

# PRIORITY 1

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 MACKAMAN, C.D.      Washington Public Power Supply System  
 PARRISH, J.V.      Washington Public Power Supply System  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 94-018-00: on 941115, failure to comply w/TS action  
 requirement when inoperable control rod block  
 instrumentation exceeded allowed outage time. Placed Channel  
 "A" SDV high water level control rod block trip on 941109.

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December 15, 1994  
GO2-94-279

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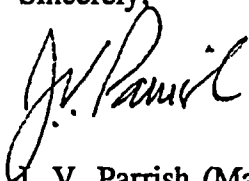
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Subject: **NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21  
LICENSEE EVENT REPORT NO. 94-018 REVISION 0**

Transmitted herewith is Licensee Event Report No. 94-018 for the WNP-2 Plant. This report is submitted in response to the reporting requirements of 10CFR50.73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

Should you have any questions or desire additional information, please call me or D.A. Swank at (509) 377-4563.

Sincerely,



J. V. Parrish (Mail Drop 1023)  
Assistant Managing Director, Operations

JVP/CDM/mky  
Enclosure

cc: LJ Callan, NRC-RIV  
KE Perkins, Jr., NRC-RIV, Walnut Creek Field Office  
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# LICENSEE EVENT REPORT (LER)

|                                   |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |            |  |  |
|-----------------------------------|--|--|--|--|--|--|--|--|--|-------------------------------|--|--|--|--|--|--|------------|--|--|
| FACILITY NAME (1)                 |  |  |  |  |  |  |  |  |  | DOCKET NUMBER (2)             |  |  |  |  |  |  | PAGE (3)   |  |  |
| Washington Nuclear Plant - Unit 2 |  |  |  |  |  |  |  |  |  | 0   5   0   0   0   3   9   7 |  |  |  |  |  |  | 1   OF   5 |  |  |

TITLE (4)  
**FAILURE TO COMPLY WITH A TECHNICAL SPECIFICATION ACTION REQUIREMENT WHEN INOPERABLE CONTROL ROD BLOCK INSTRUMENTATION EXCEEDED THE ALLOWED OUTAGE TIME**

| EVENT DATE (5) |     |      | LER NUMBER (6) |                   |                 | REPORT DATE (7) |     |      | OTHER FACILITIES INVOLVED (8) |   |   |   |   |                   |   |   |   |   |   |   |   |   |  |  |
|----------------|-----|------|----------------|-------------------|-----------------|-----------------|-----|------|-------------------------------|---|---|---|---|-------------------|---|---|---|---|---|---|---|---|--|--|
| MONTH          | DAY | YEAR | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH           | DAY | YEAR | FACILITY NAMES                |   |   |   |   | DOCKET NUMBERS(S) |   |   |   |   |   |   |   |   |  |  |
| 1              | 1   | 5    | 9              | 4                 | 9               | 4               | 0   | 1    | 8                             | 0 | 0 | 1 | 2 | 1                 | 5 | 9 | 4 | 0 | 5 | 0 | 0 | 0 |  |  |

OPERATING MODE (9) 1 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

|                  |   |   |                 |                   |                  |                      |  |
|------------------|---|---|-----------------|-------------------|------------------|----------------------|--|
| POWER LEVEL (10) | 1 | 0 | 0               | 20.402(b)         | 20.405(c)        | 50.73(a)(2)(iv)      | 77.71(b)   |
|                  |   |   |                 | 20.405(a)(1)(i)   | 50.36(c)(1)      | 50.73(a)(2)(v)       | 73.73(c)   |
|                  |   |   |                 | 20.405(a)(1)(ii)  | 50.36(c)(2)      | 50.73(a)(2)(vii)     | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
|                  |   |   |                 | 20.405(a)(1)(iii) | X 50.73(a)(2)(i) | 50.73(a)(2)(viii)(A) |  |
|                  |   |   |                 | 20.405(a)(1)(iv)  | 50.73(a)(2)(ii)  | 50.73(a)(2)(viii)(B) |  |
|                  |   |   | 20.405(a)(1)(v) | 50.73(a)(2)(iii)  | 50.73(a)(2)(x)   |                      |  |

