

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

September 5, 1979 IE Bulletin No. 79-22

POSSIBLE LEAKAGE OF TUBES OF TRITIUM GAS USED IN TIMEPIECES FOR LUMINOSITY

Description of Circumstances:

In June and July 1979, inspections were performed by the Arizona Atomic Energy Commission with the assistance of the Nuclear Regulatory Commission at American Atomics Corporation, Tuscon, Arizona. American Atomics manufactures small tubes containing tritium gas for distribution to other licensees some of which place the tubes in timepieces for distribution to other companies for sale. The tubes can contain as much as 200 millicuries of tritium in gaseous form. The inspection disclosed an allegation regarding irregularities in quality control during manufacture or testing of the tubes. A few tubes were reported by consignees as having lost luminosity indicating the tritium had leaked out of the tubes.

Action to be Taken by NRC Licensees who Received Tubes Containing Gaseous Tritium from American Atomics Corporation:

1. Examine a minimum of 100 tubes in stock to determine if complete luminosity is lost, indicating either loss of tritium or that tritium may not have been put in the tubes. Report in writing: (a) the total number of tubes in stock at the time of sampling, (b) the number of tubes examined, and (c) the number of tubes with apparent loss of luminosity (i.e., failure).
2. Select a random sample of at least 100 tubes from stock supplies and soak test the tubes in lots of five for 24 hours in a volume of water equal to 10 times the volume of the tubes to determine leakage of tritium. Report in writing: (a) the number of tubes in stock when the sample was selected, (b) the total number of tubes that were tested, and (c) the number of five tube lots found to be leaking in excess of 50 nanocuries per 24 hours.
3. For those licensees who also possess an NRC exempt distribution license for distribution to the public of timepieces containing tritium gas tubes, report in writing: (a) the number of failures during quality assurance testing of completed lots of timepieces (e.g., vibration tests, drop tests, etc.) (b) the lot sizes used for the testing and, (c) whether the testing was performed by the recipient of this Bulletin or by American Atomics Corporation. The reports submitted should cover the first calendar quarter of 1979.
4. Review receiving inspection records for tubes received during the first calendar quarter of 1979. Report in writing: (a) the total number of tubes received during the period, and (b) the number of tubes rejected due to apparent loss of luminosity.

Reports concerning Items 1, 2, 3, and 4 should be submitted to the Director of the appropriate NRC Regional Office with a copy sent to the NRC Office of Inspection and Enforcement, Division of Fuel Facilities and Materials Safety Inspection, Washington, D.C. 20555 within 45 days.

Approved by GAO, B180225 (R0072); clearance expires 7-31-80. Approval was given under a blanket clearance specifically for generic problems.

LISTING OF IE BULLETINS
ISSUED IN LAST SIX MONTHS

Bulletin No.	Subject	Date Issued	Issued To
79-21	Temperature Effects on Level Measurements	8/13/79	All PWRs with an operating license
79-20	Packaging Low-Level Radioactive Waste for Transport and Burial	8/10/79	All Materials Licensees who did not receive Bulletin No. 79-19
79-19	Packaging Low-Level Radioactive Waste for Transport and Burial	8/10/79	All Power and Research Reactors with OLs, fuel facilities except uranium mills, and certain materials licensees
79-18	Audibility Problems Encountered on Evacuation	8/7/79	All Power Reactor Facilities with an Operating License
79-17	Pipe Cracks in Stagnant Borated Water Systems at PWR Plants	7/26/79	All PWR's with operating license
79-16	Vital Area Access Controls	7/26/79	All Holders of and applicants for Power Reactor Operating Licenses who anticipate loading fuel prior to 1981
79-15	Deep Draft Pump Deficiencies	7/11/79	All Power Reactor Licensees with a CP and/or OL
79-14	Seismic Analyses for As-Built Safety-Related Piping System	6/2/79	All Power Reactor facilities with an OL or a CP
79-13	Cracking In Feedwater System Piping	6/25/79	All PWRs with an OL for action. All BWRs with a CP for information.
79-02 (Rev. 1)	Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts	6/21/79	All Power Reactor Facilities with an OL or a CP
79-12	Short Period Scrams at BWR Facilities	5/31/79	All GE BWR Facilities with an OL.

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Bulletin No.	Subject	Date Issued	Issued To
79-11	Faulty Overcurrent Trip Device in Circuit Breakers for Engineered Safety Systems	5/22/79	All Power Reactor Facilities with an OL or a CP
79-10	Requalification Training Program Statistics	5/11/79	All Power Reactor Facilities with an OL
79-09	Failures of GE Type AK-2 Circuit Breaker in Safety Related Systems	4/17/79	All Power Reactor Facilities with an OL or CP
79-08	Events Relevant to BWR Reactors Identified During Three Mile Island Incident	4/14/79	All BWR Power Reactor Facilities with an OL
79-07	Seismic Stress Analysis of Safety-Related Piping	4/14/79	All Power Reactor Facilities with an OL or CP
79-05C&06C	Nuclear Incident at Three Mile Island - Supplement	7/26/79	To all PWR Power Reactor Facilities with an OL
79-06B	Review of Operational Errors and System Misalignments Identified During the Three Mile Island Incident	4/14/79	All Combustion Engineering Designed Pressurized Water Power Reactor Facilities with an Operating License
79-06A (Rev 1)	Review of Operational Errors and System Misalignments Identified During the Three Mile Island Incident	4/18/79	All Pressurized Water Power Reactor Facilities of Westinghouse Design with an OL
79-06A	Review of Operational Errors and System Misalignments Identified During the Three Mile Island Incident	4/14/79	All Pressurized Water Power Reactor Facilities of Westinghouse Design with an OL

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Bulletin No.	Subject	Date Issued	Issued To
79-06	Review of Operational Errors and System Misalignments Identified During the Three Mile Island Incident	4/11/79	All Pressurized Water Power Reactors with an OL except B&W facilities
79-05B	Nuclear Incident at Three Mile Island	5/21/79	All B&W Power Reactor Facilities with an OL
79-05A	Nuclear Incident at Three Mile Island	4/5/79	All B&W Power Reactor Facilities with an OL
79-05	Nuclear Incident at Three Mile Island	4/2/79	All Power Reactor Facilities with an OL and CP
79-04	Incorrect Weights for Swing Check Valves Manufactured by Velan Engineering Corporation	3/30/79	All Power Reactor Facilities with an OL or CP
78-12B	Atypical Weld Material in Reactor Pressure Vessel Welds	3/19/79	All Power Reactor Facilities with an OL or CP
79-03	Longitudinal Welds Defects In ASME SA-312 Type 304 Stainless Steel Pipe Spools Manufactured by Youngstown Welding and Engineering Co.	3/12/79	All Power Reactor Facilities with an OL or CP
79-01A	Environmental Qualification of Class 1E Equipment (Deficiencies in the Environmental Qualification of ASCO Solenoid Valves)	6/6/79	All Power Reactor Facilities with an OL or CP