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Washington Public Power Supply System

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Responds to: N/A
Response required by: N/A

REGION V

Mr. J. B. Martin
Regional Administrator
Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA. 94596

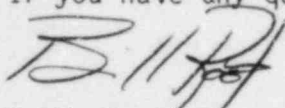
Subject: NUCLEAR PROJECT NO. 1/4
DOCKET NOS. 50-460 & 50-513
REPORTABLE CONDITION 10CRF50.55(e)
PAUL-MUNROE HYDRAULIC OPERATORS

Reference: Telecon, C.R. Edwards, Supply System to R.T. Dodds,
NRC, same subject, dated December 14, 1984

In the noted reference, the Supply System informed your office of a reportable deficiency in accordance with the requirements of 10CFR50.55(e). Attachment A provides a statement of the identified condition and a brief description of our planned actions to correct the identified deficiency.

Based on the current status at WNP-1/4 and continuing investigations by Paul-Munroe, the Supply System will not be able to issue a final report at this time. An update will be provided at construction restart.

If you have any questions or desire further information, please advise.


R. W. Root, Jr.
WNP-1 Program Director (821)

RWR:LCO:lw

Attachments

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NRC Document Control Desk, DC
ORM (847)
FDCC (899)
BDCC (828)

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ATTACHMENT A

WNP-1/4

DOCKET NO'S. 50-460 & 50-513
REPORTABLE CONDITION PER 10CFR50.55(e)
PAUL-MUNROE HYDRAULIC OPERATORS

DESCRIPTION OF DEFICIENCY

The WNP-1 and 4 containments utilize four piping penetrations each with an isolation valve on both the inside and outside to provide containment atmospheric cleanup service and purging during reactor operating and shutdown modes. This system is primarily intended to maintain a safe environment within containment, to facilitate containment entry, and to provide pressure relief.

The sixteen containment isolation valves for this system were supplied by Allis Chalmers. There are eight, eight inch butterfly valves and eight, thirty-six inch butterfly valves, each supplied with a Paul-Munroe Hydraulics operator. Based on receipt of a 10CFR Part 21 report by Paul-Munroe Hydraulics and a 10CFR50.55(e) report by Philadelphia Electric Company, the Supply System was notified of a potential defect in the Paul Munroe Hydraulic operator. It was determined that WNP-1/4 valves are similar to those having the defects.

The defects exist within the hydraulic system of the operator. The hydraulic pump maintains hydraulic pressure stored in an accumulator which supplies fluid to operate the valve actuator in the fast mode. The hydraulic pump was found to cycle more frequently than specified. Although this may reduce valve life, a subsequent investigation led to discovery of three contributing factors.

- 1) Abrasion or erosion of the solenoid operated, directional control valve seating surface was found. Leakage across this valve will cause the hydraulic pump to cycle more frequently.
- 2) Failures of the piston seal resulting in oil leakage past the piston also caused the hydraulic pump to cycle more frequently.
- 3) Accumulators were found to have lost their gas precharge. This also contributes to more frequent cycling of the hydraulic pump.

Although more frequent cycling of the hydraulic pump is not a deficiency in itself, failure of the piston seal could prevent the valve from completely closing, as could the loss of accumulator precharge.

ANALYSIS OF SAFETY IMPLICATION

Leakage of hydraulic fluid from the actuator system could result in improper positioning of the valves. Sufficient hydraulic pressure may not be available for the actuator to fulfill its normal and safety operational modes. As the eight valves of concern are in the containment atmospheric purge and filtration system, failure to close or reach full closure could allow an uncontrolled release of potentially radioactive gas to the atmosphere.

CAUSE OF DEFICIENCY

- 1) Erosion of the directional control valve brass seating surface has been mainly attributed to dirt contamination in the oil. Contamination can occur during installation and/or maintenance. Paul-Munroe is continuing investigation to determine if there are other causes of the seat leakage.
- 2) The manufacturing practice of the actuator vendor allows large clearances between the piston and cylinder wall which may permit the piston seal to extrude into the clearance gap and fail. Paul-Munroe determined that the manufacturer's design is inconsistent with the dimensions and surface finish required by the seal manufacturer to ensure a proper seal necessary for long life.
- 3) Paul-Munroe determined that loss of the gas precharge in the accumulator is the result of porosity in the material around the sealing area of the accumulator end cap.

CORRECTIVE ACTION

The nonconforming valves have been identified on nonconformance reports 1-BNCR-68-02 and 4-BNCR-68-02. Repair or replacement of the components as listed below are necessary to ensure a leak tight hydraulic system for proper operation of the valves.

- 1) To mitigate any damage from oil contamination, Paul-Munroe recommends an improved filtration system by replacing a forty micron filter with a two micron filter.
- 2) Paul-Munroe recommends modification of the piston actuator as follows:
 - a) Increase the piston and seal groove dimensions by bronze plating the component and then machining all dimensions to those specified by the seal manufacturer.
 - b) Polish the cylinder wall to obtain a finish of 8 to 16 micro inches RMS.
- 3) Because repairs to the accumulators cannot be guaranteed, Paul-Munroe recommends replacement of leaking accumulators.

The Supply System will implement the Paul-Munroe recommendations. Based on the construction delay, implementation will be delayed until construction restart. It should be noted that Paul-Munroe is continuing its investigations as to other possible causes and recommended actions. Future recommendations will also be evaluated for implementation at WNP-1 and 4.

ACTION TO PREVENT RECURRENCE

Implementation of the recommended corrective actions has been shown to correct the deficiencies at Limerick. No further action can be taken as this was a reportable defect by the manufacturer.