| LICENSEE CONTACT FOR THIS LER (12) |  |  |  |  |  |  |  |  |  |   |  |  |  |  |
|------------------------------------|--|--|--|--|--|--|--|--|--|---|--|--|--|--|
| NAME                               |  |  |  |  |  |  |  |  |  | TELEPHONE NUMBER                          |  |  |  |  |
| C.D. Mackaman, Licensing Engineer  |  |  |  |  |  |  |  |  |  | AREA CODE                                 |  |  |  |  |
|                                    |  |  |  |  |  |  |  |  |  | 5   0   9   3   7   7   -   4   4   5   1 |  |  |  |  |

| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) |        |           |              |                     |       |        |           |              |                     |  |  |  |  |  |
|--|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|--|--|--|--|--|
| CAUSE  | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |  |  |  |  |  |
| A  | A      | A         | L S          |                     | M     | O      | 4         | O            | NO                  |  |  |  |  |  |

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| SUPPLEMENTAL REPORT EXPECTED (14)                    |  |  |  |  |  |  |  |  |  | EXPECTED SUBMISSION DATE (15) |  |  | MONTH | DAY | YEAR |
| YES (If yes, complete EXPECTED SUBMISSION DATE) X NO |  |  |  |  |  |  |  |  |  |                               |  |  |       |     |      |

ABSTRACT (16)

A replacement Channel "A" Scram Discharge Volume (SDV) high water level control rod block level switch was installed during the Spring 1994 Refueling Outage and calibrated and tested on June 30, 1994 to verify operability. The switch failed the first quarterly channel functional test (CFT) on October 11, 1994. The switch was recalibrated and functionally tested several times to assure repeatability, and as a precaution, the surveillance frequency was increased. The CFT was successfully performed approximately two weeks later, but the switch failed the CFT on November 9, 1994 and was declared inoperable. During an evaluation of the repeat failure, it was discovered that the level switch is not designed to be adjustable, unlike the switch it replaced, and the previous switch calibrations could have caused the switch actuation failures. As a result, on November 15, 1994, with WNP-2 in Mode 1 at 100% power, it was determined that the Channel "A" level switch had been technically inoperable from June 30, 1994 to November 9, 1994 without the Technical Specification required action having been performed. With only the Channel "B" level switch and trip function operable, the number of operable channels was less than that required by Technical Specification 3.3.6.b and Table 3.3.6-1, Trip Function 5.a.

Immediate corrective action was taken at 1527 hours on November 9, 1994 to place the Channel "A" SDV high water level control rod block trip function in the tripped condition. Actions were then taken to restore the Channel "A" level switch and trip function to operable status. The level switch and trip function were declared operable at 1914 hours on November 11, 1994.

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| LICENSEE EVENT REPORT (R)<br>TEXT CONTINUATION  |  |                |                     |                   |          |
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| TITLE (4)<br>FAILURE TO COMPLY WITH A TECHNICAL SPECIFICATION ACTION REQUIREMENT WHEN INOPERABLE CONTROL ROD BLOCK INSTRUMENTATION EXCEEDED THE ALLOWED OUTAGE TIME |  |                |                     |                   |          |

Subject to an evaluation of further information to be provided by General Electric (GE), the apparent cause for this event was the failure to identify the non-adjustable design characteristic of the replacement SDV rod block level switch prior to installation. Further actions include an evaluation of additional information to be provided by GE concerning perceived inaccurate or incomplete equivalency evaluation information for the supplied level switch.

