CBC Columbiana Boiler Company

Containers & Cylinders for Chemicals & Gases
UF_6 & UO_2 Packaging · Galvanizing & Tinning Kettles

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May 12, 2000

Mr. David H. Tiktinsky, Project Manager
Licensing Section, Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
United States Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

Re: Informal Changes to SAR for the ESP-30X Protective Shipping Package for 30-inch UF_6 Cylinders, Revision 2, dated March 2000

Dear Mr. Tiktinsky,

As per your conversation with Rose Montgomery (on behalf of The Columbiana Boiler Company), please find enclosed Section 7 and Section 8 of the above referenced SAR, which have been completely revised. In addition, enclosed is page iv of the main table of contents which was also revised due to revisions in Section 7.

I have enclosed ten copies of the informal changes [one for each SAR submitted]. Your assistance in replacing the above mentioned sections and table of contents page is greatly appreciated. Please feel free to contact myself or Mr. Trevor Rummel should you have any questions.

Best Regards,

Jennifer Jones

Jennifer Jones
Radioactive Packaging Officer

NMSS01 Public

SECTION SEVEN OPERATING PROCEDURES

TABLE OF CONTENTS

7. OPERATING PROCEDURES

The ESP-30X overpack is loaded and unloaded and the 30B UF_6 cylinder is filled, tested, and handled in accordance with standard, in-plant operating procedures at various enrichment plants and at various nuclear fuel facilities. The basic procedural requirements are described in USEC-651 and ANSI Standard N14.1. As a minimum, the specific procedures include steps described in the subsequent sections.

7.1 Procedures for Loading the Package

7.1.1 Receipt and Filling of 30B Cylinder

Receipt and filling of the 30B cylinder shall be performed in accordance with USEC-651 and ANSI N14.1.

7.1.2 Cylinder Inspection

Complete an inspection of the 30B cylinder per USEC-651 and ANSI N14.1 prior to insertion into the ESP-30X overpack. Any defective conditions must be corrected, and the cylinder must be re-certified prior to use.

7.1.3 Overpack Inspection

The user shall establish and implement written procedures to inspect the ESP-30X overpack prior to each use to assure the following:

(a) The overpack base and supports are sound with no broken welds or components.
(b) The overpack inner and outer shells are intact with no broken welds and no holes, tears, or indications greater than ½ inch.
(c) The inner liner is free of debris and standing water.
(d) The inner liner is intact and is not in a deteriorated or damaged condition.
(e) The gaskets and cylinder support pads are in place and intact and are not in a deteriorated or damaged condition.
(f) The gasket surfaces are free from nicks and deep scratches.
(g) The cover plates and welds are sound and undamaged.
(h) The overpack halves fit together properly with no gaps.
(i) The closure bolts are the proper grade and size and are undamaged.
(j) All vent seals/plugs are securely in place.
(k) The tie-down and lifting/stacking supports are in place and are not in a deteriorated or damaged condition.
(l) The shackles are in place and are not in a deteriorated or damaged condition.
(m) The security seal apparatus is undamaged.

Following the inspection, a report shall be completed verifying that the overpack is free from damage and is in working order. Any defective condition must be corrected and the overpack must be re-certified prior to use.

7.1.4 Procedure for Loading a 30B Cylinder

7.1.4.1 Prior to loading the cylinder, the inspection required in Section 7.1.2 shall be completed and documented.

7.1.4.2 The 30B UF_6 cylinder is filled, tested, and handled in accordance with standard, in-plant operating procedures at the facility. As a minimum, the procedures described in USEC-651 and ANSI Standard N14.1 shall be used.

7.1.4.3 Leak tightness of the filled cylinder shall be verified using a test having a sensitivity of at least 1×10^{-3} std-cc/sec per ANSI Standard N14.5-1997. Leak tightness of the filled cylinder shall be verified by leak rate testing of the pigtail before disconnection and after closing the cylinder valve. The continued presence of UF_6 in the pigtail is an indication that the valve is not fully closed or is defective, and corrective measures shall be taken to remedy the leak as proscribed by the facility's operating procedures.

