

Washington Public Power Supply System

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Docket No. 50-397

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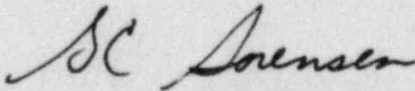
Mr. J.B. Martin, Regional Administrator
U.S. Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Subject: NUCLEAR PLANT NO. 2
LICENSE NO. NPF-21
NRC ENFORCEMENT ACTION EA 85-30

The Washington Public Power Supply System hereby replies to the Notice of Violation contained in your letter dated March 19, 1985. Our reply pursuant to the provisions of Section 2.201, Title 10 Code of Federal Regulations, consists of this letter and Appendix A (attached).

In Appendix A, an explanation of the violation is presented, the corrective steps taken with results achieved are outlined, and the date of full compliance is specified.

Should you have any questions concerning our response, please do not hesitate to contact me.



G.C. Sorensen
Manager, Regulatory Programs

GCS:mm
Attachment

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APPENDIX A

As a result of the inspection conducted during the period January 31 - February 15, 1985, and in accordance with the General Statement of Policy and Procedure for NRC Enforcement Actions, 10 CFR Part 2 Appendix C, as revised, 49 FR 8583 (March 8, 1984), the following violations were identified:

A. Notice of Violation

Technical Specification 3.8.1.1 requires three separate and independent diesel generators to be operable in operational conditions 1, 2 and 3. Action statement "f" states that with DG-1 and DG-2 inoperable, restore at least one of the inoperable diesel generators to operable status within 2 hours or be in at least hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.

Contrary to the above, during the period January 21 to 31, 1985, both diesel generators DG-1 and DG-2 were inoperable. The capability of the generators to automatically assume the essential load was defeated. The voltage regulator for each generator was set at about 3700 volts. The generator voltage must reach about 3910 volts to satisfy a permissive relay to allow closure of the generator output breaker and thus permit automatic loading of the electrical bus.

This is a Severity Level III Violation (Supplement I).

1. Validity of Violation

The Supply System concurs with the validity of this violation.

2. Reason for Violation

A loss of normal and preferred power occurred and the Division I and Division II Standby Diesel Generator sets received a start signal. Both diesels automatically started and accelerated to rated speed. During an inspection of the diesel generators, approximately one half hour following the scram, a Plant engineer observed Division I and Division II diesel generator (DG) output voltages of 3700-3800 VAC. Rated voltage is 4,160 VAC. Control room personnel were immediately notified of this discrepancy and the generators voltages were adjusted to normal values.

An investigation revealed that on January 21, 1985, the voltage adjusting motor operated potentiometers (MOP's) had been run to their lowest voltage setpoint. Following is a description of the actions leading to this event: On January 21, 1985, Plant operators noticed an illuminated voltage regulator limit indication for DG #1 in the control room. This limit light indicates that the MOP is at the high or low limit of its travel. No procedural guidance existed to direct operators on required followup actions. During an invest-

igation as to the cause of this indication, the DG #1 MOP was adjusted to its low limit point. During MOP operation, a shift electrician attempted to verify operation of the limit switches which provided the high/low limit signal. Upon examination of the MOP, it was discovered that the operating cam for these limit switches had slipped and was providing an erroneous signal. The DG #2 MOP was then operated and correct operation of its limit switches confirmed. It was determined that a Maintenance Work Request (MWR) would be required to adjust the DG #1 limit switches. It was felt that the cam adjustments did not affect MOP operability, and it was decided that the adjustment could be performed during the next planned maintenance outage. This decision process did not receive further management review. The MOP's for both DG #1 and DG #2 were left at their minimum voltage adjustment positions. It was erroneously believed that once the MOP control switch was released, the MOP would return to a position that provided normal voltage output for the DG's. The Division III High Pressure Core Spray DG is designed with this provision.

In summary, the MOP design allowed the potentiometers to be adjusted while the generator was not operating. The engineer responsible for the startup testing of these diesel generators did not provide input to the operating procedure concerning the voltage adjust high and low limit lights. The procedure did not contain a caution to Plant operators concerning the fact that voltage could be adjusted outside the range which was required for automatic breaker closure. Nor was a caution present to indicate that if the voltage regulator was adjusted, while the diesel generator was secured, the voltage would not return to a preset value upon starting. These precautions should have been included in the procedure. The absence of these precautions is considered a personnel error which resulted in deficient procedures.