#### Event Description

The Channel "A" Scram Discharge Volume (SDV) [JC, VSL] high water level control rod block level switch (CRD-LS-13E) [AA, LS] was replaced during the Spring 1994 (R-9) Maintenance and Refueling Outage and initially calibrated on June 30, 1994 to verify operability. The level switch is one of two Magnetrol float-type switches that actuate on increasing SDV water level to prevent (block) control rod withdrawal. The switch failed to actuate during the first quarterly channel functional test (CFT) surveillance at 1120 hours on October 11, 1994. The level switch was successfully recalibrated and declared operable at 1211 hours on October 11, 1994. On October 13, 1994, a Followup Operability Assessment concurred with the initial declaration of operability based on acceptable trip actuation repeatability, demonstrated during level switch recalibration. It was suspected that Hydrolazing during the R-9 outage resulted in small particulate (corrosion and wear products) that had become suspended and caused transient binding of the float mechanism. Since this could not be verified (without breaking the level switch pressure boundary seal), it was concluded that the cause of the failure was indeterminate. As a precaution, the surveillance frequency was increased.

The level switch was verified to actuate properly during the first increased frequency CFT surveillance performance on October 27, 1994, but failed to actuate on the next performance on November 9, 1994. As a result, the switch was declared inoperable at 1453 hours on November 9, 1994, and Problem Evaluation Request (PER) 294-0975 (a corrective action program document) was initiated to evaluate the condition. During the PER investigation of the repeat failure, discussions with the switch supplier (General Electric Company [GE]) and the manufacturer (Magnetrol) indicated that the level switch is not designed to be adjustable, unlike the switch it replaced, and the previous switch calibrations could have caused the switch actuation failures. As a result, on November 15, 1994, with WNP-2 in Mode 1 at 100% power, it was determined that the Channel "A" level switch had been technically inoperable from June 30, 1994 to November 9, 1994 without the Technical Specification required action having been performed. With only the Channel "B" level switch and trip function operable, the number of operable channels was less than that required by Technical Specification 3.3.6.b and Table 3.3.6-1, Trip Function 5.a.

#### Immediate Corrective Actions

Immediate corrective action was taken at 1527 hours on November 9, 1994 to place the Channel "A" SDV high water level control rod block trip function in the tripped condition. Actions were then taken to restore the Channel "A" level switch and trip function to operable status. The level switch setpoint was revised to restore the switch to within the manufacturer's specifications. Following recalibration and testing, the switch and trip function were declared operable at 1914 hours on November 11, 1994.

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| LICENSEE EVENT REPORT (R)<br>TEXT CONTINUATION   |  |                |        |          |          |    |   |
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| TITLE (4)<br>FAILURE TO COMPLY WITH A TECHNICAL SPECIFICATION ACTION REQUIREMENT WHEN INOPERABLE<br>CONTROL ROD BLOCK INSTRUMENTATION EXCEEDED THE ALLOWED OUTAGE TIME |  |                |        |          |          |    |   |

## Further Evaluation and Corrective Actions

### Further Evaluation

1. This event is being reported pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B) as "[a]ny operation or condition prohibited by the plant's Technical Specifications. . . ."
2. SDV water level is detected by both float-type level switches and differential pressure (dp) type level transmitters for the scram function. Separate float-type level switches actuate a high level alarm in the control room and establish a control rod withdrawal block condition before reaching the high level setpoint that would cause an automatic scram. This gives plant operators time to take corrective action before the automatic scram occurs.
3. The Channel "A" level switch was replaced during the R-9 refueling outage under a substitution evaluation. The replacement switch that was provided by GE, and manufactured by Magnetrol, appeared to have somewhat different operating characteristics than the original switch. However, the GE equivalency evaluation stated that the level switch was an acceptable direct replacement. This application requires that the switch be welded in place, making it critical that the adjustment and setpoint tolerances be similar. The replacement switch was installed and calibrated under the assumption that the characteristics were similar to the original switch. During the October, 1994 (first switch failure) investigation, both GE and Magnetrol were contacted to provide switch drawings and operation and maintenance (O&M) instructions. Magnetrol informed the Supply System that the level switch had been provided to GE without an O&M manual, and it was expected that GE would provide a manual. After further prompting, Magnetrol provided a vendor guide for a similar switch, and GE acknowledged that the guide was acceptable for the troubleshooting application only. During the second switch failure investigation, GE and Magnetrol were contacted again to provide information relating to switch installation and calibration. Based on a conversation with Magnetrol, it was determined that the level switch provided is not designed to be adjustable. This was later confirmed in a letter from GE responding to technical inquiries regarding the supplied level switch. Other level switches manufactured by Magnetrol have been routinely adjusted using surveillance procedures and the switches have generally performed reliably since initial plant startup. The letter also stated that the switch was provided with two magnetic switch mechanisms that were designed to actuate simultaneously on high level. The SDV level rod block application did not require two switches, and the unused upper switch had been removed during the course of previous calibrations. Although the reset characteristics could have been affected, this action did not appear to have impacted switch operability. However, the lower switch actuation point was found to have been set higher (11/32 inch) than that specified by Magnetrol, which could have impaired actuation repeatability and reliability. On this basis it was concluded that the Channel "A" SDV level rod block level switch had been inoperable since initial calibration.



