Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 22-H8.1B

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Supplementary Information

Renseignements supplémentaires

Presentation from SRB Technologies (Canada) Inc.

Présentation de SRB Technologies (Canada) Inc.

In the Matter of the

À l'égard de

SRB Technologies (Canada) Inc.

SRB Technologies (Canada) Inc.

Application for the renewal of the licence for SRBT Facility

Demande de renouvellement de permis pour l'installation de SRBT

Commission Public Hearing

Audience publique de la Commission

April 27, 2022

27 avril 2022

Canada

SRB TECHNOLOGIES (CANADA) INC.

Presentation – April 27, 2022
Licence Renewal Hearing

Application for Renewal of Nuclear Substance
Processing Facility Operating Licence

PART ONE

INTRODUCTION

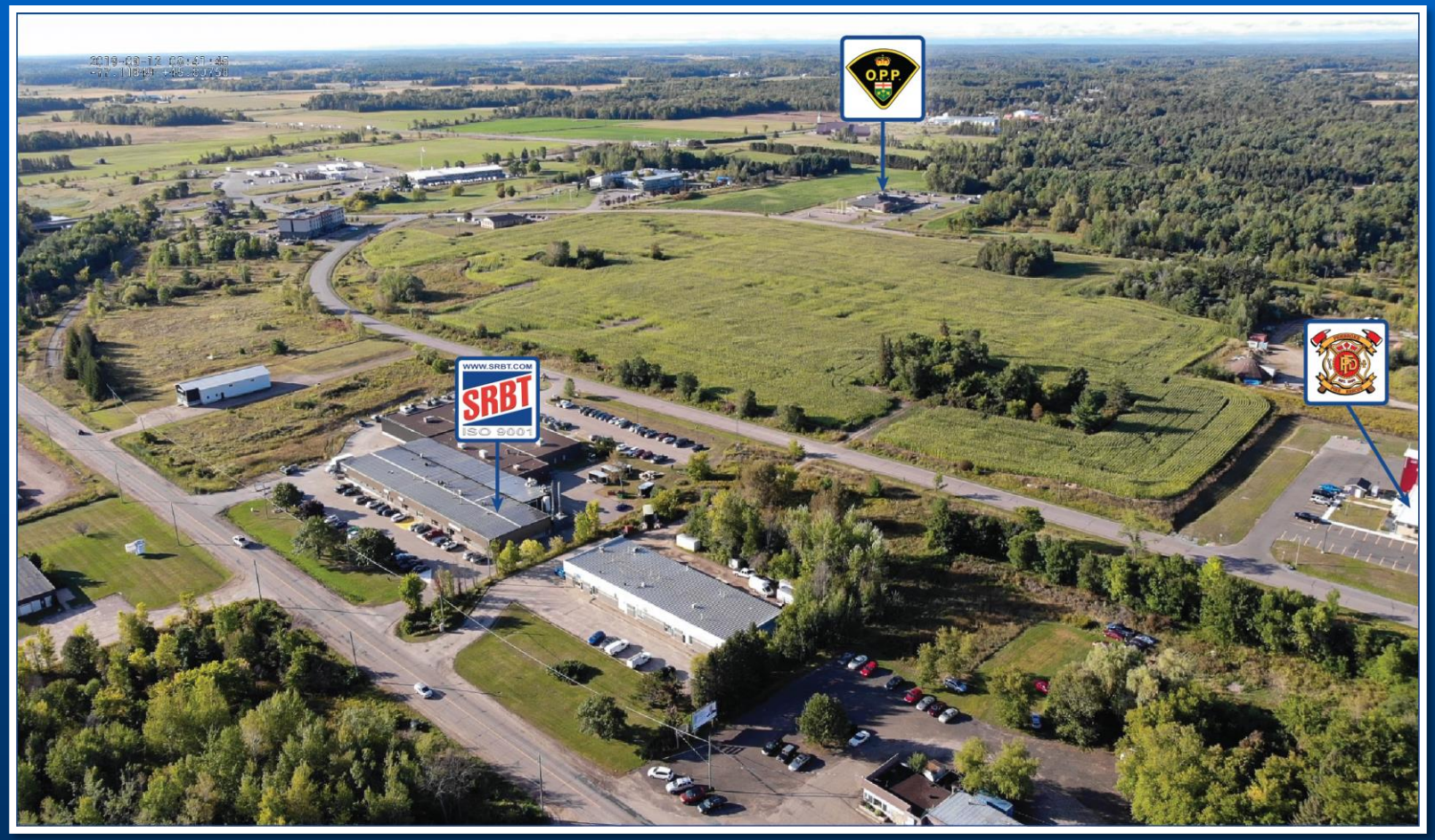
INTRODUCTION

Since 1990, SRB Technologies (Canada) Inc. (SRBT) has safely operated a nuclear substance processing facility in Pembroke, Ontario.

- 38 hard working employees
- Locally owned and operated
- 1,400 m^2 (15,000 sq. ft.) facility
- Licence last renewed in 2015
- Approaching the end of our seven-year licence term

INTRODUCTION

SRBT is located in TransCanada Corporate Park, alongside other industrial and manufacturing facilities.



- Pembroke Fire Department located very nearby
- OPP station also located nearby
- Nearest residential zone located ~250 m northwest
- City of Pembroke lies mainly to the north and northeast

INTRODUCTION

SRBT is licensed to operate a Class IB tritium processing facility for the purposes of manufacturing self-luminous safety signs, devices and light sources.

These products have important safety applications in several industries.

- Tritium gas is processed and sealed in borosilicate glass
- Coated internally with a phosphorescent powder
- Powder emits visible light under tritium beta-radiation
- Various shapes and sizes
- Colour and brightness vary with customer requirements

INTRODUCTION

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ISO 9001

INTRODUCTION

INTRODUCTION

In 2012, SRBT became 100% Canadian-owned and operated.

Our corporate mission is to continuously improve our operations, and to reduce or eliminate impacts to our environment and community stakeholders.

- **SAFETY is paramount**. It is the top priority that guides our actions and informs our decisions
- We strive to maintain or exceed all applicable requirements and expectations
- We work to continuously improve our programs and processes, and address problems effectively
- We continue to lower our environmental impact by working to minimize tritium releases
- We are very active in our support of our community
- We share a wide variety of information and data with the public through our website and social media

Our Vision

Strive to maintain or exceed *the standing required to allow our company to process tritium and manufacture life safety devices to fulfill the needs of our customers.*

Our Mission

Continuously improve *company programs in order to* **meet or exceed** *the requirements of the Nuclear Safety and Control Act, Regulations and conditions of the licence in order to* **strive to achieve higher grades** *in all safety areas.*

Our Goals

1. *To promote a strong safety culture throughout the organization by having all employees continuously assess and analyze any impact the operations may have on the public and the environment.*
2. *To reduce any risk to the public and the environment due to the operations to ensure that requirements of the Nuclear Safety and Control Act, Regulations, conditions of the licence and ISO 9001 requirements are met or exceeded.*
3. *To be transparent, visible and open with our community, our regulators and our staff.*
4. *To ensure that the products are supplied to customer requirements and specifications and to the requirements of the Nuclear Safety and Control Act, Regulations, conditions of the licence and ISO 9001 requirements.*
5. **To continue to lower emissions and improve** *the effectiveness of our programs and processes.*

Our Values

We will achieve our goals by acting with integrity with the regulators, the members of the public and our employees, and by respecting their input and contribution by **making improvements based on** *this input.*

Our Policy

It is the policy of the company and the employees to learn from our operational experience and research, to consider the input of all stakeholders and be conservative in our decision making, to ensure the protection of the public and the environment to achieve the goals that we have set to meet our ultimate vision.
Compliance to the Quality Management System is an obligation throughout the company for all employees; all workers are committed to adhere with all requirements of the Quality Management System, and are encouraged to contribute to the **continual improvement** *and* **upgrading** *of the company's Quality Management System.*

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SRBT

ISO 9001

TOP MANAGEMENT

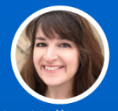
Stephane Levesque
President

Ross Fitzpatrick
Vice President

EXECUTIVE COMMITTEE

Tanya Sennett
Compliance Manager

Jamie MacDonald
Manager of Health Physics & Regulatory Affairs



Janice Hollingworth
Account Manager

Katie Levesque
Executive Assistant

Mary-Ann Demers
Production Control Manager

MANAGERS

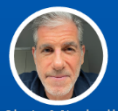
Nathalie Belleau
Quality Manager

Paul Lavigne
Manager of Safety & Security

Owen Egan
Project Engineer

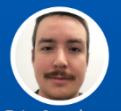
Darci Gaudette
Logistics Manager

SPECIALISTS & MANAGEMENT ASSISTANTS



Chris Mitchell
Graphic Design Specialist

Bennett Robinson
Information Technology (IT) Specialist



Eric Gaudette
Fire Protection Specialist

Darryl Myre
Inventory Control Assistant

Joshua Bull
Assistant Manager of Health Physics

SUPERVISORS

Donna Buder
Rig Room Supervisor

Laura Charles
Glass Shop Supervisor

Christina Kutschke
Coating Supervisor

Darwin Thomas
Machining & Molding Supervisor

Mark Hoffman
Assembly Supervisor (Night Shift)

Brenda St-Pierre
Assembly Supervisor

PRODUCTION TECHNICIANS

Mathew Bergin
Environmental Protection Technician

Paula Biesenthal
Production Technician

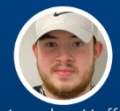
Amber Buske
Production Technician

Cody Chaput
Production Technician

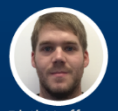
Faith Fitzpatrick
Production Technician

Lexxi Fitzpatrick
Production Technician

Mandy Gorr
Production Technician



Christopher Hoffman
Production Technician



Phil Hoffman
Production Technician

Terry Klentz
Production Technician

Tina Markus-Savage
Production Technician

Damien McElroy
Production Technician

Sandra Paquette
Production Technician

Caitlyn St-Cyr
Production Technician

Evan Watt
Production Technician

Keith Visutski
Production Technician

PART TWO

SAFETY AND CONTROL AREAS

MANAGEMENT SYSTEM

In 2014, SRBT embarked on a multi-year project to revamp our system of programs and procedures, in order to align and comply with CSA N286-12.

