

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

March 26, 1979

IE Information Notice No. 79-07

RUPTURE OF RADWASTE TANKS

Description of Circumstances:

In November, 1977 a radwaste tank ruptured at the Millstone Nuclear Power Station. Two problems led to the tank failure. First, the tank vent, which was intended to relieve excessive pressure in the radwaste tank, had been plugged by accumulated solidified concentrates. Second, corrosion had weakened the capability of the radwaste tank to withstand pressure. Individually, or in combination, these problems were causative factors in the rupture of the radwaste tank due to overpressurization.

The Licensee Event Report states that an aerated waste concentrates tank was overpressurized and ruptured. The tank contained radwaste evaporator concentrates with a 10-12 percent boric acid concentration. These concentrates, when cooled to ambient temperatures, formed a solid crystalline structure. Apparently, concentrate had entered the vent line by previous tank overflows or purging of air through the tank so that a solid buildup occurred in the vent line. This buildup eventually led to a flow blockage in the vent line. The licensee, in an attempt to blow out or clear a radwaste pipe, applied 100 PSI air pressure to the tank. The tank was designed for 15 PSI and the plugged vent could not relieve pressure. Therefore, the tank overpressurized and ruptured.

This tank had a history of corrosion problems such that the corrosion probably caused some weakness which contributed to the rupture. The tank was constructed of type 304 stainless steel. The plant was a sea-coast site such that significant amounts of chlorides were present in the aerated waste system and, consequently, in the waste concentrate tank. The presence of significant amounts of chlorides, coupled with residual welding stresses in the type 304 stainless steel, resulted in chloride stress corrosion.

Since radwaste tanks of this type are used at most power reactors, the potential may exist for similar events at other power reactors. Also, such events can be avoided by proper procedures and periodic examination

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if personnel are aware of the problem. In addition, proper consideration of design features (e.g., materials selection and vent designs) can minimize the probability of such an event. Prevention of such events will minimize the possibility of personal injury, in-plant contamination, releases of radioactivity, and occupational radiation exposure resulting from the repair and clean-up operations.

No specific action or written response to this Information Notice is required. If you require additional information regarding this subject, contact the Director of the appropriate NRC Regional Office.

LISTING OF IE INFORMATION NOTICES
ISSUED IN 1979

Information Notice No.	Subject	Date Issued	Issued To
79-01	Bergen-Paterson Hydraulic Shock and Sway Arrestor	2/2/79	All power reactor facilities with an OL or a CP
79-02	Attempted Extortion - Low Enriched Uranium	2/2/79	All Fuel Facilities
79-03	Limiter Valve Geared Limit Switch Lubricant	2/9/79	All power reactor facilities with an OL or a CP
79-04	Degradation of Engineered Safety Features	2/16/79	All power reactor facilities with an OL or a CP
79-05	Use of Improper Materials in Safety-Related Components	3/21/79	All power reactor facilities with an OL or CP
79-06	Stress Analysis of Safety-Related Piping	3/23/79	All Holders of Reactor OL or CP
79-07	Rupture of Radwaste Tanks	3/26/79	All power reactor facilities with an OL or CP