycles of PUTTs and verify analysis supporting the extension.</p>	<p>CNSC staff noted progress in SRBT's research project on extending filling cycles of PUTTs – SRBT is currently limiting PUTTs to 13 cycles (from 30 cycles) to demonstrate that it does not have a large contribution towards environmental emissions.</p>