7.1.4.4 The cylinder shall be weighed using the procedures and standards outlined in USEC-651 to assure that the capacity of the cylinder has not been exceeded.

7.1.4.5 After verifying leak tightness of the filled cylinder, the cylinder shall be allowed to cool until the vapor pressure of the cylinder is below atmospheric pressure.

7.1.4.6 Prior to loading into the ESP-30X overpack, the valve port and valve boss/coupling shall be inspected for solid deposits. Solid deposits around the valve port or valve boss/coupling indicate a leak condition, and the cylinder shall not be loaded into the overpack. Corrective measures shall be taken to remedy the leak as proscribed by the facility's operating procedures. If the valve port and valve boss/coupling are free of solid deposits, the cylinder may be loaded into the overpack.

7.1.4.7 A tamper-indicating seal shall be installed on the 30B cylinder prior to loading it into the ESP-30X overpack.

7.1.5 Procedure for Loading the ESP-30X Overpack

7.1.5.1 The inspection required by Section 7.1.2 shall be performed and documented prior to loading the overpack with a 30B cylinder.

7.1.5.2 Carefully load the 30B cylinder into bottom half of the overpack with the cylinder valve positioned up (at 12:00 o'clock position).

7.1.5.3 Carefully place the lid on the overpack.

7.1.5.4 Tighten all bolts closures alternating first corner-to-corner (4 closures) followed by side-to-side (6 closures).

7.1.5.5 Install security seals and record their numbers.

7.1.5.6 Complete radiation survey and assign Transport Index per applicable regulations.

7.1.5.7 Remove old labels and re-label per applicable regulations.

7.2 Procedures for Unloading the Package

7.2.1 Procedure for unloading the ESP-30X Overpack

7.2.1.1 Inspect the exterior of the overpack as possible for damage using the steps provided in Section 7.1.3 (a), (b), (g), (h), (I), (j), (k), (l), and (m). Document any damage observed. Complete receiving report as required by facility operating procedures.

7.2.1.2 Remove and record the overpack security seal.

7.2.1.3 Loosen all bolts

7.2.1.4 Remove the lid of the overpack.

7.2.1.5 Remove the 30B cylinder from the overpack.

7.2.1.6 Clean any loose debris from ESP-30X overpack interior.

7.2.1.7 Close the overpack prior to storage.

7.2.2 Procedure for unloading the 30B cylinder

7.2.2.1 Prior to unloading the cylinder, cylinder shall be inspected and weighed as required by USEC-651.

7.2.2.2 The 30B UF_6 cylinder is emptied and handled in accordance with standard, in-plant, operating procedures at the facility. As a minimum, the procedures described in USEC-651 and ANSI Standard N14.1 shall be used.

7.3 Preparation of Empty Package for Transport

Empty cylinders may be shipped without protective overpacks provided the residual heel does not exceed 25 lbs of UF_6 and 5% maximum ^{235}U enrichment and as required by the applicable regulations.

7.3.1 Preparation of an empty overpack for shipment:

7.3.1.1 Close the overpack.

7.3.1.2 Complete radiation survey.

7.3.1.3 Remove old labels and re-label per applicable regulations.

SECTION EIGHT ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

TABLE OF CONTENTS

8. ACCEPTANCE AND MAINTENANCE PROGRAMS

This section describes the activities to be performed in compliance with Subpart G of 10CFR71 to assure that the ESP-30X package conforms to the requirements of this Safety Analysis Report and remains in conformance following loading.

8.1 Acceptance Tests

8.1.1 Acceptance Tests for the ESP-30X Overpack

Each completed overpack shall be inspected to document compliance with the following drawing requirements:

(a) Final dimensions as described below:

Inner cylinder cavity dimensions.
Outer shell dimensions.
Closure bolt locations.
Bolt center locations and hole diameters in tie down supports.
Flatness of gasket surface.