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4. The substitution evaluation process relies on GE's 10CFR50, Appendix B program. Based on the equivalency evaluation supplied by GE, there were no changes to the switch function, mounting, electrical interface, mechanical interface, or accuracy. Additional information has been requested from GE concerning the adequacy of the Supply System calibration procedure for the supplied rod block level switch and their justification for providing a non-adjustable level switch as "equivalent." Further actions may result from an evaluation of GE's response.
5. During the root cause investigation for this event, it was discovered that opportunities existed to identify the non-adjustable design characteristic of the Channel "A" SDV rod block level switch prior to or during initial installation. Areas found where improvements may be warranted include maintenance supervision of in-plant work, work documentation review, and the substitution evaluation process. Actions have been taken as part of the PER process to address the issues related to these areas. Because the issues were not found to be directly contributory to the apparent cause of this event, the actions addressing the issues have not been included in this Licensee Event Report (LER).
6. There were no other structures, systems, or components inoperable at the time that contributed to this event.

#### Root Cause

Subject to an evaluation of further information to be provided by GE, the apparent cause for this event was the failure to identify the non-adjustable design characteristic of the replacement SDV rod block level switch prior to installation.

#### Further Corrective Actions

Further actions include an evaluation of additional information to be provided by GE concerning perceived inaccurate or incomplete equivalency evaluation information for the supplied rod block level switch. The investigation will be completed by January 27, 1995.

#### Safety Significance

There was minimal safety significance associated with this event. The SDV high water level control rod block level switch does not provide an active safety-related function. Separate redundant and diverse float-type level switches and level transmitters provide the active safety-related scram function. The SDV rod block level switch is safety-related only to assure system pressure integrity. The misadjustment of the Channel "A" rod block level switch did not affect the switch pressure integrity. Furthermore, only one operable SDV level rod block channel is necessary to initiate the rod block, and the redundant channel was available during the period that the Channel "A" switch and trip function were inoperable. With the exception of a 1.3 hour period on October 11, 1994 (when the Channel "B" level switch was being recalibrated), the Channel "B" SDV level rod block trip function was operable between June 30, 1994 and November 9, 1994. Since this event had no impact on the SDV high water level scram function or system pressure integrity, the event posed no threat to the health and safety of either the public or plant personnel.

|  |  |  |  |  |  |  |                |        |          |          |      |
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### Similar Events

A review of previous LERs was performed for similar root causes resulting from material substitution process failures or inaccurate or incomplete vendor information, and none were identified. Furthermore, no events were found where a failure to identify a design characteristic caused a safety-related instrument to be incorrectly installed or calibrated. Instances were found where similar root causes and conditions resulted in safety-related component failures (e.g., LERs 88-037, 92-022, 92-027, and 94-003). However, the components and circumstances are generally unrelated, and none of the previous events involved instrumentation. Therefore, the corrective actions for these precursors would not have been expected to prevent this event.