- Project was implemented in a controlled, step-wise fashion, with input at all levels of the organization
- CNSC staff continuously updated on project status
- Many processes updated and integrated formally into facility-wide system that addresses both safety and product quality
- All work at SRBT is governed by the requirements described in this top-tier document

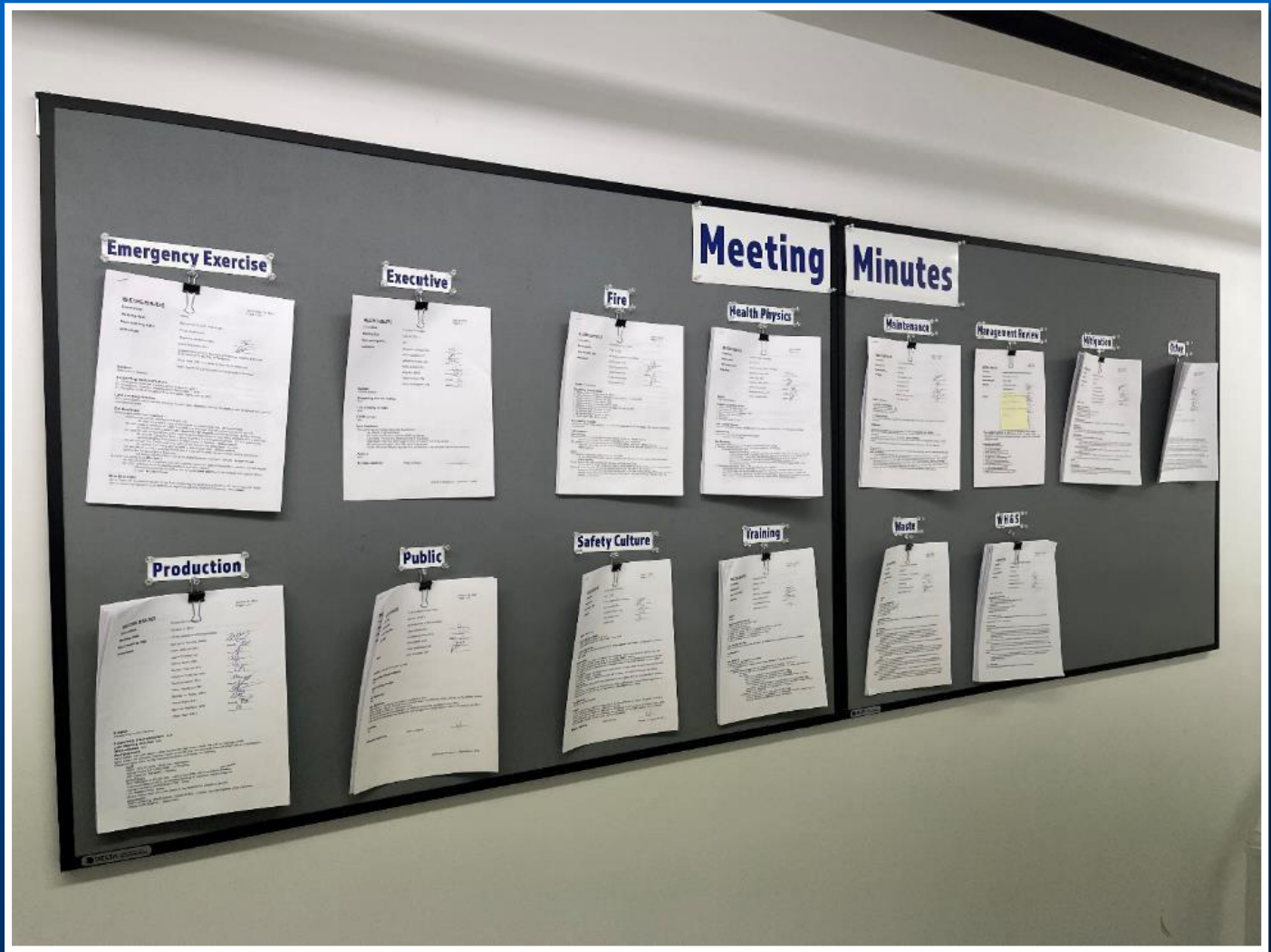
MANAGEMENT SYSTEM

Project completed in December 2016, with the SRBT **Quality Manual** being submitted to CNSC staff, and accepted after inspection of the new system.

- The SRBT Quality Manual is designed to fully align and comply with both CSA N286-12 and the requirements of ISO 9001
- The Quality Policy statement is the cornerstone which codifies our key vision and mission statements
- Outlines the safety goals, values and compliance policies that all employees and management must adhere to

MANAGEMENT SYSTEM

Key safety-related programs are overseen by various Committees, with a responsible organizational manager assigned as program ‘owner’.



- Most committees include members at multiple levels of the organization
- At the end of 2021, **59%** of employees are on at least one committee
- Between 2015-2021, a total of **588** committee meetings have been held
- Safety targets and key performance indicators are closely tracked and trended
- Actions taken to continuously improve operations and safety
- Minutes from meetings are posted openly in the facility for all staff to review

MANAGEMENT SYSTEM

Promotion of a strong **nuclear safety and security culture** at all levels of the organization contributes to safe and effective operations.

- Safety culture strength is assessed and managed by a dedicated committee
- Training is provided annually to all staff on the Management System, and the elements described in CSA N286-12
- Annual refresher on Radiation Safety, Security Awareness, Fire Protection, and Conventional Health and Safety training

HUMAN PERFORMANCE MANAGEMENT

Well-trained and qualified workers helps to ensure the conduct of licensed activities is safe at all times.

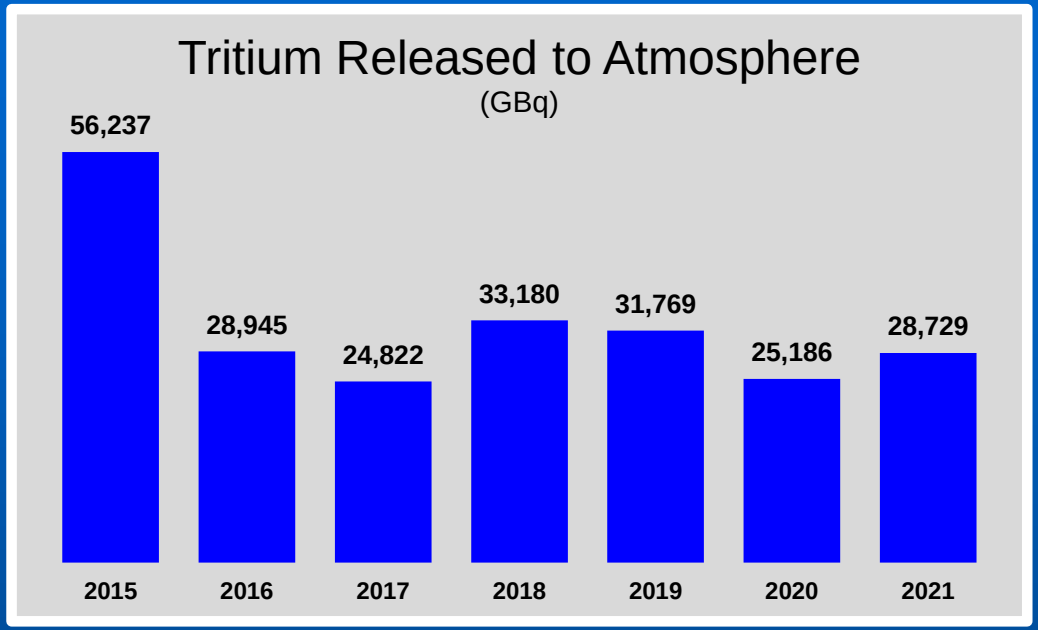
- **Systematic approach to training** (SAT) is applied for licensed activities that require high standards for human performance to ensure safety
- SRBT Training Program fully aligns and complies with REGDOC-2.2.2, Personnel Training
- Program improved with expanded training needs analyses and improved refresher training processes

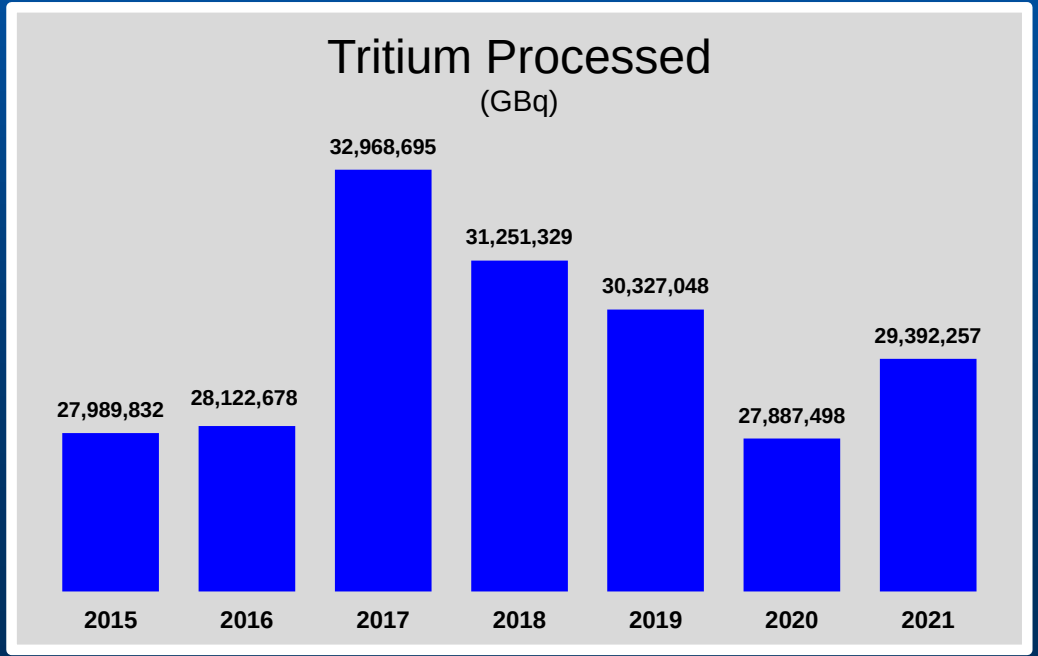
OPERATING PERFORMANCE

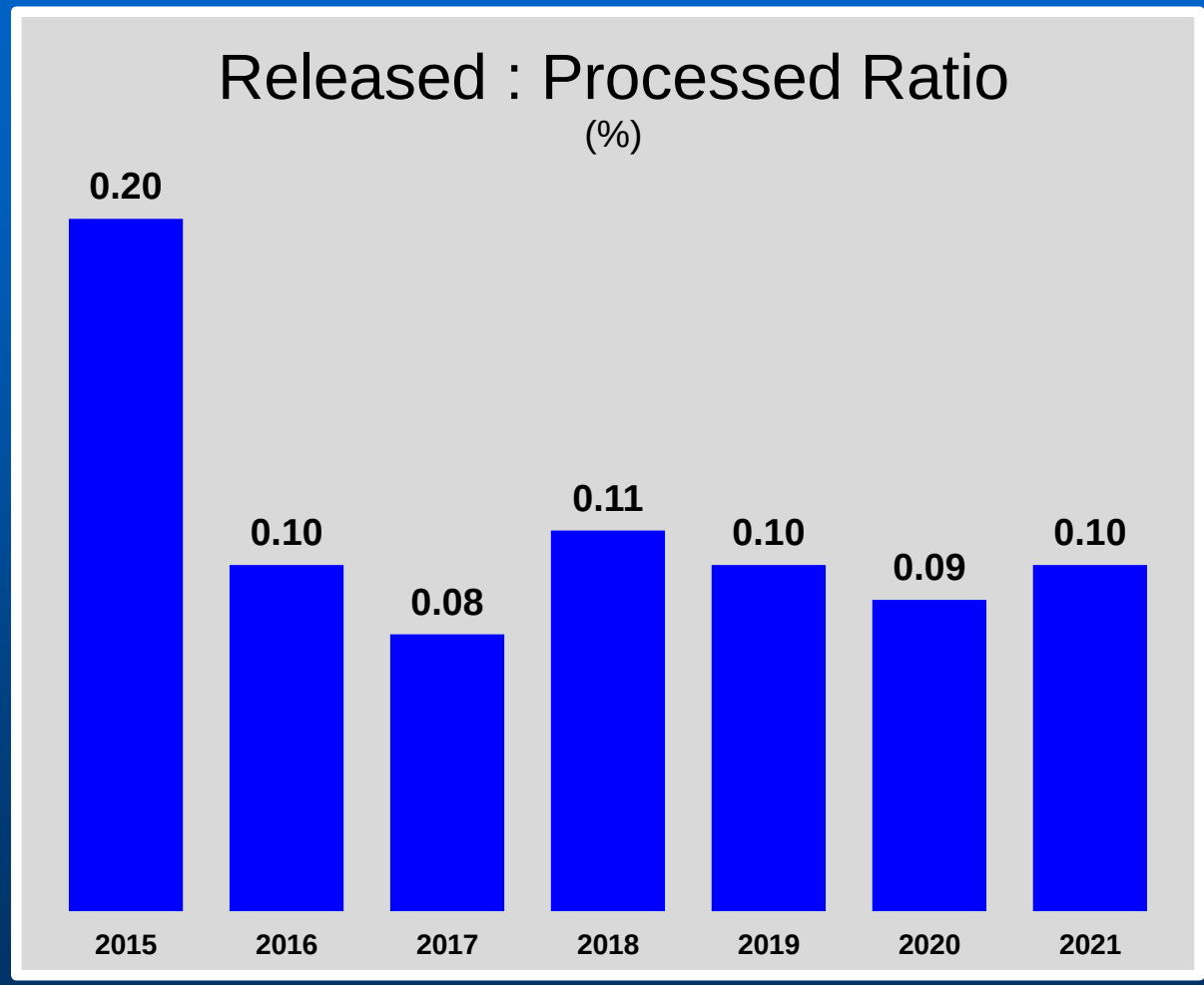
In the time since the licence was renewed by the Commission in 2015:

- **Fully compliant** with all licence conditions, LCH CVCs, and OLCs
- **No action levels exceeded** – a high level of operational control at all times
- **No significant compliance issues** identified during CNSC compliance inspections
- **83 internal audits** conducted by fully independent organizational manager
- Few reportable events through current licence term, all of very low significance
- Event reports are openly shared and posted to our website

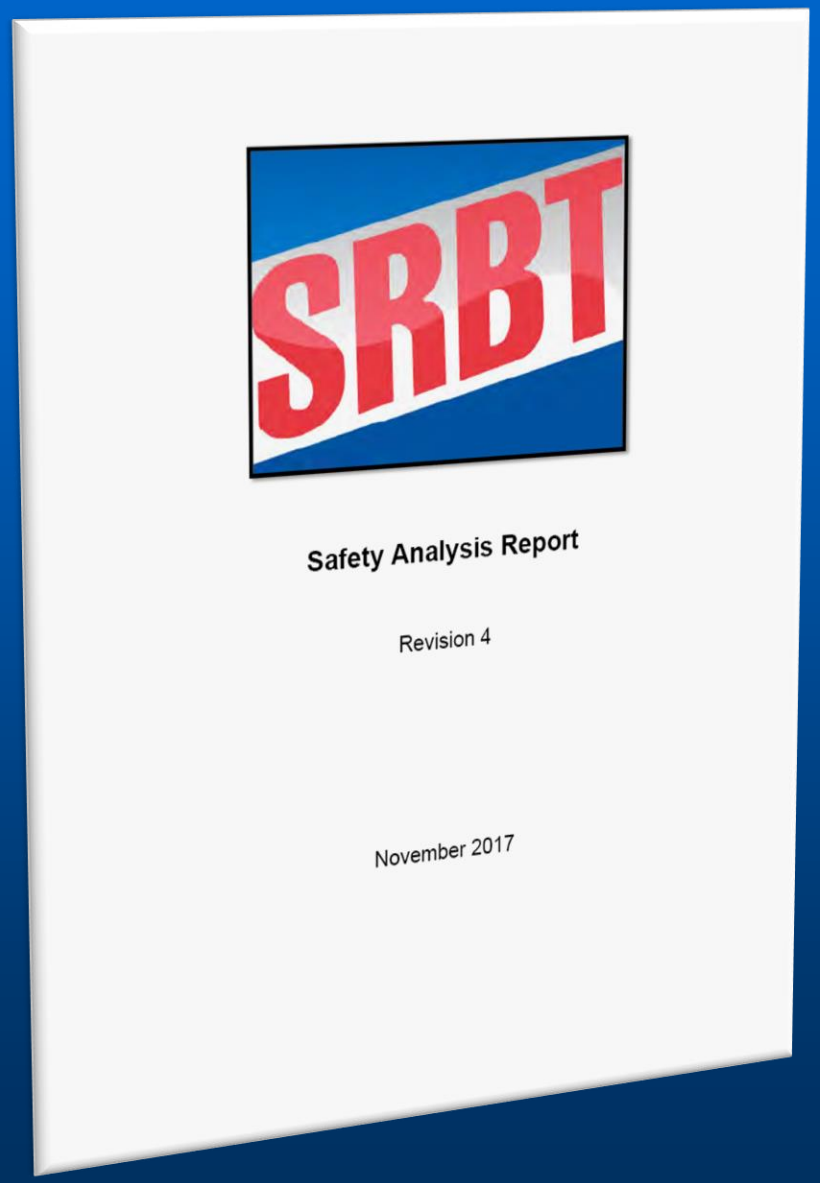
OPERATING PERFORMANCE







SAFETY ANALYSIS

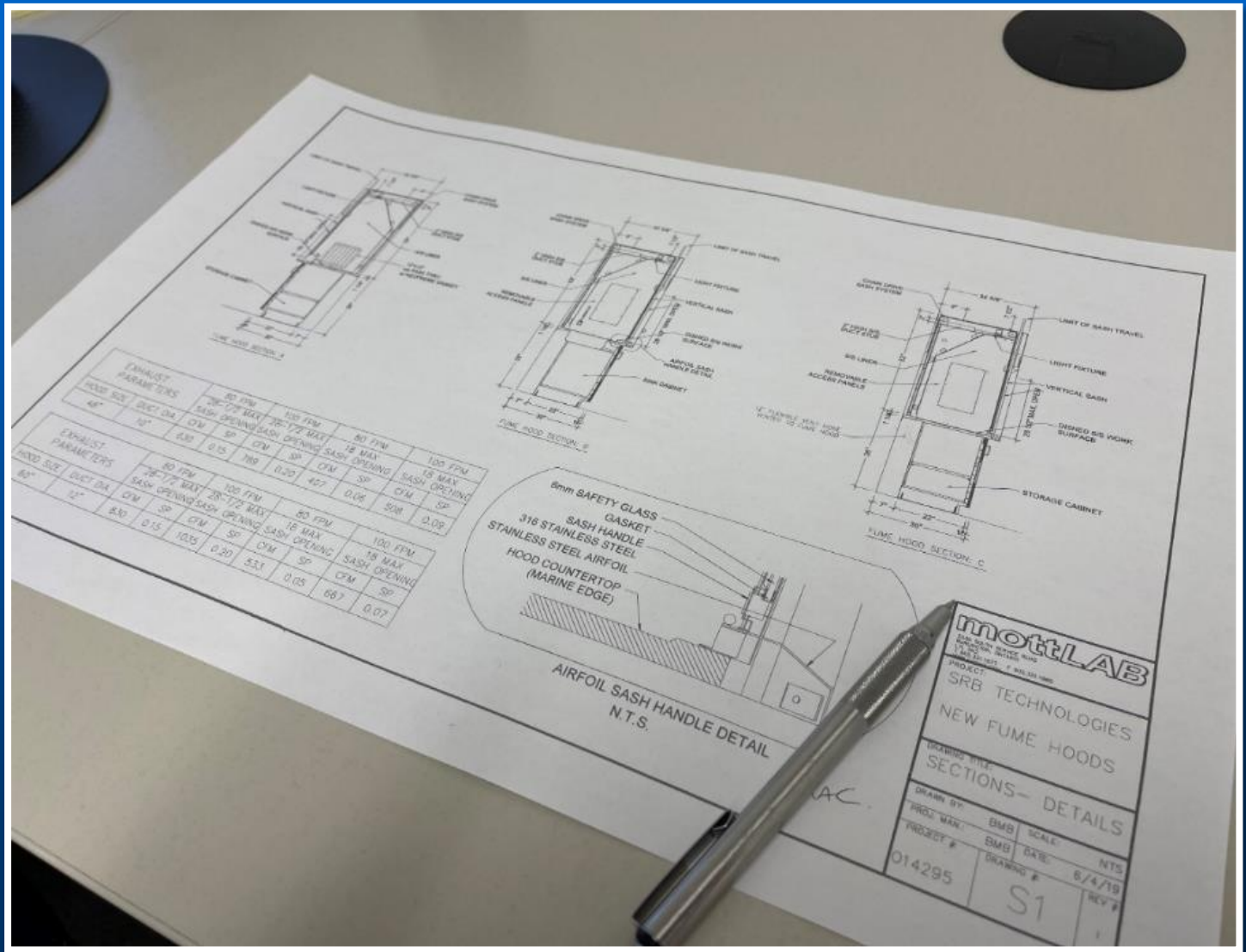


- Facility Safety Analysis Report fully revised in 2017
- Limiting scenarios developed with very conservative assumptions
- Updated dispersion modelling based on facility-specific meteorological data
- Analyzed limiting scenarios result in effective doses **lower than limits for normal operations NEWs and the public**
- Elements of safety analyses from nearby industrial facilities integrated into SAR
- No hazards requiring special consideration in SRBT facility design / operation in order to mitigate risks
- Expanded set of Operating Limits and Conditions – continuous compliance ensures safe operations

SAFETY ANALYSIS

	HYPOTHETICAL SCENARIO	MAXIMUM DOSE (mSv)	RECEPTOR	DISTANCE (m)
A	Release of the entire contents of a tritium trap	0.034	Member of the public	99
B	Release of the entire contents of a bulk container	0.304	Member of the public	99
C	Release from a tornado	0.140	Member of the public	100
D	Release from impact of a large rogue vehicle	0.180	Member of the public	99
E	Smoldering fire within the controlled area of the facility	9.28	Staff – NEW	
F	Release from breakage during handling	3.95	Staff – NEW	
G	Release from breakage during packing	3.02	Staff – NEW	

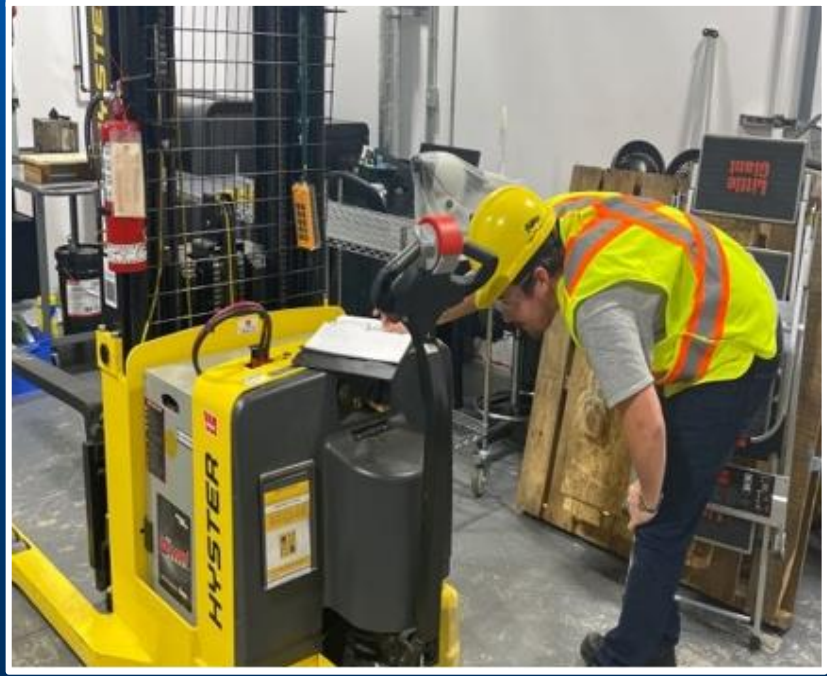
PHYSICAL DESIGN



Facility continues to maintain design basis over time.

