

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 * 3000 George Washington Way * Richland, Washington 99332

Docket No. 50-397

May 15, 1991

Go2-91-0101

Document Control Desk U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Subject: NUCLEAR PLANT NO. 2 LICENSEE EVENT REPORT NO. 90-025-01

Dear Sir:

Transmitted herewith is Licensee Event Report No. 90-025 Revision 1 for the WNP-2 Plant. This report is submitted in response to the report requirements of IOCFR50,73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

This supplement provides final root cause information.

Very truly yours.

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J. W. Baker (M/D 927M) WNP-2 Plant Manager

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Enclosure: Licensee Event Report No. 90-025-01

cc: Mr. John B. Martin, NRC - Region V Mr. C. Sorensen, NRC Resident Inspector (M/D 901A) INPO Records Center - Atlanta, GA Mr. D. L. Williams, BPA (M/D 399) NRC Resident Inspector - walk over copy

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APPROVED DMB NO. 3150-0104 EXPIRES 4/30/92

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Plant Conditions

NRC FORM 366A 16-091

a) Plant Mode - 1 (Power Operation)

b) Power Level - 100%

Event Description

At 0327 hours on October 23, 1990, during performance of the High Pressure Core Spray (HPCS) system operability surveillance test (PPM 7.4.5.1.11), the Test Return Valve to the Suppression Pool (HPCS-V-23) failed to go full shut. This test was being performed by Licensed Plant Operators and involved the closure of HPCS-V-23 against full discharge pressure of the HPCS Pump (HPCS-P-1). The valve light indicated full closed but the HPCS Minimum Flow Valve (HPCS-V-12) did not come open and the flow indication did not go to zero. This condition could cause the undesired diversion of system flow from in-vessel spray which is the primary function of the system. The uncertainty of performance of HPCS-V-23 makes the HPCS system inoperable which is a reportable event.

Immediate Corrective Action

At 0514 hours Plant operators took action to close the manual block valve for the test return line (HPCS-V-64). This action isolated the faulty valve and would prevent the diversion of system flow. The HPCS Operability Surveillance was completed at 0809 hours on October 23, 1990 thereby confirming system operability.

Further Evaluation and Corrective Action

A. Further Evaluation

- 1. This event is being reported per the requirement of 10CFR50.73(a)(2)(v) as a "condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition; (B) Remove residual heat; (C) Control the release of radioactive material; or (D) Mitigate the consequences of an accident." The inoperability of the HPCS system is a unique event at WNP-2. Unlike the other Emergency Core Cooling Systems, HPCS system inoperability is reportable even though all requirements of technical specification LCO action statements are being complied with. This is so because it is a "single train" Emergency Core Cooling System and, as such, is reportable any time it is unable to perform its safety function when it is required to be able to do so by Plant conditions.
- This requirement was not recognized immediately but after further management review it was reported via the Emergency Notification System (ENS) at O810 hours on October 23 in accordance with 50.72(b)(2)(iii).