The condition which made the Division 1 and Division 2 diesel generators inoperable for a ten day period was not readily apparent. The voltage regulator was set at approximately 3700 volts with no control room or local indication to specifically indicate this condition. This condition did not prevent the diesels from starting but would have prevented the diesel generator output breaker from automatically closing onto their respective buses. Had the condition existed requiring the diesels to provide power to their respective buses, the low voltage condition would then become apparent and corrective action would be taken. This is not to imply that technically the diesels were operative; but only to state a fact that the diesel generators were available to supply their emergency buses dependent upon operator action.

3. Corrective Steps Taken/Results Achieved

- a. Upon notification of the voltage conditions, the control room immediately adjusted the DG MOP's to obtain the correct voltage setpoint.

- b. The control circuitry for both Division I and Divisions II diesel generators has been modified to preclude MOP operation while the DG's are shutdown.
- c. The diesel generator abnormal, operating and surveillance procedures have been changed to include an additional statement which requires MOP adjustment to obtain rated voltage after the output breaker has been opened.
- d. Operator knowledge of certain aspects of the Standby DG operation was judged deficient and the training program and material were reviewed to identify specific corrective actions. As a result the current cycle of operator requalification training has been modified to include 1) a briefing by the Plant engineer detailing DG control circuit modifications to the MOP's 2) a formal session on Licensee Event Reports (LER's) related to the event. Additionally, a deficiency was discovered in the simulator modeling of the HPCS DG MOP circuit which will be corrected.
- e. The Non-Conformance Reports (NCR's), LER's, MWR's, Plant Modification Record (PMR) and NRC Notice of Violation Letter relating to Enforcement Action EA 85-30 have been placed in the required reading book for operations personnel.
- f. Between February 28, 1985 and March 15, 1985 the Operations Manager held the following staff meetings with Operations personnel:
 - 1) Crews B,C,E & F between February 28 and March 6, 1985 regarding NRC enforcement conference, LER 285-008 and further corrective action.
 - 2) Crews B & F on March 7, 1985, Crews A,C & D on March 12, 1985 and Crew E on March 15, 1985 regarding Management philosophy on DG issue. This reinforced the various administrative procedure mechanisms that identify Plant operating problems and which provide the necessary feedback to the Plant staff and Management for future review and followup action.

The results achieved:

In summary, positive corrective action has been implemented by way of required reading, staff meetings, training, design and procedural changes. The control circuit design change prevents the possibility of this event recurring by precluding changes to the voltage adjustment MOP while the DG units are shutdown. Operators are also procedurally required (by an additional statement in the procedure) to verify that correct voltage conditions exist prior to securing the units. This ensures the MOP adjustment will attain the correct voltage conditions on both manual and automatic DG starts.

4. Corrective Steps To Be Taken

Operator requalification training will continue thru the full cycle covering all crews. Additional modifications are being evaluated to provide slow start capability and an automatic reset feature for the MOP circuit.

5. Date When Full Compliance Will be Achieved

- a. Training cycle completion May 10, 1985.
- b. The evaluations to determine the design changes required to provide slow start and MOP automatic reset circuitry features will be completed at a later date and is not considered necessary for full compliance. It is mentioned only to point out that with the preplanned design change fully implemented, this event would not have occurred.

B. Notice of Violation

10 CFR Part 50, Appendix B, Criterion V requires, in part, that for safety related functions, activities affecting quality be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Technical Specification 6.8.1 requires, in part, that written procedures shall be established, implemented, and maintained covering the activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2. Regulatory Guide 1.33, Appendix A, part 4.w(2)(a), requires that instructions for energizing, startup, shutdown, and changing modes of operation be prepared for Emergency Power Sources.

Contrary to the above, on January 21, 1985, the diesel generator system operating procedure, surveillance procedures, and abnormal condition procedures did not contain instructions and acceptance criteria for control of the voltage regulators on emergency electrical system diesel generators DG-1 and DG-2 to ensure sufficient voltage to enable automatic connection to the vital buses. This contributed to the violation described in "A", above.

