UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

March 24, 2003

NRC INFORMATION NOTICE 2002-31, SUPPLEMENT 1 POTENTIALLY DEFECTIVE UF_6 CYLINDER VALVES (1-INCH)

Addressees

All U.S. Nuclear Regulatory Commission (NRC) licensees authorized to possess and use source material and/or special nuclear material for heating, emptying, filling, or shipping 30- and 48-inch cylinders of uranium hexafluoride (UF_6).

Purpose

The NRC previously issued Information Notice 2002-31 to inform addressees about two safety concerns related to 1-inch UF_6 cylinder valves manufactured by the Hunt Valve Company, Inc., of Salem, Ohio. The safety concerns were: (1) cracked packing nuts and; (2) the loss of material traceability and failure to conduct hardness testing of the valve stems. Since then, the United States Enrichment Corporation (USEC) has conducted a series of tests to verify that the valves would perform their intended safety function.

The NRC is issuing this supplement to inform addressees that, as a result of those tests, a number of valves failed to meet the seat leakage performance requirements. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. Suggestions contained in this information notice do not constitute new NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

USEC conducted a series of tests to determine whether the 1-inch UF_6 cylinder valves manufactured by the Hunt Valve Company meet the critical characteristics specified in ANSI N 14.1, “American National Standard for Nuclear Materials - Uranium Hexafluoride - Packaging for Transport.” One of the more important critical characteristics tested was seat leakage. ANSI N 14.1 requires a 400 psig leak test with no leakage permitted. USEC initially tested a sample size of 56 valves in its stores. Of those tested, one valve failed, and another possible failure has been referred to the ANSI N14.1 Committee for interpretation. The two valves in question came from one specific vendor lot of 100 valves.

USEC then proceeded to conduct additional seat leakage tests on all of the remaining valves in the parent lot. As a result of the testing conducted to date, USEC has identified 13 valve failures out of 210 valves tested. Preliminary indications are that the failures are caused by bronze debris on the valve seats. The jagged debris was apparently cut from the valve body bronze threads by the harder monel valve stem threads that were not adequately de-burred or

polished. An optical inspection of valves manufactured by other vendors and previously manufactured Hunt valves found significantly less debris present and a polished finish. USEC polished the valve stems of several of the leaking valves and successfully retested them to the ANSI N14.1 test acceptance criteria.

Discussion

Although the nonconforming valves identified thus far belong to one valve lot, the potential nonconformance may extend to other lots. During an inspection at Hunt Valve in 2001, the NRC identified an ineffective quality assurance program. It could not be determined how long the quality assurance problems had existed. Consequently, the potential nonconforming problems have not been limited to any single Hunt valve lot at this time.

As indicated in the original Information Notice, the 1-inch UF_6 valves form part of the pressure boundary for Model No. 30B (30-inch diameter) cylinders that contain low-enriched uranium (up to 5 percent U^{235}) and various 48-inch diameter cylinders containing enriched, natural and depleted (tails) uranium. As such, the valves perform several safety functions as described in IN 2002-31 dated October 31, 2002. In addition, packages shipped under an NRC Certificate of Compliance must conform to ANSI N14.1. Conformance to ANSI N14.1 is also required by Department of Transportation regulations (see 49 CFR 173.420).

Related Generic Communications

- Information Notice No. 89-78: "Failure of Packing Nuts on One-Inch Uranium Hexafluoride Cylinder Valves"
- Information Notice No. 97-24: "Failure of Packing Nuts on One-Inch Uranium Hexafluoride Cylinder Valves"
- Information Notice No. 02-31: "Potentially Defective UF_6 Cylinder Valves (1-inch)"

This notice does not require any specific action or written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate project manager in the NRC's Office of Nuclear Material Safety and Safeguards.

/RA/

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Office	SPIB*	Editor*	SFPO*	OI*	SPIB*	FCSS
NAME	WTroskoski	EKraus	WBrach	MKFahey	MLeach	RPierson
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LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
2003-08	Potential Flooding Through Unsealed Concrete Floor Cracks	06/25/2003	All holders of operating licenses or construction permits for nuclear power reactors.
2003-07	Water in the Vent Header/vent Line Spherical Junctions	06/24/2003	All holders of operating licenses for boiling water reactors (BWRs) with a Mark I containment.
2003-06	Failure of Safety-related Linestarter Relays at San Onofre Nuclear Generating Station	06/19/2003	All holders of operating licenses or construction permits for nuclear power reactors, except those that have permanently ceased operations and have certified that fuel has been permanently removed from the reactor.
2003-05	Failure to Detect Freespan Cracks in PWR Steam Generator Tubes	06/05/2003	All holders of operating licenses or construction permits for pressurized-water reactors (PWRs).
2002-15, Sup 1	Potential Hydrogen Combustion Events in BWR Piping	05/06/2003	All holders of operating licenses for light water reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor.

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OL = Operating License
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NMSS INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
2002-36	Incomplete or Inaccurate Information Provided to the Licensee and/or NRC By Any Contractor or Subcontractor Employee	12/27/2002	All materials and fuel cycle licensees and certificate holders.
2002-35	Changes to 10 CFR Parts 71 and 72 Quality Assurance Programs	12/20/2002	All holders of 10 CFR Part 71 quality assurance program approvals and all 10 CFR Part 72 licensees and certificate holders
2002-33	Notification of Permanent Injunction Against Neutron Products Incorporated of Dickerson, Maryland	11/21/2002	All teletherapy and radiation processing licensees.
2002-31	Potentially Defective UF_6 Cylinder Valves (1-inch)	10/31/2002	All licensees authorized to possess and use source material and/or special nuclear material for the heating, emptying, filling, or shipping of uranium hexafluoride (UF_6) in 30- and 48-inch cylinders.
2002-30	Control and Surveillance of Portable Gauges During Field Operations	10/30/2002	All NRC licensees authorized to possess, use, transport, and store portable gauges.
2002-28	Appointment of Radiation Safety Officers and Authorized Users Under 10 CFR Part 35	09/27/2002	All medical licensees.

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