



**SRB TECHNOLOGIES (CANADA) INC.**

Presentation – May 5, 2015  
Pembroke City Council

## 1.0 INTRODUCTION

SRB Technologies (Canada) Inc. has been in operation since 1990, and currently:

- Employs 46 people.
- Located in an industrial park on the outskirts of Pembroke.
- Leases 12,000 square feet of a building.
- Closest residence is approximately 250 m from the facility.



FIGURE A: AERIAL PHOTOGRAPH OF THE FRONT OF SRBT'S FACILITY

## INTRODUCTION (Continued)

- SRBT is licensed by the Canadian Nuclear Safety Commission to process tritium.
- Process tritium for the manufacturing of gaseous tritium light sources.
- Gaseous tritium light sources are glass capsules coated with luminescent powder and filled with tritium.
- Interaction between the particles emitted by the tritium and the luminescent coating produces light on a continuous basis.



FIGURE B: VARIOUS TYPES OF TRITIUM LIGHT SOURCES PRODUCED BY SRBT

## INTRODUCTION (Continued)

- Our products ensure the safety and security of people all over the world.
- Supplier of aircraft signs for many aerospace manufacturers.
- We manufacture many vital products used by Canadian and other NATO peacekeeping troops worldwide.



FIGURE C: PICTURE OF A SOLDIER WITH OUR ILLUMINATED TORCH

## INTRODUCTION (Continued)

- Other lighting technologies require wiring, power or batteries.
- Our lighting products do not use electricity thereby reducing energy consumption.



FIGURE D: VARIOUS TYPES OF PRODUCTS PRODUCED BY SRBT

## 1.2 SUMMARY OF APPLICATION

SRBT requested that the Commission of the CNSC renew our operating licence for a period of 10 years.

Requesting a licence with no new methods or processes, and we will be operating existing equipment with same trained staff.

We request a licence with:

- The same licence activities.
- The same release limits.
- The same action levels.
- The same possession limit.

The Staff of the CNSC are supporting our request for a 10 year licence.

## 1.2 SUMMARY OF APPLICATION

Our renewal request is based upon our stable and experienced workforce:

- 14 of the 15 staff employed in 2010 continue to work in the same positions.
- Despite our growth the workforce averages nearly 9 years of experience at the facility.
- Members of the Health Physics team possess a combined 107 person-years working at SRBT (over 15 years on average per member).
- President and Vice-President, who now own the company, have a combined 42 years of experience managing and operating the facility.

### 3.3 PERFORMANCE ASSESSMENTS, IMPROVEMENTS AND MANAGEMENT REVIEWS

#### 3.3.1 CNSC Compliance Verification

Throughout the term of our current licence, CNSC staff conducted several compliance inspections, facility visits and promotional visits.

As of the end of April 2015, SRBT has zero open action items.

<b>TYPE OF FINDING</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Directive	0	0	0	0	0
Action Notice	1	3	3	1	1
Recommendation	2	2	2	1	1

TABLE A: CNSC COMPLIANCE ACTION ITEMS

### 3.3 PERFORMANCE ASSESSMENTS, IMPROVEMENTS AND MANAGEMENT REVIEWS

Additional Independent Oversight:

- Annual ISO 9001 Audits by our Registrar (3.3.2).
- Frequent Internal Audits (3.3.3).
- Three Ontario Power Generation (OPG) audits (3.3.4).
- Annual Pembroke Fire Department Inspections (3.3.5).
- Annual Fire Protection Consultant Inspections (3.3.6).
- Quarterly Underwriters Laboratories (UL) audits (3.3.7).
- Numerous customer audits (3.3.8).

## 3.4 HUMAN PERFORMANCE MANAGEMENT

### Key Training Activities:

- Radiation Safety Training (3.4.2).
- Yearly Fire Extinguisher Training (3.4.3).
- Fire Responder Training (3.4.4).
- Transportation of Dangerous Goods Training (3.4.5).
- Health Physics Training (3.4.6).
- Fire Protection Committee Member Training (3.4.7).
- Health and Safety Training (3.4.8).

