

Attachment
10 CFR 71.95- Type B Transportation Package Report (USA/9196/B(U)F-96)

(1) Brief abstract describing the major occurrences - (71.95(c)(1)

The UX-30 package is used to transport unirradiated uranium, in the form of UF₆, with a U-235 mass percentage not to exceed 5 weight percent –defined as USA/9196/B(U)F-96, Revision 29 contents (b)(1)A.

The Certificate of Compliance, USA/9196/B(U)F-96, Revision 29 (and previous revisions), specifies in condition 9(c) that:

9 (c) The package shall be prepared for shipment and operated in accordance with the Operating Procedures of Chapter 7 of the application, as supplemented.

Chapter 7 of the application requires uranium hexafluoride packages conform with ANSI N14.1 standard.

ANSI N14.1-2012 Section 8.3.2 (6) requires the valve port cap gasket to be present.

(2) Narrative description of the event – (71.95(c)(2)

- i) Status of components or systems that were inoperable at the start of the event and that contributed to the event;*

The affected cylinder valves were verified to be closed prior to installing the port cap and the cylinders were leak checked before being shipped. There were no inoperable components or systems.

- ii) Dates and approximate times of occurrences;*

On March 24, 2017, URENCO USA (UUSA) received a shipment of six 30B containers from GNF-A, each with a heel of enriched UF₆. On May 5, 2017, a UUSA operator was preparing to connect cylinder UREU 103006 to process systems and it was discovered that the valve port cap had no Teflon gasket as required.

On May 15, 2017, GNF-A was informed by UUSA of this conformance. There were no other cylinders in the shipment that had this non-conformance.

On May 19, 2017, UUSA discovered the valves on cylinder UREU 102122 and cylinder UREU 100534 also had missing cap gaskets and GNF-A was notified.

In total, GNF-A shipped three (3) heel cylinders with missing cap gaskets that did not meet the Certificate of Compliance.

iii) The cause of each component or system failure or personnel error, if known;

GNF-A had no previous experience with missing cylinder valve cap gaskets. However, in response to 10 CFR 71.95 reports dated June 2, 2016 by UUSA and July 28, 2016 by Westinghouse Electric Company for a similar discovery of an empty UF6 cylinder with a missing cap gasket, GNF-A implemented a process improvement for a visual check of the cap gasket after UF6 removal. This requirement was implemented after November 29, 2016 but the cylinders in question were processed prior to that requirement being put in place. Therefore, the presence or absence of the cap gasket was not verified by GNF-A on these cylinders when the valve cap was replaced after UF6 removal.

iv) The failure mode, mechanism, and effect of each failed component, if known;

The port cap and gasket provide a secondary sealing function to contain UF6 in case the cylinder valve failed. If the valve failed, the cap and gasket would prevent or reduce the amount of UF6 that could be released. The gasket also prevents debris from entering the valve port.

v) A list of systems or secondary functions that were also affected for failures of components with multiple functions;

No systems or secondary functions were affected by the absence of the cap gasket; The cylinders passed pressure testing prior to shipment.

vi) The method of discovery of each component or system failure or procedural error;

The missing cap gaskets were discovered as part of cylinder connection activities at UUSA.

vii) For each human performance-related root cause, a discussion of the cause(s) and circumstances;

This was not a human performance related root cause.

viii) The manufacturer and model number (or other identification) of each component that failed during the event;

There were no component failures.

ix) For events occurring during use of a packaging, the quantities and chemical and physical form(s) of the package contents.

The non-conforming cylinders contained a heel quantity of UF6. The proper shipping name was UN2977, Radioactive Material, Uranium Hexafluoride, Fissile, Class 7 (8) (Enriched to 20% or less). The cylinder was shipped in a USA/9196/B(U)F-96, UX-30 overpack.

(3) Assessment of Safety Consequences and Implications of the Event – (71.95(c)(3))

The event did not present a significant safety hazard. The cylinders contained only heel quantities of UF6, the valves were fully functional and the cylinders were leak checked prior to being shipped. Based on procedural activities performed at UUSA and evidence upon cap removal, there is reasonable assurance that the cylinder valve remained closed and that no leakage of material occurred during shipment of the cylinder.

(4) Corrective actions taken – (71.95(c)(4)

- The issue was captured in the GNF-A corrective action program as CR 25628.
- A GNF-A quality stop work notice was issued on May 17, 2017 discontinuing 30B cylinder shipments until corrective actions were in place.
- GNF-A issued Temporary Operating Procedure 24953, “Cylinder Valve Gasket Check”, Rev 2 on June 9, 2017 to verify valve cap gaskets were in place on cylinders that had been processed prior to November 29, 2016. With this action, the May 17 stop work notice was lifted.
- GNF-A Operating Procedure log sheet LS 1331.01, “Cylinder Installation/Removal” was modified on May 19, 2017 to document the presence of the gasket prior to valve cap installation.

(5) Reference to any previous similar events – (71.95(c)(5)

On June 2, 2016, UUSA and on July 28, 2016, Westinghouse Electric Company both reported the same discovery of an empty UF6 cylinder with a missing port cap gasket that had been shipped in a UX-30 package.

(6) Contact – (71.95(c)(6)

Please contact Scott Murray at (910) 819-5950 for any additional information about this report.

(7) Extent of Exposure to Radiation – (71.95(c)(7)

No individuals were exposed to radiation or radioactive material due to this issue. There was no leakage of contents due to the non-conformance.