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| | | TEXT CONTINUATION | | COMMENTS REGARDING BURDLN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (FS30) U.S. NUCLEAR REQULATORY COMMISSION WASHINGTON, DC 20565, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503 |
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| TEXT (If more space a | 3 . | Initially the cause of this associated with HPCS-V-23. when the line was pressuri: flow. | s event was believe The valve was not red to prevent the | ed to be equipment failure able to completely close undesired diversion of system |
| | 4. | After the event, a root can Valve Analysis and Test Sys dynamic conditions confirme premature torque switch act conditions are more severe determined the root cause of specification, in that the required thrust for HPCS-V- surveillance test condition | use analysis was pe stem (MOVATS) diagn ed that the valve of tuation. Investiga than the design re of the event was th calculation which -23 did not conside is. | erformed. A Motor Operated hostic test of HPCS-V-23 under hid not close fully due to the ition revealed that the test equirements. It was he less than adequate design determines the minimum or differential pressure at |
| Β. | Furt | her Corrective Action | | |
| | 1. | Further tests to investigat conducted under controlled red tagged in the closed po | te reasons for inop conditions. Prior osition and HPCS-V- | erability of HPCS-V-23 were to that time, the valve was 64 remained closed. |
| | 2. | HPCS-V-23 Thrust calculation ensure proper closure under | ons were revised an " both test and acc | d torque switches reset to ident conditions. |
| | 3. | A note was added to the MON valve is routinely tested a differential pressure." | / Master Data Sheet it higher different | for HPCS-V-23 to state "This tial pressure than the design |
| | 4. | The HPCS operability survei HPCS-V-12 opens when HPCS-V HPCS-V-23 is stroked closed | 11ance procedure w /-23 closes and to 1 against different | vill be revised to verify record the flow rate when tial pressure. |
| | 5. | The plant policy will be re of identifing reportable ev train" safety systems. | eviewed to identify vents including the | improvements in the process inoperability of "single |
| | б. | Valve thrust calculations to if operational or testing of assumptions. | based on test data Nifferential pressu | will be reviewed to determine res exceed design basis |
| | 7. | The design differential pre require valves be identifie severe than their design di | essure calculation d, whose surveilla ifferential pressur | process will be revised to nce conditions are more conditions. |
| Safet | y Si | gnificance | | |
| There syste ECCS Autom syste | is mis coul atic ms w | no safety significance assoc within the bounds of the EC d have performed its safety Depressurization System (AL ere operational. | iated with this ev CS single failure function in respon SS) and Low Pressur | vent. The failure of the HPCS analyses. At all times the use to a DBA since the re Coolant Injection (LPCI) |

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The HPCS System Operability Test is performed on a quarterly basis. During this test HPCS-V-23 is opened and closed against the running pump for only a short period of time. Thus, the probability of system inoperability due to the valve not closing against system pressure is quite small. In addition, the HPCS test data collected during the surveillance indicates the system was not completely degraded. The flow through HPCS-V-23 after it closed against the unning pump was approximately 1400 gpm at a pump discharge pressure of 1350 psig. With HPCS-V-23 open the flow was measured at approximately 7000 gpm at a pump discharge pressure of 250 psig.

At all times during the event, the requirements of the WNP-2 Technical Specifications (Section 3.5.1) were complied with. The LCU action for this section requires ensuring the operability of the redundant ECCS Divisions 1 and 2 and the Reactor Core Isolation Cooling system while the HPCS system is inoperable (a maximum of 14 days is allowed). Since no safety significance is associated with this event, it posed no threat to the health and safety of the public or plant personnel.

Similar Events

This event is similar to the one that occurred on November 21, 1989 as reported in LER 89-043. In that case, HPCS-V-23 was found to stay approximately 10 percent open when the same operability surveillance was performed. At that time, the problem was thought to be an internal mechanical problem with the valve. During the May 1990 refueling outage the valve was disassembled and inspected (Work Request AS3203) but no significant problems were discovered. A root cause analysis was performed on the event associated with LER 89-043 and the subsequent inspection on August 31, 1990. The root cause was judged to be indeterminate. An additional root cause analysis confirmed that HPCS-V-23 did not fully close, during system testing, due to premature torque switch actuation. The investigation also revealed the valve would not close further in the earlier event since it was already fully closed. When the HPCS pump was secured and the differential pressure relaxed, HPCS-V-23 had enough applied stem thrust to mechanically fully close the valve.

EIIS Information

| Text Reference | EIIS Reference | | |
|----------------|----------------|-----------|--|
| | System | Component | |
| HPCS System | BG | 00 M | |
| HPCS-V-23 | BG | V | |
| HPCS-V-12 | BG | Y | |
| HPCS-V-64 | BG | V | |
| HPCS-P-1 | BG | P | |
| ECCS | BM | 10 m | |
| ADS | BG | | |
| LPCI | BM | | |
| RCIC | BG | | |