## 3.8 FITNESS FOR SERVICE

SRBT took several actions as a result of the ‘Lessons Learned’ at Shield Source Inc.:

- SRBT has elected to increase frequency of stack monitoring verification from every two years to every year.
- Invested in upgrading and modernizing equipment associated with stack monitoring by purchasing and installing:
  - New “Bubblers”.
  - New tritium monitors for real-time emissions monitoring.
  - New “digital” data recorder to complement the existing analog “paper” chart recorder for real-time emissions data.

## 3.9 RADIATION PROTECTION

### 3.9.1 Annual Worker Dose

DOSE	2010 mSv	2011 mSv	2012 mSv	2013 mSv	2014 mSv	LIMIT mSv
Maximum	0.88	1.15	0.80	1.93	1.29	50
Average	0.11	0.25	0.11	0.21	0.10	

TABLE B: ANNUAL WORKER DOSE METRICS

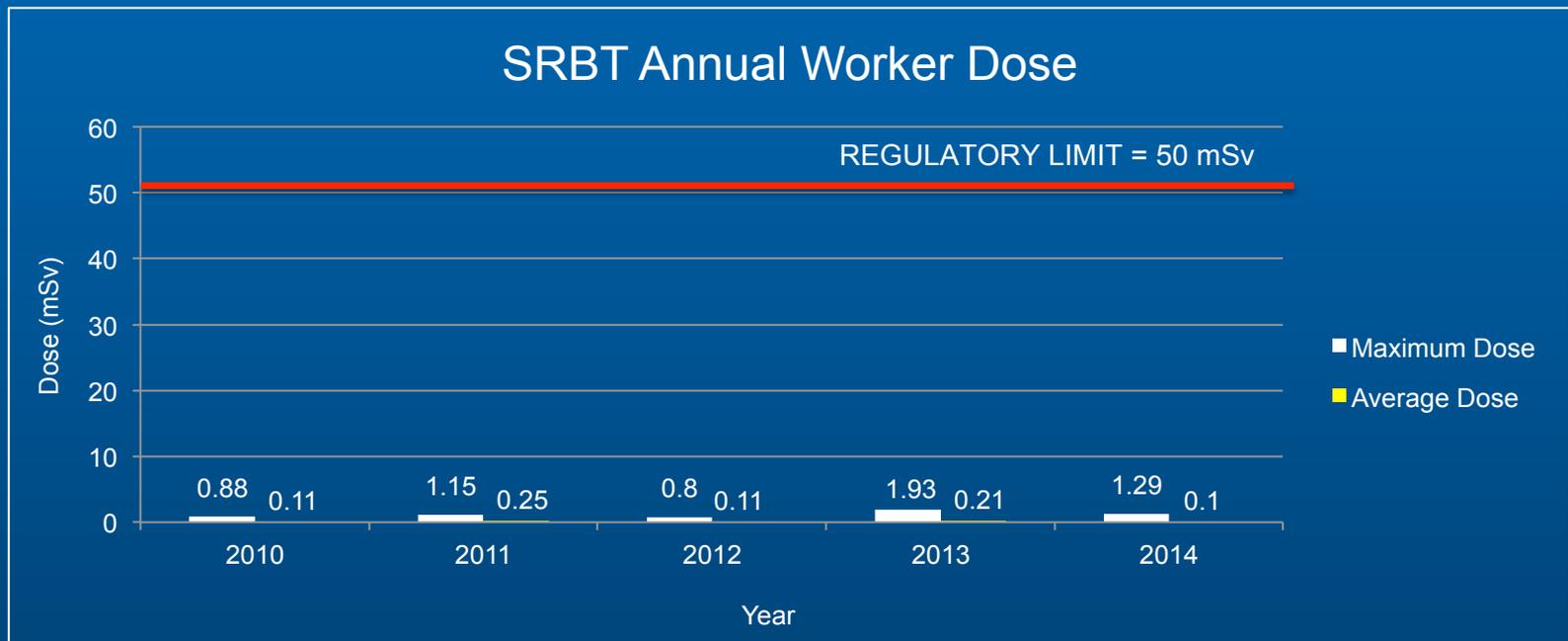


CHART A: ANNUAL WORKER DOSE METRICS

## 3.9 RADIATION PROTECTION

### 3.9.2 Annual Maximum Public Dose

DOSE	2010 mSv	2011 mSv	2012 mSv	2013 mSv	2014 mSv	LIMIT mSv
Maximum	0.0050	0.0050	0.0049	0.0068	0.0067	1.0000

