Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

Docket No. 50-397

September 22, 1983 G02-83-859

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

Subject: NUCLEAR PROJECT NO. 2 REPORTABLE 10CFR50.55(e) CONDITION #240 LOSS OF ESF LOADS ON UNDER VOLTAGE TRIP

References: 1. Telecon dated February 28, 1983, 1983 (QA2-83-050), L.C. Floyd to D. Willet.

- Letter G02-83-253 dated March 24, 1983
 R.G. Matlock to R.H. Engelken.
- 3. Letter G02-83-573 dated June 24, 1983 C.S. Carlisle to J.B. Martin.

In accordance with the provisions of IOCFR50.55(e) your office was informed of the above reportable condition. The attachment provides the Project's final report on the above condition.

If you have any questions regarding this subject, please contact Roger Johnson, WNP-2 Project QA Manager, (509) 377-2501, ext. 2712.

IE-27

S. Carlisle Program Director, WNP-2

ecmm

Attachment

cc: Mr. W.S. Chin Mr. N.D. Lewis Document Control Desk, NRC

8309300063 830922 PDR ADOCK 05000397 S PDR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM NUCLEAR PROJECT NO. 2 DOCKET NO. 50-397 LICENSE NO. CPPR-93 10CFR50.55(e) CONDITION #240 LOSS OF ESF LOADS ON UNDERVOLTAGE TRIP

FINAL REPORT

Description of Deficiency

On a degraded voltage condition (87.5% of rated voltage) in the critical bus (SM7 or SM8) supplying ESF loads; the second level undervoltage relays are required to trip the source breaker (i.e., startup/normal or back-up source breaker) and initiate load shedding. The relays are self reset following closing of the alternate source breaker and the voltage on the critical bus returning to normal. However, the design incorporated a seal-in circuit for the 2nd level undervoltage relays requiring actuation of a manual switch to reset the relays following a degraded voltage condition. This resulted in the following:

- An unsuccessful "auto" transfer from the startup/normal source to back-up source, if the degraded voltage condition existed in the startup/normal source, and,
- ESF load breakers trip circuits being continuously energized until the relays are reset manually.

Safety Implication

The situation described above, had it been left uncorrected, would have caused division 1 and 2 ESF loads to be unavailable in the case of a degraded voltage condition (87.5% of rated voltage) on buses SM7 and SM8. This situation would have remained unless operator corrective actions were taken. Had the condition occurred within the first 10 minutes following a design basis event, when no operator action is assumed, the plant could not be brought to a safe shutdown condition. The condition is considered to be a reportable deficiency under the provisions of 10CFR50.55(e).

Cause of Deficiency

The condition is judged to have occurred as the result of a random engineering design error made in BRI PED-218-E-5180 (Sheets 17 and 18). This conclusion is supported by the results of the review of other safety-related switchgear control circuits.

Actions to Prevent Reoccurrence

The Project Design Control Procedure (WNP-2-017) was amended in August 1981 to provide documentary evidence of design verification on electrical Class IE design as it was issued. This should reduce the probability of such errors in the future.

Corrective Action

Project Engineering Directive (PED) 218-E-4618 has been issued to implement corrective action. The PED will effect the following changes:

- Delete seal-in circuit for 2nd level undervoltage relays.
- Provide a blocking circuit to prevent reclosing of the backup (115V) source breakers when the backup source is supplying the critical bus and an undervoltage condition exists in the backup source.

Upon implementation of PED 218-E-4618, the SM7 and SM8 second level undervoltage relays will function as described in Sections 8.3.1.1.1 and 8.3.1.2.4.3.2 of the FSAR. Installation of this change is in progress and will be complete prior to fuel load.

A review of high voltage switchgear and breaker control logic for safety-related systems has been conducted to ensure that similar design deficiencies do not exist. No similar seal-in circuits were found in any other safety-related switchgear control circuit.