- New and modified SSCs incorporated via **Change Control** processes
- Non-nuclear expansion completed in 2016 – plastics molding, 3-D printing
- Replaced fume hoods in tritium processing area of the facility
- Decontaminated and dismantled Reclaim Rig and a laser cutting rig
- All contaminated components disposed as LLW

FITNESS FOR SERVICE

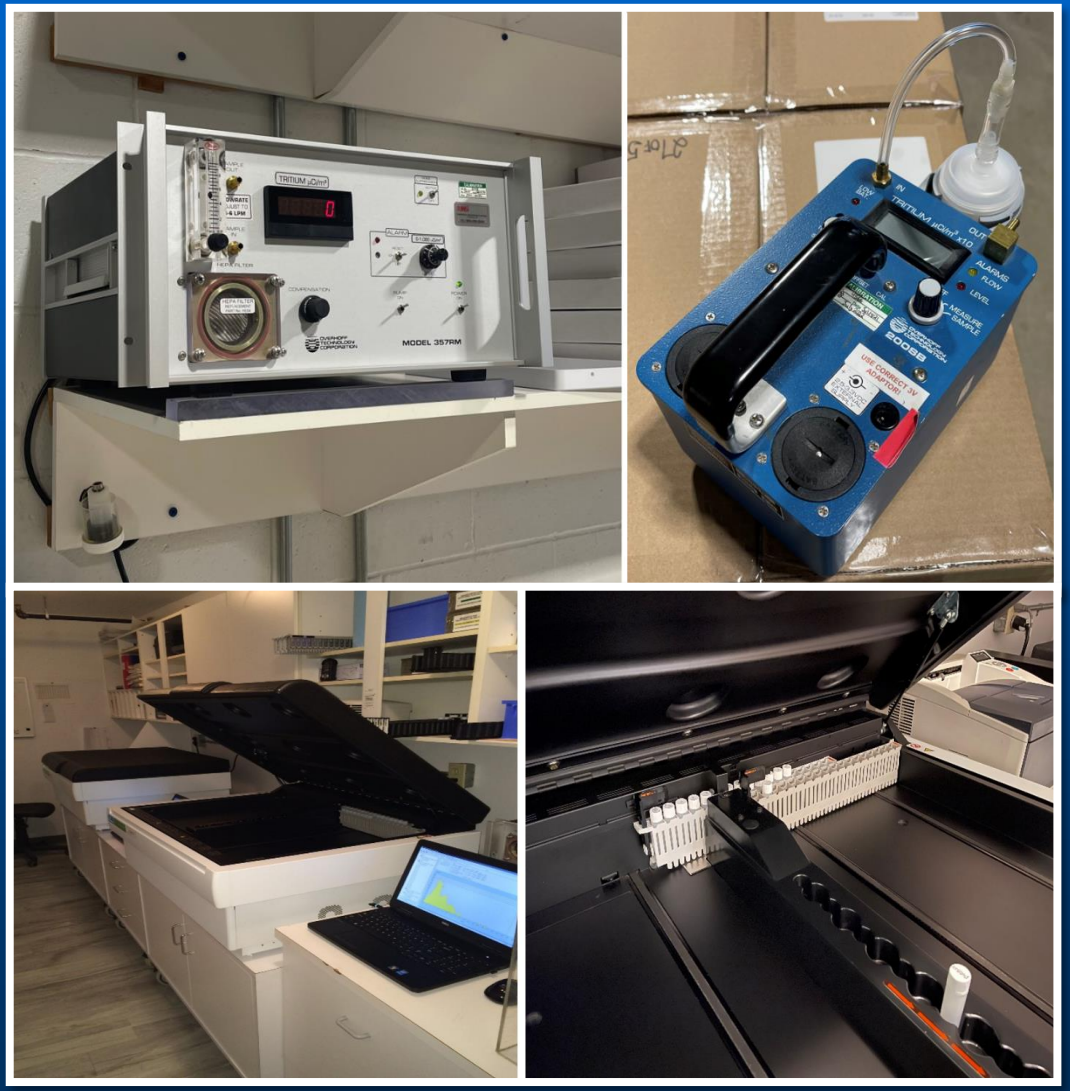


Certain maintenance best practices used in nuclear power plants are voluntarily incorporated into Maintenance Program.

- Critical spares management, master equipment list
- **No preventive maintenance backlog**
- No recordable dose to contractor through term of current licence
- Corrective maintenance tracked and trended by Committee
- Effective implementation ensures safe and reliable SSCs

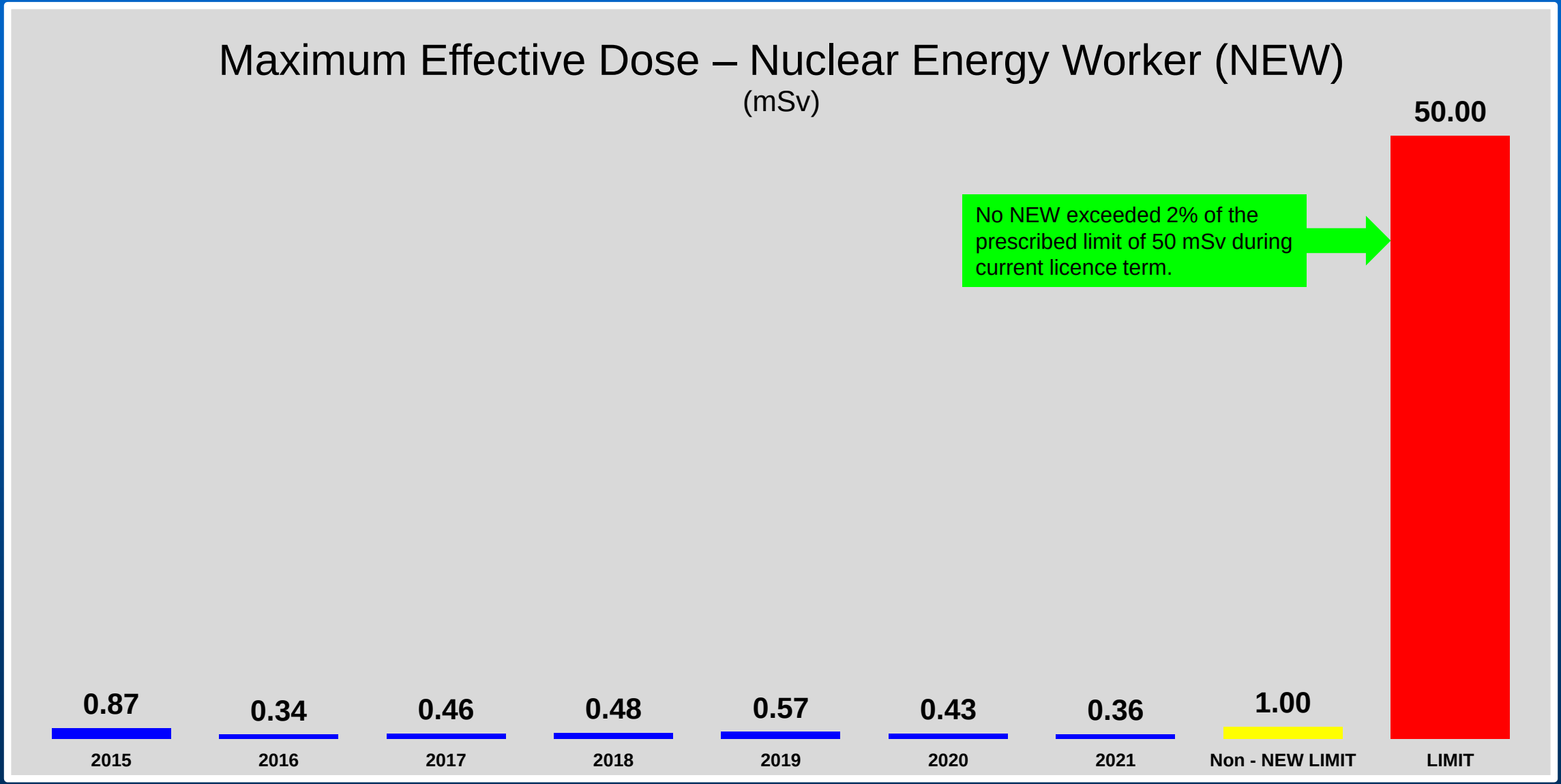
RADIATION PROTECTION

Effective doses to all persons are maintained ALARA.

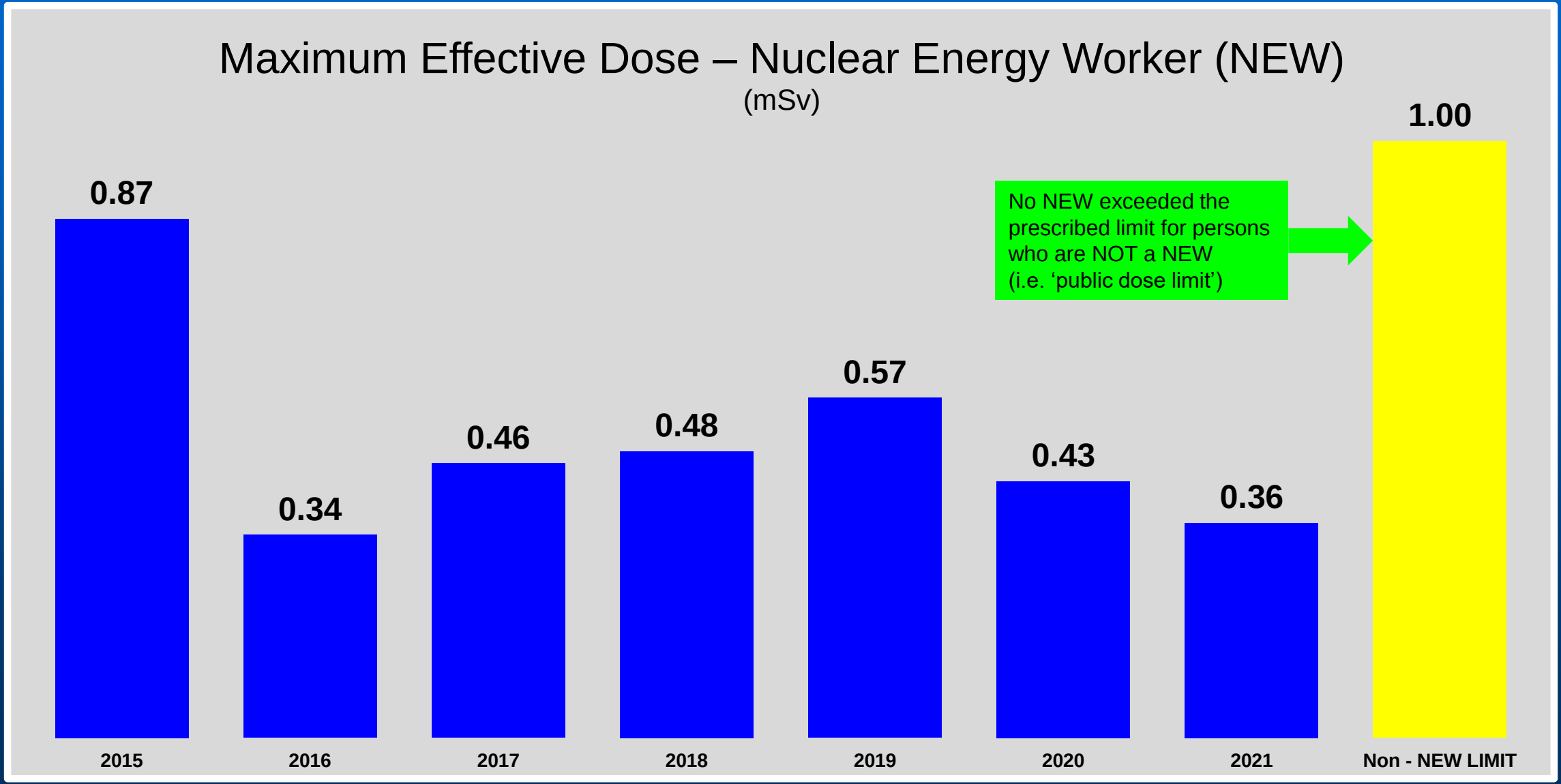


- **No exceedances of regulatory limits or action levels for effective dose**
- Effective doses to workers very low in comparison to regulatory limits
- **No SRBT NEW exceeded 1 mSv for any calendar year during current licence term**
- Over **$500,000** invested in equipment related to radiation protection
- Contamination controls implemented are very effective at ensuring risk is ALARA