TABLE C: ANNUAL MAXIMUM PUBLIC DOSE

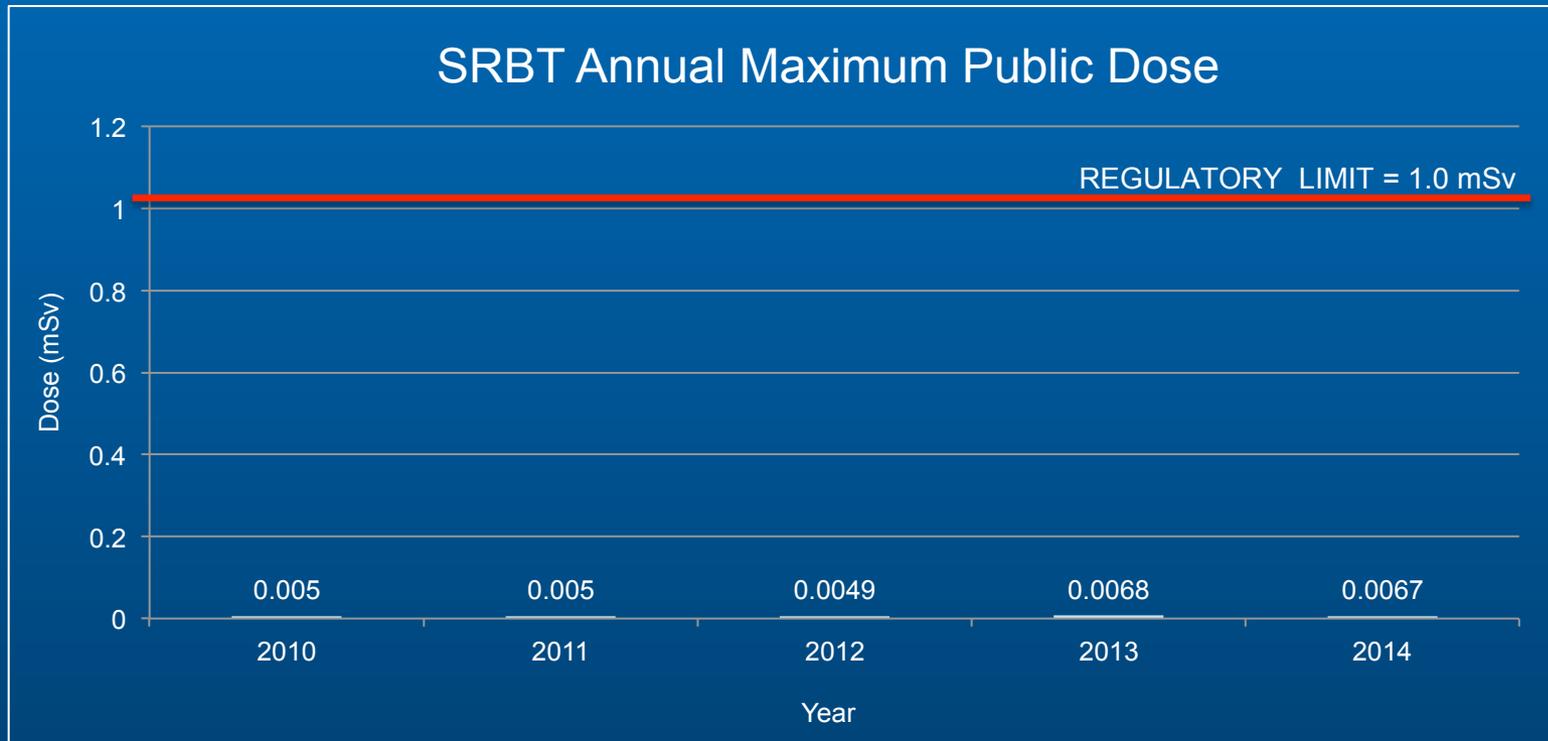


CHART B: ANNUAL MAXIMUM PUBLIC DOSE

## 3.11 ENVIRONMENTAL PROTECTION

- Annual emission of HTO + HT maintained < 18% of licence limit:

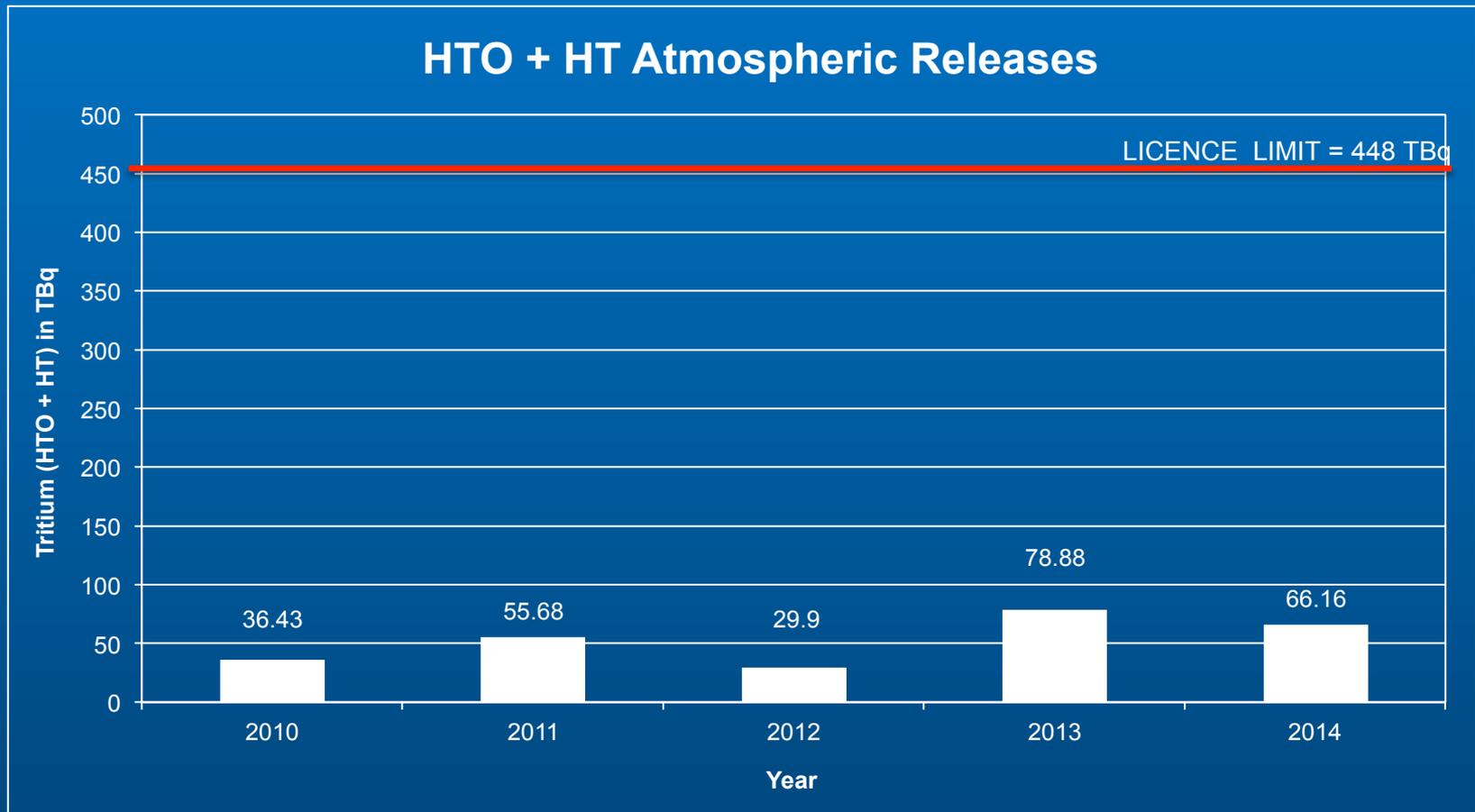


CHART C: TOTAL ATMOSPHERIC RELEASES

## 3.11 ENVIRONMENTAL PROTECTION

- Annual emission of HTO maintained < 27% of licence limit:

