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**FULL REPORT**

**Failure to Comply with Requirements of Section 26 of the PTNSR**

Author:

A handwritten signature in black ink, appearing to read 'Jamie MacDonald', written over a horizontal line.

Jamie MacDonald  
Manager of Health Physics & Regulatory Affairs

Accepted:

A handwritten signature in blue ink, appearing to read 'Stephane Levesque', written over a horizontal line.

Stephane Levesque, President

Date Submitted: March 14, 2018

Submitted To: R. Rashapov, Project Officer - CNSC

# SRBT Full Report

## Failure to Comply with Requirements of Section 26 of the PTNSR

NOTE: This report is intended to fulfill the requirements associated with Clause 38 of the Packaging and Transport of Nuclear Substances Regulations (PTNSR), in relation to the event where SRBT offered a package for transport that contained a Type 'B' quantity of tritium in a package categorized as UN2915, a Type 'A' quantity within a Type 'B' package.

(a) *The date, time and location of the failure to comply or of the dangerous occurrence.*

SRBT offered the package for transport to the Canadian Nuclear Laboratories (CNL) on February 5, 2018, at our facility in Pembroke, ON. The package was transported by CNL carrier to their facilities that same day.

On February 28, 2018, SRBT was notified by the consignee that after conditioning of the tritide storage container, a volumetric quantity of gas was recovered which exceeded the Type 'A' quantity limits. As such, the shipment conducted on February 5 should have been classified as UN2916 rather than UN2915.

(b) *The names of the persons involved.*

The following list of individuals were involved in identifying the failure to comply, and in the investigation since the event was first recognized:

- Shane Pleau, Import/Export Manager, SRBT
- Jamie MacDonald, Manager – Health Physics and Regulatory Affairs, SRBT
- Yvonne Andrews, Radioactive Material Transportation Specialist, CNL
- Faranak Yazdani, Manager of Transportation of Dangerous Goods Program, CNL

(c) *The details of the packaging and packages.*

The package used to transport the tritide bed was the CNL 2060 'Tritide' package, certified to transport up to 18,500 TBq, under certificate CDN/2060/B(U)-85 (Rev. 6).

The package was assembled and tested to specification as if it contained a Type 'B' quantity; however, the labelling and accompanying transport documents classified the shipment as UN2915, Type 'A'. It was retroactively discovered that the package contained approximately 51 TBq of tritium, in excess of the Type 'A' limit of 40 TBq, but within the limit of the package as assembled and tested.

(d) *The probable cause of the situation.*

Empty tritide beds are typically assigned a nominal value of 18.5 TBq of tritium when being returned, in order to account for residual tritium on the bed that cannot be removed using SRBT processing equipment. Thus, this package was labelled and documented as a Type 'A' quantity (UN2915) in a Type 'B' package, as per routine process.

CNL notified SRBT that after processing the spent bed in their Tritium Laboratory facility (a process called 'conditioning'), it was determined that approximately 51 TBq of residual tritium was recovered from the bed. As such, the amount of tritium was in excess of the Type 'A' quantity limit, but was still well within the limit of the package, as certified and packaged physically.

The CNL conditioning process removes a greater amount of the tritium 'heel' than our process for emptying the container can accomplish; we assign a value of 18.5 TBq to these packages as a matter of routine, based on previous data from the usual amount of gas obtained during conditioning from CNL, with an added level of conservatism.

(e) *The effects on the environment, the health and safety of persons, and national or international security that have resulted or may result.*

The shipment took place without any incident; as such there were no effects on the environment, the health and safety of persons, nor any security issues.


(f) *The doses of radiation that any person has received or is likely to have received.*

No dose of radiation (above and beyond the routine dose that CNL technicians would potentially receive during the conditioning process) has been incurred by any person as a result of this event.

- (g) *The actions taken to remedy the failure to comply or the dangerous occurrence and to prevent its recurrence.*

SRBT will cease shipping these containers as a Type 'A' quantity in a Type 'B' package, and instead simply ship it labelled and documented as a Type 'B' shipment (UN2916), in order to ensure a conservative level of compliance and safety.

SRBT will also perform a final tritium heating cycle on all tritide beds prior to packaging for return as an 'empty' container to CNL, in order to provide additional margin between the amount of tritium removed from the bed upon conditioning by CNL and the stated quantity of tritium in the package when offered for shipment.



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Jamie MacDonald  
Manager of Health Physics and Regulatory Affairs

MARCH 14, 2018

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Date