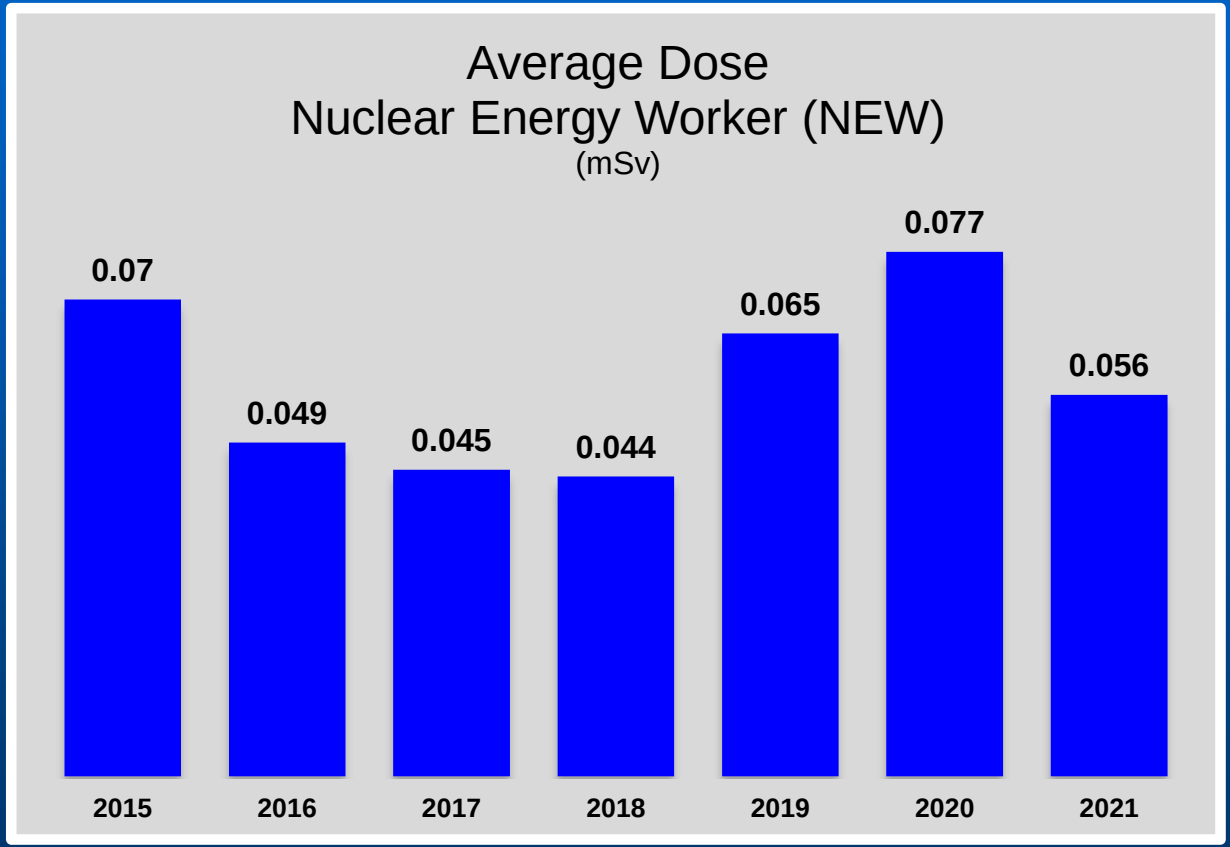
RADIATION PROTECTION

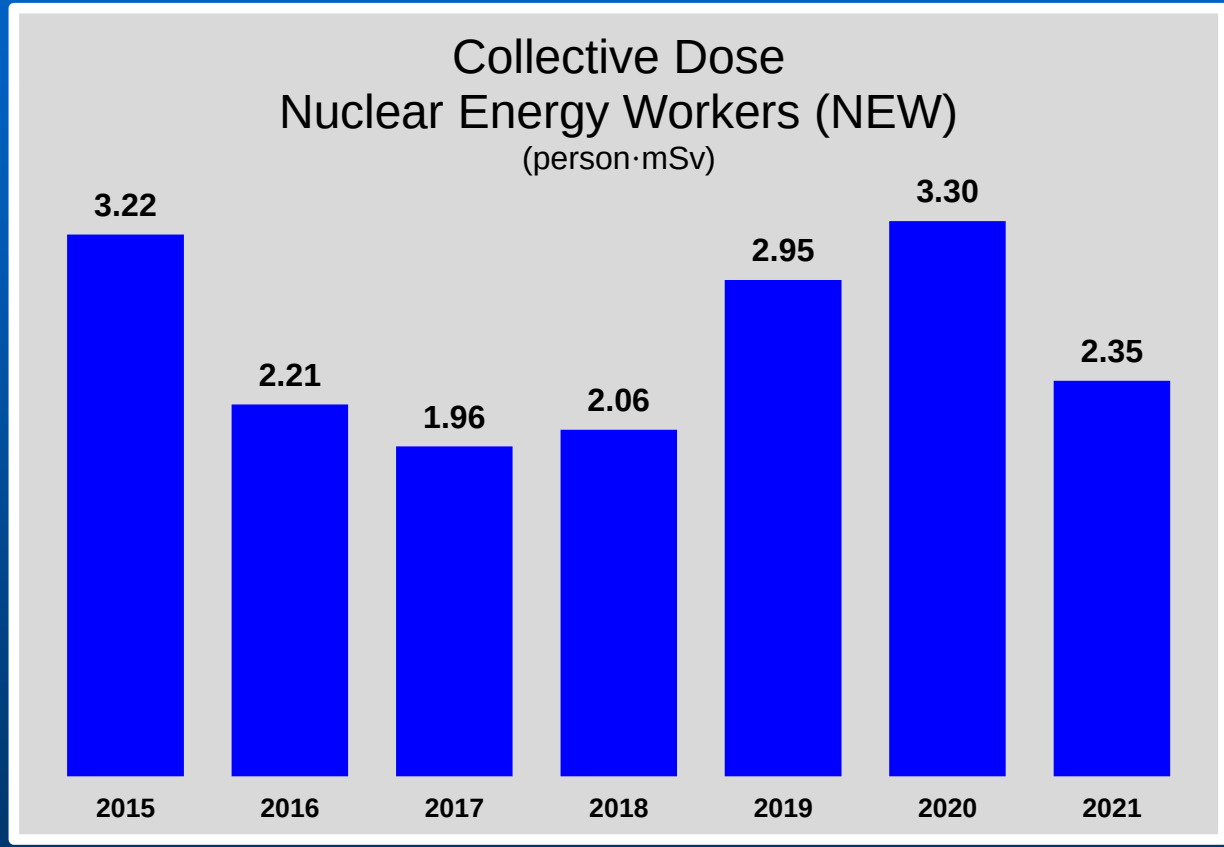


RADIATION PROTECTION



RADIATION PROTECTION





CONVENTIONAL HEALTH AND SAFETY

Continuously low rate of workplace injuries and lost-time incidents.

- An average of 0.4 lost-time incidents per calendar year between 2015-2021
- Focused site inspection by ESDC in 2017 resulted in no findings
- Over **1 in 4** SRBT employees certified in First Aid & CPR/AED Level C


CANADIAN RED CROSS
CROIX-ROUGE CANADIENNE

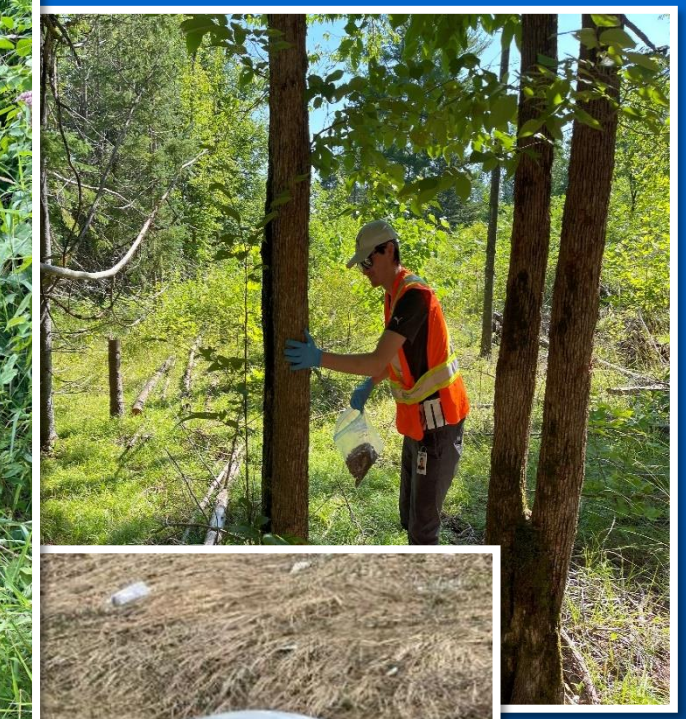
Jamie Macdonald
Is Certified in Emergency First Aid & CPR/AED level C
CSA Std. Z1210-17 – Basic

Certificate number 102621723
Expiry Date: 2024-09-06
Issue Date: 2021-09-07
Issued in: ON

To validate a certificate, go to myrc.redcross.ca and click on Validate Certificate. Complete both fields and click on Validate. The search result will either verify the certificate or indicate an issue.