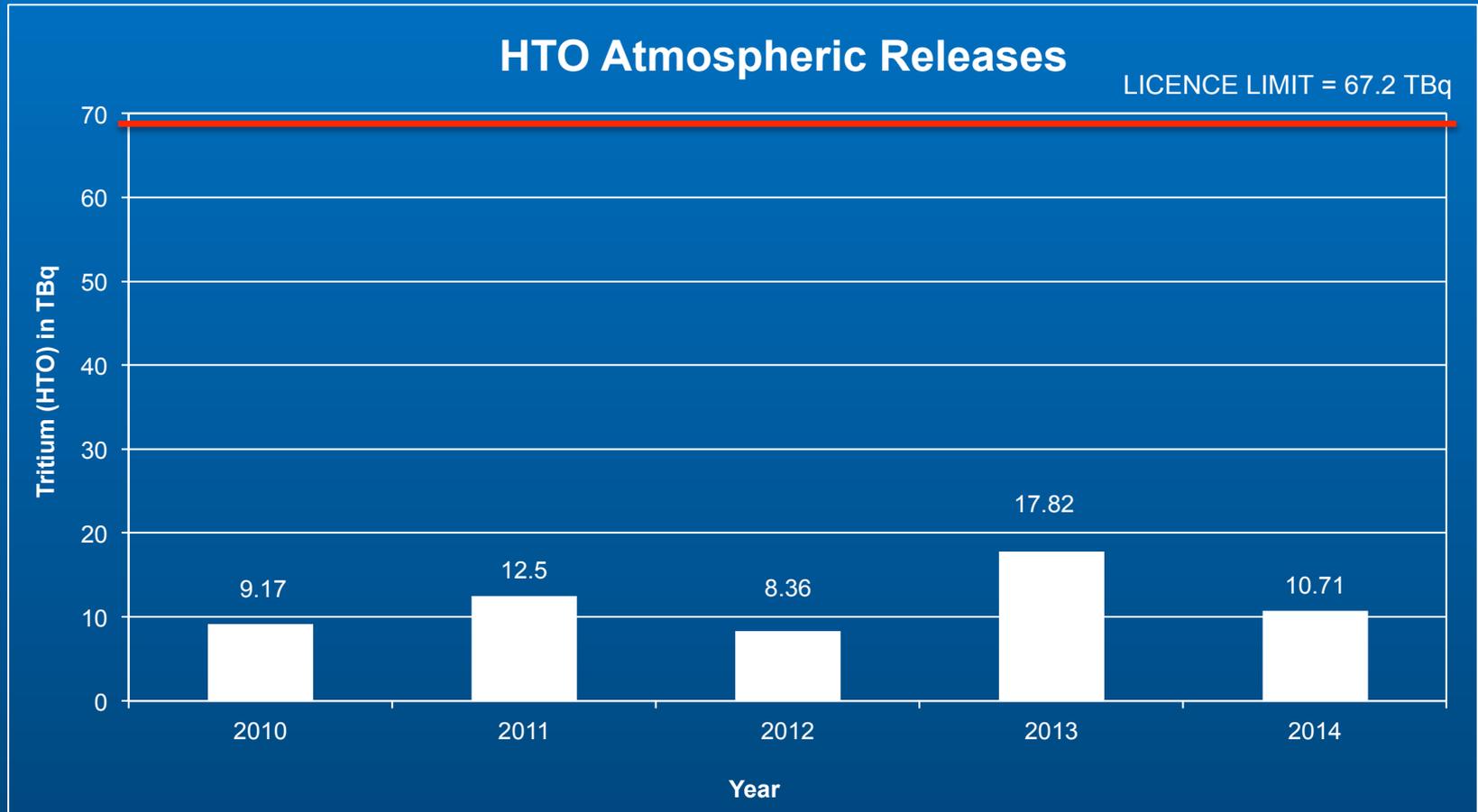


CHART D: TRITIUM OXIDE ATMOSPHERIC RELEASES

### 3.11 ENVIRONMENTAL PROTECTION

Ratio Tritium Released to Processed 2010 – 2014:

	2010	2011	2012	2013	2014
Released : Processed (%)	0.55	0.76	0.29	0.26	0.23

TABLE D: RELEASED TO PROCESSED RATIO

SRBT has been successful in reducing this ratio over the last several years, from 1.70% in 2008 down to 0.23% in 2014.

For the first 16 weeks of 2015, this ratio stands at 0.15%.

This ratio is an excellent indicator of the overall effectiveness of our emission-reducing initiatives.

## 3.11 ENVIRONMENTAL PROTECTION

### 3.11.2 Liquid Effluent 2010 - 2014

	2010 TBq	2011 TBq	2012 TBq	2013 TBq	2014 TBq	LIMIT TBq
Tritium – Water Soluble (TBq)	0.007	0.008	0.012	0.009	0.013	0.200

TABLE E: ANNUAL LIQUID EFFLUENT

Throughout the term of the existing licence, liquid emissions were maintained at less than 6.5% of our annual licence limit.

## **3.11 ENVIRONMENTAL PROTECTION**

### 3.11.3.2 Groundwater Monitoring

- Program in place since 2006. Includes sampling by a third party of several monitoring wells and residential wells.
- Highest average residential well in 2014 was measured at 217 Bq/L and continues to trend downward. Well below the Ontario Drinking Water Guideline value of 7,000 Bq/L.
- Of the 34 monitoring wells, at end of 2014 only 2 wells exceed the Ontario Drinking Water Guideline value. Both wells are located on the SRBT site within 50 m of the stack.
- Concentrations are expected to gradually decrease with decay and hydrogeological processes.

### 3.11.3 ENVIRONMENTAL MONITORING

An independent third party also collects and analyzes samples as dictated by SRBT's Environmental Monitoring Program:

- 40 air monitoring stations within 2 km of the facility.
- 8 precipitation monitors.
- Produce sampling from local gardens and local market.
- Local milk.
- Local wine.
- Muskrat River.

Data is used to calculate the maximum dose to a member of the public as a result of the emissions from SRBT.

## 3.12 EMERGENCY MANAGEMENT AND FIRE PROTECTION

### 3.12.2.2 Emergency Exercise

- SRBT conducted a full-scale emergency training exercise on February 9, 2015.
- Conducted in concert with Pembroke Fire Department and the City of Pembroke, and was observed by CNSC staff.
- Response deemed acceptable, SRBT identified only minor improvement opportunities, but no safety concerns.

## 3.12 EMERGENCY MANAGEMENT AND FIRE PROTECTION

### 3.12.2.2 Emergency Exercise



FIGURE E: EMERGENCY EXERCISE, FEBRUARY 9, 2015

## 4.1 PUBLIC INFORMATION PROGRAM

### 4.1.1 Direct Interaction with the Public

- Only two inquiries from members of the public during the current licence term up until the end of 2014.
- Information pamphlet and licence renewal information sent to various stakeholders including those living within 500 meters of the facility.
- Information pamphlet sent to 10,000 residences, businesses and establishments in Pembroke and Laurentian Valley.
- 98 plant tours between 2011 and the end of 2014, 28 tours conducted so far in 2015.
- Door to door campaign of 369 residences, 76 individuals that were at home expressed very little to no concern.

## 4.1 PUBLIC INFORMATION PROGRAM

- Website was frequently updated throughout the current licence term (4.1.4).
- Complete website redesign recently launched.
  - Public notifications regularly posted.
  - Licence and Licence Conditions Handbook posted.
  - Annual Compliance Reports posted.
  - Monitoring results posted, including passive air samplers, air emissions, produce sampling, and groundwater.
  - Details of main Presentations and meetings posted.
  - Information on tritium and radiation posted.
  - Emergency Preparedness information posted.
  - Community support and involvement initiatives.
- Facebook page developed and linked to website.