(b) Installation of gaskets and cylinder support pads.

(c) Lid to body fit.

(d) Closure bolt and nut grade, size, quantity and condition.

(e) Installation of lifting shackles and security seal pads.

(f) Actual weights of lid and bottom halves.

(g) Final assembled weights.

(h) Proper permanent marking and nameplates per 10CFR71.85(c), 49CFR172, and ANSI N14.1 (latest revision).

8.1.2 Acceptance Tests for the 30B Cylinder

Acceptance tests for the 30B cylinder shall be in accordance with ANSI N14.1. Additionally, the cylinder shall be demonstrated to be capable of maintaining a leak tight condition using a test having a sensitivity of at least 5.0×10^{-8} std-cc/sec per ANSI N14.5-1997.

8.2 Maintenance Programs

8.2.1 Maintenance Programs for the ESP-30X Overpack

The user shall establish and implement written procedures for the periodic maintenance and inspection of each Model ESP-30X overpack requiring the following as a minimum:

8.2.1.1 Annually

(a) Check that the lifting shackles, closure bolts and supports, and tie-down supports are sound and free from unacceptable discontinuities, damage and deterioration.

(b) Check that all vents are properly sealed.

(c) Check that the inner and outer shells are free of unacceptable discontinuities, and the inner shells are free of debris and standing water.

(d) Check that the cover plates are sound and undamaged, and gasket sealing surfaces meet drawing requirements.

(e) Individually weigh each half (lid and bottom) of each packaging to verify that neither half has gained more than 25 pounds. Weight gain must be assumed to be water. If either half exhibits a gain of more than 25 pounds, the packaging must be removed from service and dried to within 10 pounds of its original nameplate weight. New weights of each packaging half must be established after any modifications, refurbishment, or repainting . After drying each packaging must be inspected, as above.

(f) Check that gaskets are in place, intact, and not damaged or deteriorated.

8.2.1.2 Every Three Years

(a) Perform all annual inspections as listed above.

(b) Replace and inspect gaskets.

8.2.1.3 Every Five Years

The owners are responsible for re-certifying the ESP-30X overpack every five years to meet original design specifications. The following inspections shall be performed:

(a) Perform all routine inspections stated in Section 7 and all annual inspections stated above. (If it is time to replace the gasket, this shall be performed as well).

(b) Full visual inspection of all welds for the presence of discontinuities. Any questionable condition of a weld shall be subject to further examination to assure that no unacceptable discontinuities are present. Weld defects shall be repaired.

(c) Check the base and lid for warpage and/or distortion which could prevent tight closure. Check that the gasket sealing surfaces meet design specifications.

(d) Assure that vent holes are properly sealed.

(e) Verify that inner and outer shells are free of corrosion, pitting, unacceptable discontinuities, broken welds and pinholes.

(f) Assure that security seal holes are functional and capable of maintaining their integrity when seals are used.

(g) Permanently mark the exterior nameplate listing the date of recertification, the individual base and lid weights, and the name of the recertifying company.

(h) The overpack shall receive a full visual inspection for rusting and the presence of corrosion. This inspection shall include assurance that corrosion has not reduced the skin wall thickness by 10% of the nominal thickness. When visual inspection cannot assure sufficient wall thickness, other examinations shall be utilized, such as ultrasonic testing, to assure acceptability.

(I) All repairs shall be performed by competent sources. All repairs that require welding shall be made by welders who are qualified in accordance with Section IX of the ANSI/ASME Boiler and Pressure Vessel Code or Section 5 of ANSI/AWS D1.1. The repair shop shall provide certification of weld procedures and welder qualifications.

8.2.2 Maintenance Program for the 30B Cylinder

Maintenance of the 30B Cylinders shall be performed in accordance with ANSI N14.1.