Ottawa Valley First Aid
http://ottawavalleyfirstaid.com

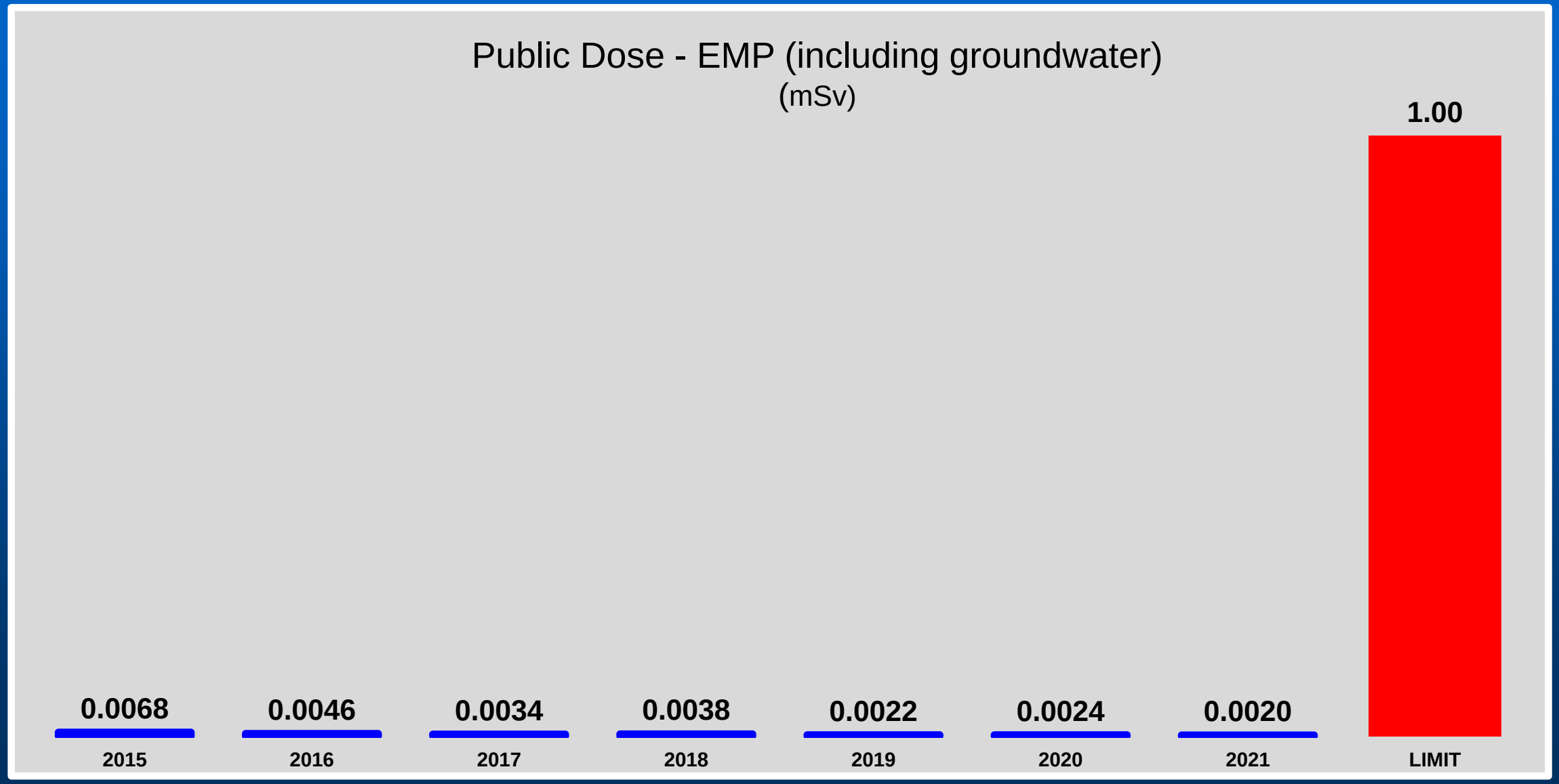
ENVIRONMENTAL PROTECTION



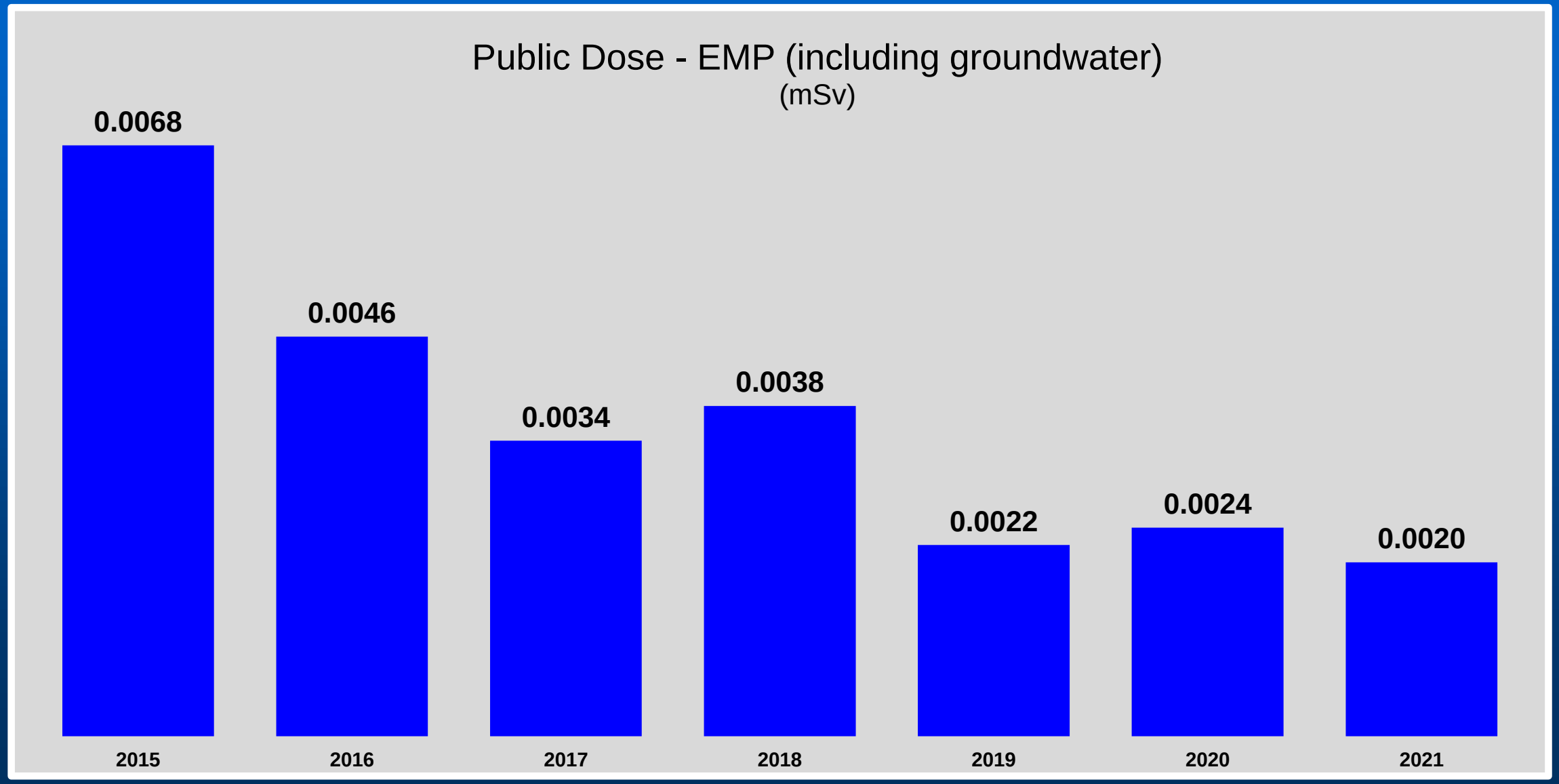
No exceedances of regulatory limits, licence limits or action levels.

- Tritium in effluent is controlled and monitored
- Dose to the public is based on data collected through **both** EMP and EffMP
- Dose to public is very low in comparison to regulatory limits
- **Public dose did not exceed 0.7% of limit since licence last renewed**
- Continuous improvement in all monitoring and protection programs every year

ENVIRONMENTAL PROTECTION



ENVIRONMENTAL PROTECTION



ENVIRONMENTAL PROTECTION

Environmental Risk Assessment (ERA) completed to N288.6-12 standard.

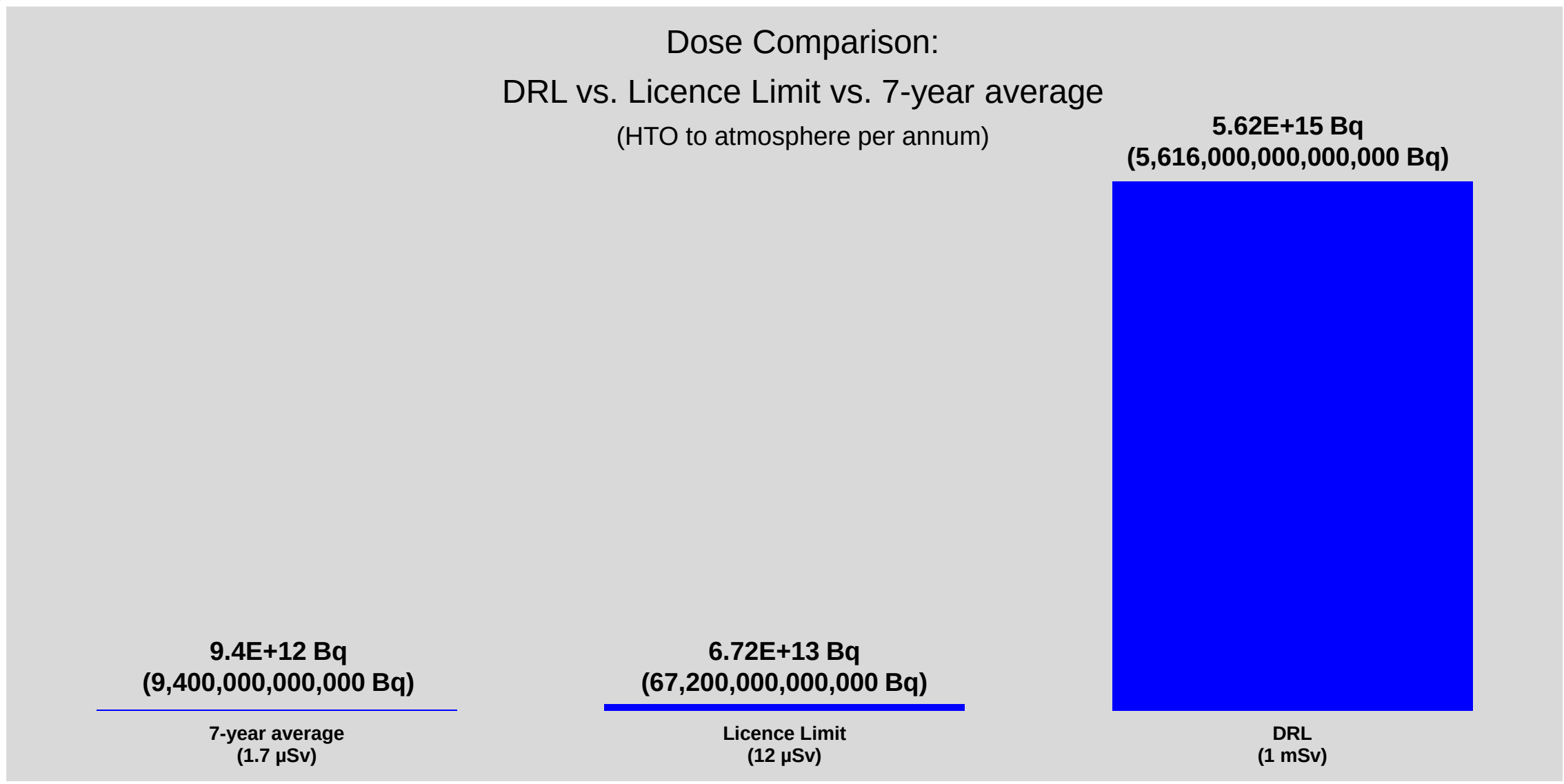
- Accepted by CNSC staff in April 2021, posted on SRBT website for interested stakeholders
- Sampling campaigns in collaboration with AOPFN Indigenous Knowledge Holders
- Sample data shared with AOPFN, including conservatively-derived risk assessment

ENVIRONMENTAL PROTECTION

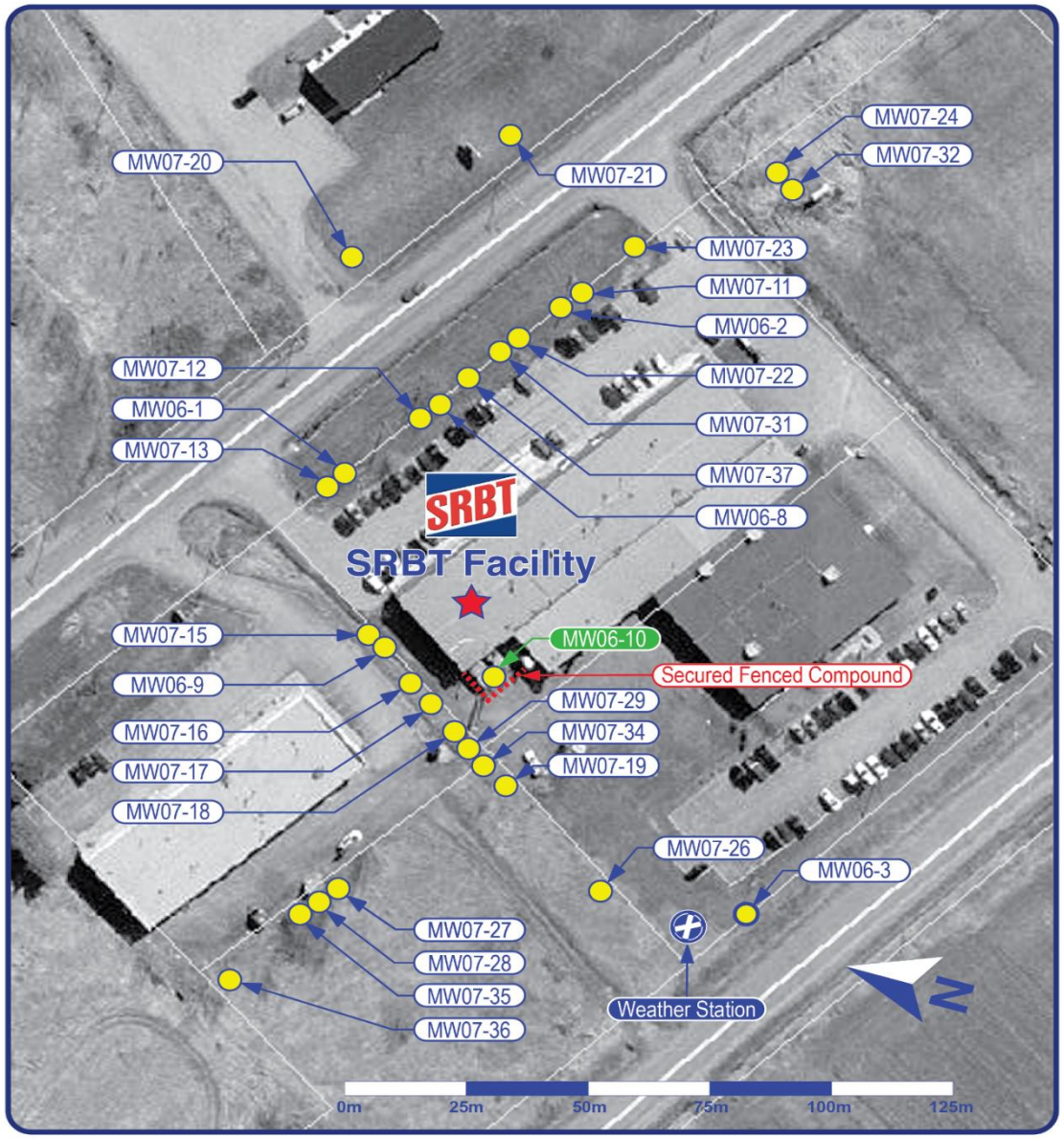
Effluent from the facility is continuously monitored for tritium concentration.

