

TOLEDO EDISON COMPANY
DAVIS-BESSE NUCLEAR POWER STATION UNIT ONE
SUPPLEMENTAL INFORMATION FOR LER NP-33-81-04

DATE OF EVENT: January 14, 1981

FACILITY: Davis-Besse Unit 1

IDENTIFICATION OF OCCURRENCE: Reactor Coolant System Chloride Concentration Exceeded Steady State Limit

Conditions Prior to Occurrence: The unit was in Mode 5 with Power (MWT) = 0 and Load (Gross MWE) = 0.

Description of Occurrence: During the Reactor Coolant Pump (RCP) seal repair outage, the Reactor Coolant System (RCS) chloride concentration increased in excess of the 0.15 ppm steady state limit in Technical Specification 3.4.7. On January 14, 1981 and January 18, 1981, chlorides reached 0.64 ppm and 1.28 ppm, respectively. Both occurrences have been attributed to the liberal use of Spotcheck in cleaning RCP seal cavities. Each time the 0.15 ppm limit was exceeded for about two days. The temperature during this entire period was about 110°F, and the system pressure was less than 500 psig with the decay heat pumps circulating only the reactor vessel.

During the RCS fill following completion of the seal repair work, purification flow was stopped on January 22 and January 23, 1981. During that time, chlorides gradually increased and on January 26, 1981 at 0130 hours it reached 0.24 ppm. At that time, two RCPs were started in order to heat the system to about 180°F to attempt to break down the organic chlorides and put them into solution as ionic Cl⁻ to facilitate removal by demineralization. The 0530 sample showed 0.83 ppm. This large increase from 0.24 to 0.83 ppm confirmed the heat effects. Purification by demineralization continued and at 2130 hours on January 27, 1981, one RCP in each loop was started to circulate the entire system. As expected, the chloride concentration increased from 0.11 ppm to 0.36 ppm. The system was cleaned up to within specs by 0800 hours on January 28, 1981. This cleanup was accelerated by the fact that Purification Demineralizer 1-2 was recharged with new resin and purification flow was increased from 40 gpm to 140 gpm for the first time at 0300 hours on January 27, 1981.

By exceeding the steady state limit, the station entered into the action statement which required that RCS pressure be limited to 500 psig. It also required an engineering evaluation to determine the effects on the structural integrity of the RCS. The requirements were met.

Designation of Apparent Cause of Occurrence: During the reactor coolant pump seal outage of January 1981, Spotcheck was added to the reactor coolant system when the seal cavities were being cleaned. Spotcheck is a chlorinated hydrocarbon and heating accelerates the decomposition into chlorides. The individual who allowed the Spotcheck to enter the system was not aware of the consequences of the solvent in the system since the label on the container states "certified to meet chloride purity". The procedure did not have adequate warnings to indicate the solvent was detrimental to the system if used improperly.

Analysis of Occurrence: There was no danger to the health and safety of the public or to station personnel. The chloride concentrations for all three excursions from January 14, 1981 through January 28, 1981 were less than the transient limit of 1.50 ppm. The RCS temperature never exceeded 200° and most of the time was less than 140°F. The system pressure remained far less than 500 psig. The combination of these parameters diminishes the potential of any harm to the RCS. Material damage is definitely negligible. In fact, very little damage could occur from any level of chlorides less than 10 ppm if the technical specification action statement is followed.

Corrective Action: Administrative Memorandum No. 4 was prepared which provides specific instructions regarding the use of any solvent when it is used for cleaning components which could come in contact with the reactor coolant system. This memorandum has been routed to the station personnel. The Maintenance Engineer has given special sessions to maintenance personnel to provide instructions on the controls required when reactor coolant system components are cleaned.

Failure Data: No previous situations where the chloride concentration exceeded the steady state limit for water in the reactor coolant system have occurred.