# 4.1 PUBLIC INFORMATION PROGRAM

The image shows a screenshot of the SRBT website's public information program page. The page features a navigation menu at the top with the following items: HOME, OUR COMPANY & VISION, PRODUCTS, DISPOSAL & RECYCLING, TRANSPORT, PUBLIC DISCLOSURE PROTOCOL, PUBLIC NOTIFICATIONS (highlighted in red), SEARCH SITE, and CONTACT US. The main content area includes the SRBT logo with 'ISO 9001' below it, a yellow awareness ribbon with a Canadian flag and the text 'Support Our Troops', and two 3D 'EXIT' signs (one red and one green). To the right of the signs is a list of features with checked boxes:  No Wiring,  No Electricity,  No Batteries, and  No Maintenance. Below this is the slogan 'SRB, Part of Your Community' and a 'Join Us On facebook' button. A secondary navigation menu at the bottom contains: PAMPHLET & BROCHURE, LICENCE & HANDBOOK, ANNUAL COMPLIANCE REPORTS, OTHER REPORTS & MONITORING RESULTS, PRESENTATIONS & MEETINGS, TRITIUM INFORMATION, PUBLIC SURVEYS, EMERGENCY PREPAREDNESS, and COMMUNITY INVOLVMENT.

HOME	OUR COMPANY & VISION	PRODUCTS	DISPOSAL & RECYCLING	TRANSPORT	PUBLIC DISCLOSURE PROTOCOL	<b>PUBLIC NOTIFICATIONS</b>	SEARCH SITE	CONTACT US
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**SRBT**  
ISO 9001

No Wiring  
 No Electricity  
 No Batteries  
 No Maintenance

**SRB, Part of Your Community**

Join Us On **facebook**

PAMPHLET & BROCHURE	LICENCE & HANDBOOK	ANNUAL COMPLIANCE REPORTS	OTHER REPORTS & MONITORING RESULTS	PRESENTATIONS & MEETINGS	TRITIUM INFORMATION	PUBLIC SURVEYS	EMERGENCY PREPAREDNESS	COMMUNITY INVOLVMENT
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FIGURE F: www.srbt.com

## 4.3 FINANCIAL GUARANTEE

### 4.3.1 Current Funding

- CNSC-approved Financial Guarantee (FG) on June 26, 2008 based on previous revision of Preliminary Decommissioning Plan (PDP).
- Final installment in April 2014 brought account held in escrow to \$550,476 and building interest.

### 4.3.2 Proposed Funding

- Hired contractors directly involved with decommissioning of Shield Source Inc.
- SRBT PDP then revised in late 2014.
- Required FG now \$652,488, an increase of \$102,012.
- SRBT proposes 6 equal payments of \$17,002 to fund revised FG, to be made every six months to escrow account beginning in October 2015.

## 4.4 FUTURE OUTLOOK

- Committed to Product Development in Safety Applications where we are ensuring that our products are developed with a focus on contributing to the safety of people in situations where reliable illumination is needed (4.4.1).
- Committed to Research of Emission Reduction Initiatives where no less than 5% of our annual profit over our new licence term shall be allocated to researching and implementing emission-reduction strategies and technologies (4.4.2).
- Committed to Integration with Scientific and Nuclear Community to advance education, our emission reduction and environmental monitoring initiatives (4.4.3).
- Committed to Reduction of Occupational Doses where we will continue to strive to lower doses to all of our workers below the public dose limit of 1 mSv (4.4.4).

## CONCLUSION

- Throughout the term of the current licence, SRBT has operated the Facility safely and in accordance with the provisions of the licence and the Nuclear Safety Control Act (NSCA) and Regulations.
- SRBT has demonstrated its commitment and integrity by the work described in this submission.
- SRBT has demonstrated that it will continue to make improvements in the future by the various initiatives, goals and targets described in our submission and based on input and concerns raised by the CNSC, members of the public and our employees.