- Visual and audible alerts to workers if elevated gaseous tritium concentration detected
- Annual intercomparison exercises with CNL ensure monitoring accuracy and precision
- Liquid effluent is batch-controlled, analyzed and released over time to minimize impact

ENVIRONMENTAL PROTECTION



ENVIRONMENTAL PROTECTION



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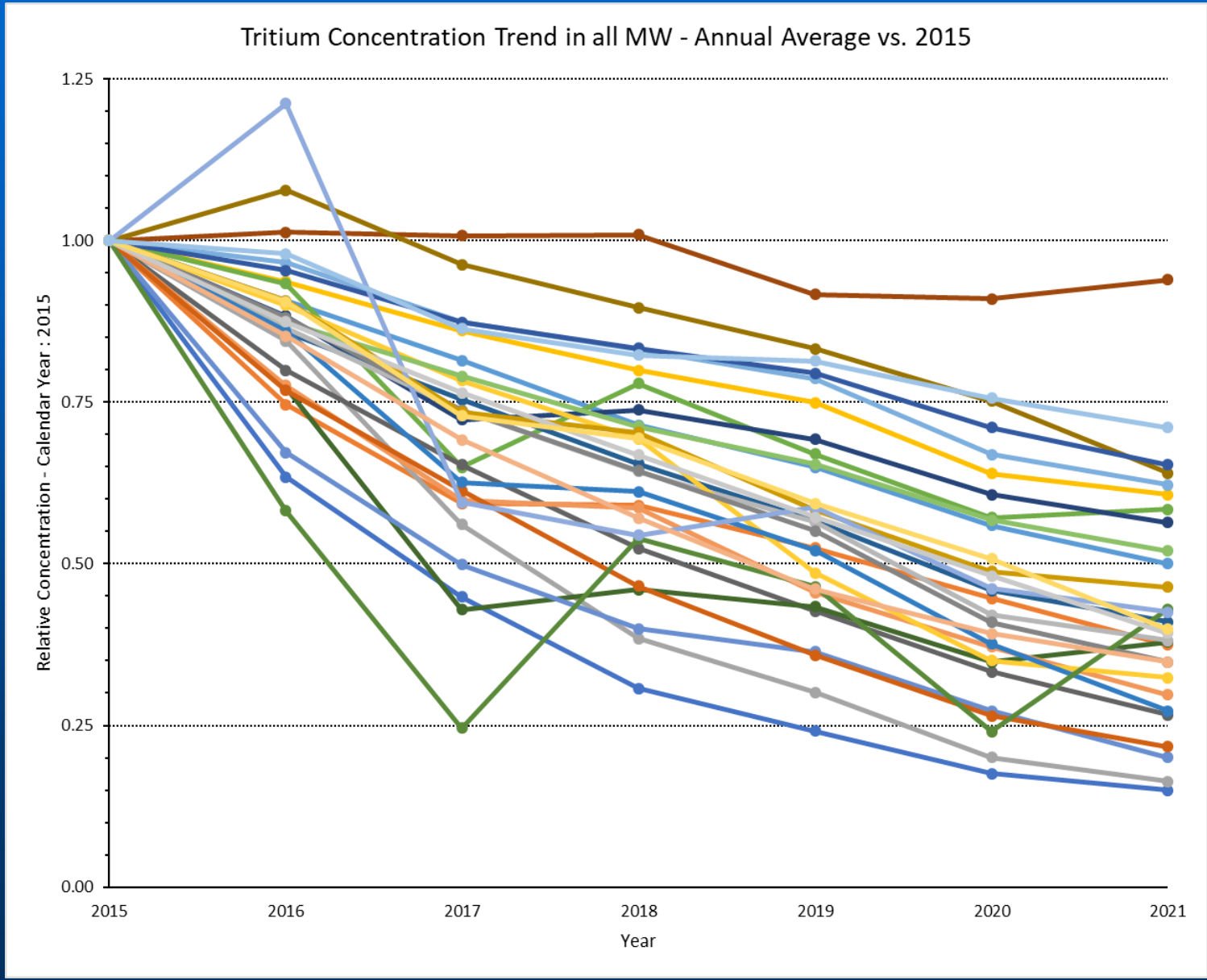
Groundwater tritium concentrations continue to decline over time as predicted.

- **All 29 dedicated monitoring wells have decreased in concentration during the current licence term**
- Only MW06-10 exhibits >7,000 Bq/L (well in secure, fenced compound, between active ventilation AHUs)
- **None of these wells are used for drinking water** – sampling and monitoring only

ENVIRONMENTAL PROTECTION



Tritium concentration in all wells is declining over time.

2021 vs. 2015

Largest relative decrease:

- 85% (MW06-1)

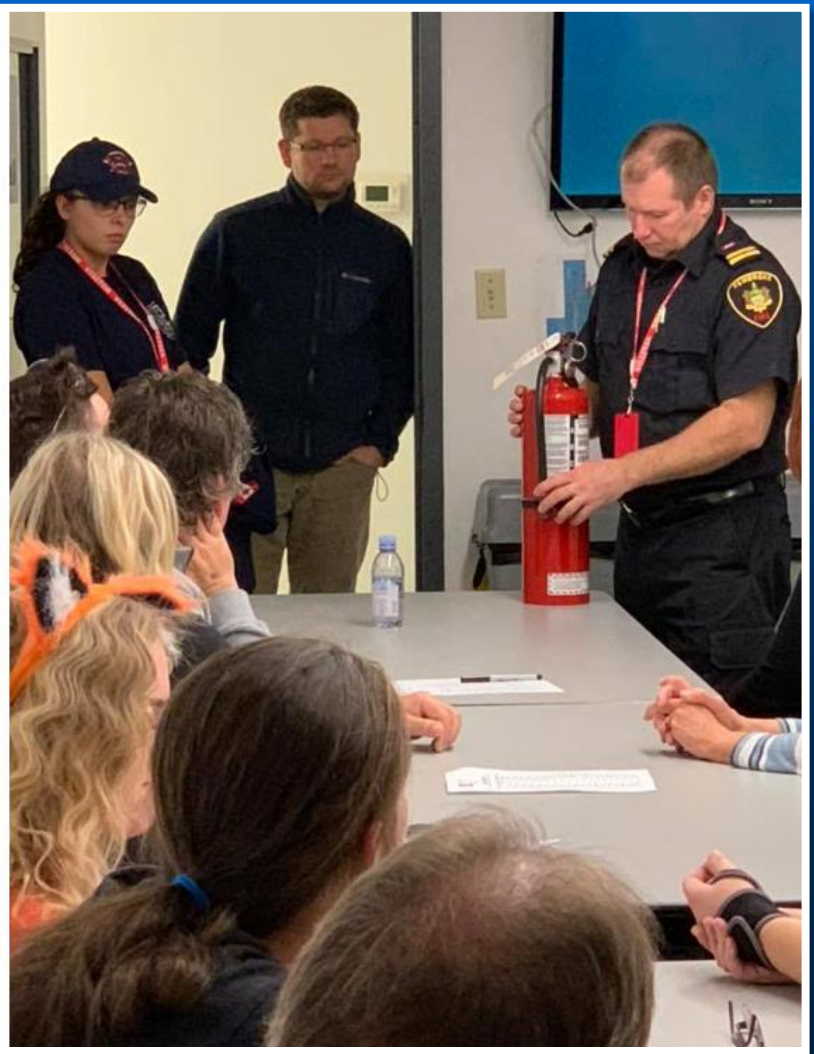
Smallest relative decrease:

- 6% (MW07-12)

Average relative decrease in concentration over all wells:

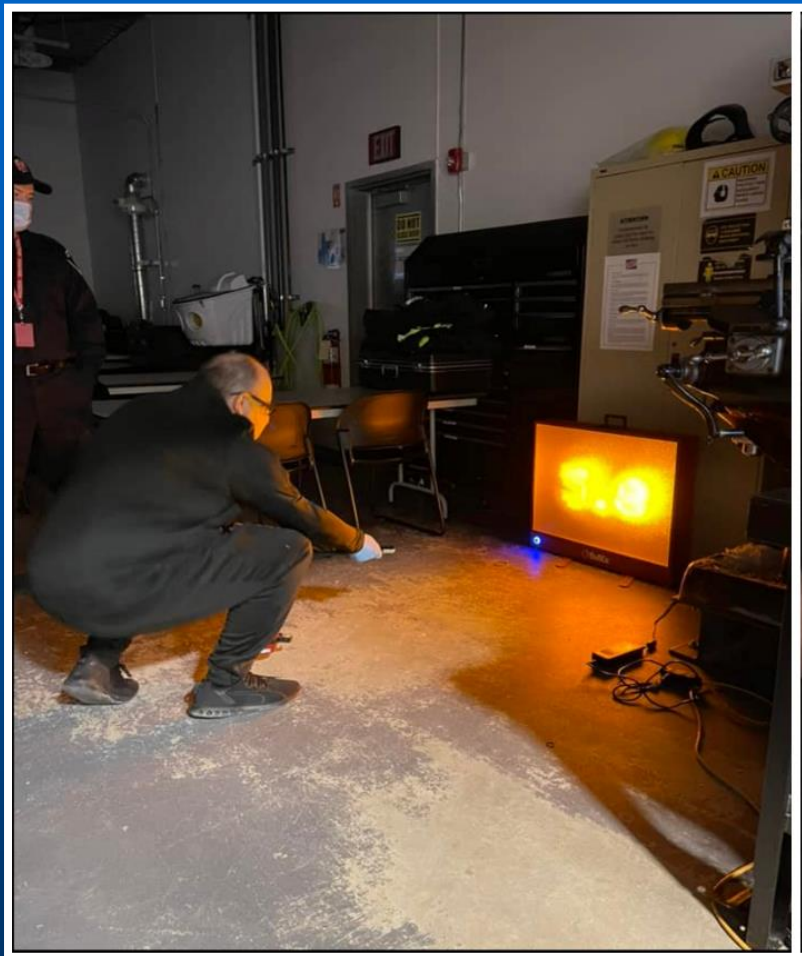
- **Decrease of 55%**

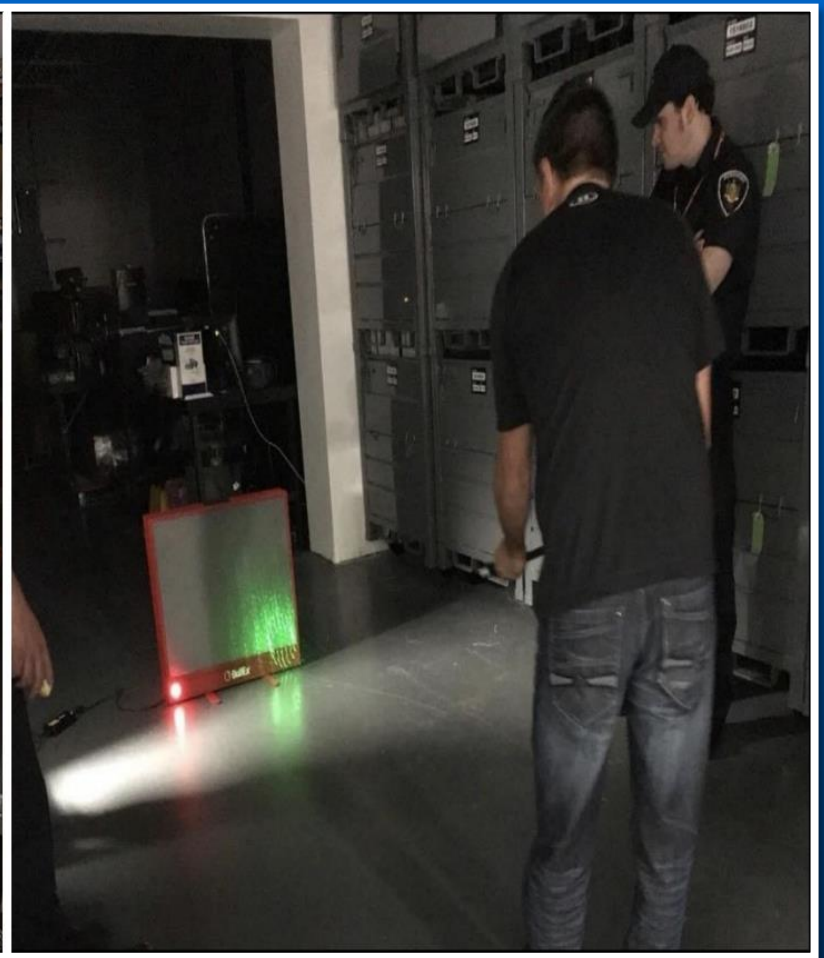
EMERGENCY MANAGEMENT AND FIRE PROTECTION



- Fire Protection Program complies with CSA N393 standard
- FHA and Fire Safety Plan support safe operations and response
- All physical fire protection SSCs are routinely tested
- Maintained in collaboration with independent third parties
- PFD provides annual fire extinguisher training to all staff

EMERGENCY MANAGEMENT AND FIRE PROTECTION





- Extinguisher training includes simulated practical
- SRBT also provides facility familiarization training to PFD
- Periodic training helps to ensure safe and adequate fire response

EMERGENCY MANAGEMENT AND FIRE PROTECTION

Emergency response is described in SRBT's Emergency Plan.

- Complies with CNSC REGDOC-2.10.1
- **Typical fire department response times during drills and events: < 5 minutes**
- **Full-scale emergency exercise conducted in October 2021**
- **Conducted in collaboration with City of Pembroke, PFD and paramedic services**
- CNSC staff conducted inspection – no non-compliances identified
- Recommendations and opportunities for improvement identified and will soon be implemented

WASTE MANAGEMENT

SRBT Waste Management Program complies with CSA N292-series of standards.

- Based upon key principles of:
  - Minimization
  - Characterization
  - Classification and segregation
  - Safe storage
  - Clearance or disposal processes
- Low-level waste materials sent to licensed service providers
- Material demonstrated to be below risk-analyzed conditional clearance levels may be released from regulatory control

DECOMMISSIONING PLANNING

- Preliminary Decommissioning Plan (PDP) revised and accepted in 2019, aligned with CSA N294 standard
- Cost estimate for decommissioning rose from $652,800 to $727,327
    - **Financial guarantee in place, accepted by CNSC, and funded in excess of requirement**
- Increase reflective of updated waste disposal costs, cost of labour, updated work packages

SECURITY

- SRBT complies with Part 2 of the *Nuclear Security Regulations*
- Facility Security Program revised in 2021
- **No security-related events or issues through the current licence term**

SAFEGUARDS AND NON-PROLIFERATION

- SRBT uses a very limited quantity of depleted uranium (DU) as a storage media for molecular tritium gas during processing
- Limit of 10 kg of DU (general exemption quantity defined in Nuclear Substances and Radiation Devices Regulations)
- Safeguards-related exemption on file with CNSC and IAEA for this material

PACKAGING AND TRANSPORT

- 8,878 shipments containing radioactive materials in the last seven years, with only five reportable events
- Four events occurred while shipment was in control by outside agencies, after having been shipped
- **No event posed a significant safety risk to persons or the environment**
- All were reported to CNSC staff, and detailed event reports are openly shared with the public via our website
- Shipping department staff are certified for TDG by an independent training service provider every two years

PART THREE

OTHER MATTERS OF REGULATORY INTEREST

PUBLIC INFORMATION PROGRAM

Wide social media presence

Website supports our corporate goal to be **transparent, visible and open with our community**

PUBLIC INFORMATION PROGRAM

- Licence application, CMD, facility information pamphlet and ACRs shared widely
- Physical and electronic copies of application shared with Indigenous communities, including:
  - Algonquins of Pikwakanagan FN
  - Algonquins of Ontario
  - Metis Nation of Ontario
  - Kebaowek FN
  - Algonquin Anishinabeg Nation
- **Key safety documentation posted on website for public review**, including our Licence, LCH, ACRs, SAR, ERA, DRL, PDP, full event reports, CNSC inspection reports, environmental data, CNSC IEMP

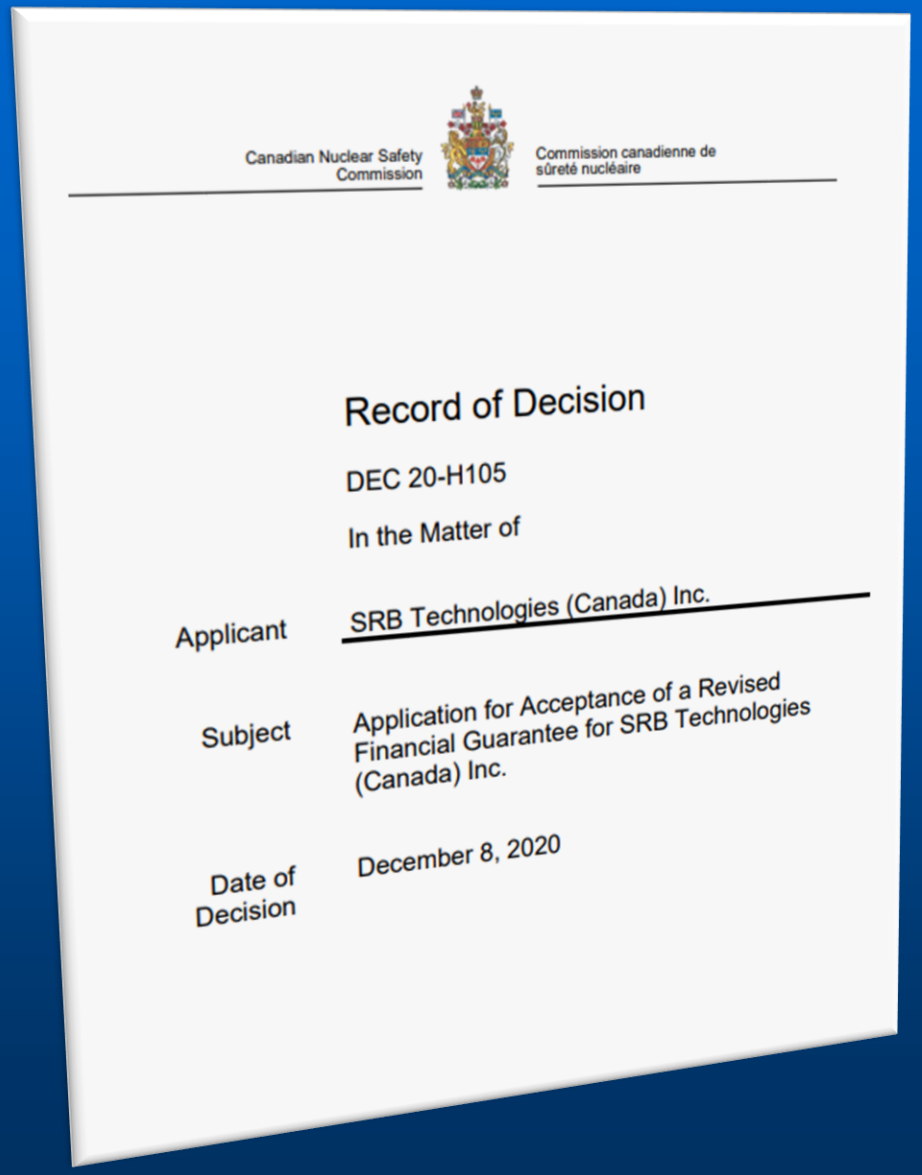
INDIGENOUS ENGAGEMENT

A proud member of
Canadian Council for
ABORIGINAL BUSINESS

SRBT is a proud member of the Canadian Council for Aboriginal Business.

- Expanding outreach with local Indigenous communities
- Recently began discussions with AOPFN and Firelight towards a LTRA
- AOPFN provided significant input in the selection of valuable ecosystem components for the ERA
- Collaborative vegetation sampling campaign with AOPFN knowledge holders, in support of the ERA
- All sampling results shared with community, including discussion on relative risk

FINANCIAL GUARANTEE



Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Record of Decision

DEC 20-H105

In the Matter of

Applicant: SRB Technologies (Canada) Inc.

Subject: Application for Acceptance of a Revised Financial Guarantee for SRB Technologies (Canada) Inc.

Date of Decision: December 8, 2020

- Revised PDP submitted to CNSC staff in November 2019
- Accepted by CNSC staff in February 2020
- Updated cost of decommissioning - $727,300
- Commission accepted revised Financial Guarantee (FG) on December 8, 2020

As of December 31, 2021, the FG is funded to $747,760.51.

This represents 102.8% of the required guarantee.

SUMMARY

JUSTIFICATION OF REQUESTED LICENCE TERM

An operating licence of this term is both safe and well-justified:

- The activity requested to be licensed is IDENTICAL to that currently licensed
- Stable and unchanging nature of operations
- Comprehensive, mature Management System and Safety Programs
- Very experienced and diverse workforce, with very little turnover over time
- Continuing trend of groundwater recovery from past operational practices
- Very low impact on the public and environment
- Low rate of reportable events, all with very low risk significance
- Open and prompt sharing of information with all stakeholders
- Fully engaged and readily available for questions at Regulatory Oversight Report meetings
- Consistent and continual improvement across all safety areas demonstrated

OTHER KEY BENEFITS OF REQUESTED LICENCE TERM

If issued, an operating licence of this term would provide several key benefits to our organization:

- Would help SRBT maintain the current business in a sustainable fashion
- Allow resources that would otherwise be allocated toward licence renewal, and related cost-recovery fees to be diverted to facility improvements
- Important factor in attracting and retaining key qualified staff
- Will help SRBT secure long-term contracts with customers and suppliers
- Easier to secure financing from banking and financial institutions
- Instill additional confidence with stakeholders

CNSC staff, the Commission and all stakeholders can be assured that the current vision for operation of the facility over a fifteen-year licence term WOULD NOT deviate in strategy from the operations that have occurred during the current licence period.

LICENCE RENEWAL REQUEST

We have and will continue to conclusively demonstrate that a fifteen-year licence is warranted and justified.

We are **FULLY QUALIFIED** to carry on the activities that the proposed licence would authorize, and in doing so, **we will continue** to 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.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