
Temporary Instruction 2600/010

1-INCH UF₆ CYLINDER VALVE TESTING

0266/010-01 OBJECTIVES

01.01 To confirm that a sample of randomly selected 1-inch UF₆ cylinder valves manufactured by the Hunt Valve Company are tested in accordance with the Action Plan developed by USEC and described in a letter to M. Virgilio, Director, Office of Nuclear Materials Safety and Safeguards, dated November 18, 2002.

01.02 To independently observe portions of the valve testing described in the Action Plan.

01.03 To confirm that test results meet the acceptance criteria outlined in ANSI N14.1, Uranium Hexafluoride Packaging for Transport, Section 6.15, Cylinder Valve 51 (1 Inch).

0266/010-02 BACKGROUND

Information Notice 2002-31, "Potentially Defective UF₆ Cylinder Valves (1-Inch)", was issued on October 31, 2002. The Information Notice identified two safety concerns with the valve manufacturing process that involved: (1) cracked packing nuts and (2) the loss of material traceability and failure to conduct hardness testing of valve stems. These valves are designated as "Q" class components under the USEC QA Program, and were required to be manufactured under a NQA-1 quality assurance program to the specifications contained in ANSI N14.1, Uranium Hexafluoride - Packaging for Transport. Although there have been no known valve failures due to manufacturing flaws since NRC issued the two Gaseous Diffusion Plants Certificates of Compliance, USEC has subsequently developed a testing program and schedule to confirm that the UF₆ cylinder valves can perform their intended safety function without reliance on vendor documentation. The purpose of this TI is to document NRC's observations of the testing process and review of the test results in order to determine whether a generic safety problem may exist.

0266/010-03 INSPECTION REQUIREMENTS

03.01 Verify that 56 valves were randomly selected for testing from the on-hand stock of UF₆ cylinder valves.

03.02 Review the work packages and confirm that the acceptance criteria meets the requirements of ANSI N14.1 for (a) pressure testing (400 psig with no leakage). Observe six randomly selected pressure tests.

03.03 Review the hardness/tensile test procedures and confirm that the acceptance criteria matches ANSI N14.1, Section 6.15. Observe six randomly selected tests.

03.04 Review the chemical analysis requested to be performed by an outside lab and confirm that the chemical composition requirements of ANSI N14.1 are verified.

03.05 Review Operability Evaluation OE-CO-2001-0079 and Design Analysis and Calculation DAC-MC-2001-0106 and verify that criteria was established for minimum and maximum valve thread engagement and minimum and maximum applied torque.

0266/010-04 INSPECTION GUIDANCE

04.01 Through direct observations and/or discussions with plant personnel, confirm that the sample size includes each available heat code in stock.

04.02 A 10% test sample size should be observed by the inspector for all pressure testing conducted at the plant.

04.03 No additional guidance.

04.04 The chemical composition for each approved alloy is specified in ANSI N14.1, Section 6.15. The work request/purchase order to the outside lab should include this requirement. Additionally, USEC should establish a protocol with the lab in order to be promptly notified of any test failure.

04.05 Inspector review should include verification that the operability evaluation and design analysis and calculations were properly reviewed and approved.

04.06 The inspector should assure that plant protocols exist to promptly notify the Resident Inspector of any test failures that may occur.

0266/010-05 REPORTING REQUIREMENTS

Inspector observations shall be documented in the routine Resident Inspector Report for the period(s) that the tests were performed. Any potential negative findings (failed tests, etc.) should be promptly brought to Regional and Headquarter's attention.

0266/010-06 COMPLETION SCHEDULE

USEC testing is scheduled to be completed by about February 2003 and the results evaluated and formally communicated to the NRC by early August, 2003.

0266/010-07 EXPIRATION

This TI expires upon submission of a test report by USEC to the NRC that is currently scheduled for August 2003.

0266/010-08 CONTACT

Questions regarding this TI should be addressed to William Troskoski, Special Projects and Inspection Branch, at (301) 415-8076.

0266/010-09 STATISTICAL DATA REPORTING

All direct inspection effort should be charged to L20799.

0266/010-10 ORIGINATING ORGANIZATION INFORMATION

10.01 NMSS/FCSS/SPIB initiated this TI.

10.02 The estimated inspection time to complete this TI is about 16 hours of direct inspection effort.

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