This is a Severity Level IV Violation (Supplement I).

1. Validity of Violation

It is agreed that the procedures contained no precautions on operation of the MOP's with the diesel generators in the shutdown mode and that this was a contributing factor to the violation described in "A".

2. Reason for Violation

The design of the MOP circuitry allowed the potentiometers to be adjusted while the generator was not operating. The engineer responsible for the startup testing of these diesel generators did not provide input to the operating procedures concerning the voltage adjust high and low limit lights. However, the testing performed did verify generator operability per the designed configuration. The procedure did not contain a caution to Plant operators concerning the fact that voltage could be adjusted outside the range which was required for automatic breaker closure. Nor was a caution present to indicate that if the voltage regulator was adjusted, while the diesel generator was secured, the voltage would not return to a preset value upon starting. The absence of these precautions is considered a personnel error which resulted in deficient procedures and this violation.

However, the operating and surveillance procedures cover instructions to the above stated requirements which include setting the voltage regulators when securing the units. Specifically, each procedure includes instructions to reduce the generator output to 200 KW and "0" KVAR. This effectively sets the generator voltage equal to line voltage and procedurally established the required condition prior to securing the unit. The referenced voltage in the procedures, 4160 ± 420 VAC, was in agreement with Technical Specifications, but is inconsistent with the output breaker automatic closure permissive circuit setpoint voltage, thus potentially allowing a voltage below the point which enables automatic connection to the vital bus. The procedures did not address the aspect of MOP operation while shutdown.

3. Corretive Steps Taken/Results Achieved

- a. The diesel generator abnormal, operating and surveillance procedures have been changed to include an additional statement which requires the MOP to be adjusted to obtain rated generator voltage after the output breaker has been opened. The operating and surveillance procedures were included on the required reading for all operators.

The Results Achieved:

In summary, positive corrective action has been implemented by way of procedural changes and required reading. Operators are procedurally required (by an additional statement in the procedure) to verify that correct voltage conditions exist prior to securing the units. Also, the actions detailed in the response to Violation A ensure that the MOP adjustment will support attaining correct voltage conditions on both manual and automatic DG starts.

4. Corrective Steps To Be Taken

- a) A Technical Specification change request has been initiated for submittal to the NRC which makes the allowable DG voltage band consistent with the output breaker closure permissive setpoint.
- b) The existing design for the amber warning lights used to indicate the voltage regulator position at the upper or lower limits of MOP travel, which exceed the operability range is being evaluated by the Nuclear Safety Assurance Group (NSAG). The issues of whether these lights should be retained, and, if retained, whether annunciator response procedures are required will be addressed.

5. Dates When Full Compliance Will be Achieved

- a) Procedural changes were completed on February 27, 1985.
- b) The NSAG evaluation will be completed by May 15, 1985.
- c) The Technical Specification change request will be submitted by May 23, 1985.

C. Notice of Violation

Technical Specification 6.8.1 requires that written procedures shall be established, implemented and maintained covering the activities referenced in Appendix A or Regulatory Guide 1.33, Revision 2. Regulatory Guide 1.33, Appendix A, part 1.h requires administrative procedures to address "Log entries." The WPPSS WNP-2 plant procedure 1.3.4, Revision 6, requires that the control Room Log include timed entries for "b". Status changes in equipment, components, or structures that affect plant operation. Also, plant procedure 1.3.5, Revision 3, requires that operations staff record abnormal plant behavior, including "Upon a turbine trip/generator load rejection ascertain that . . . the electrical distribution system realigns properly."

Contrary to the above, the control room operators failed to enter relevant key information into either the Control Room Log or the Reactor Trip Record (No. 285-040). Specifically, on January 31, 1985, a reactor operator became aware, subsequent to a generator trip and diesel generator automatic start, of the unacceptable voltage output of the diesel generators DG-1 and DG-2. Although he took immediate corrective action, he made no log or reactor trip record entries regarding the identified condition.

This is a Severity Level IV Violation (Supplement I).

1. Validity of Violation

The Supply System concurs with the validity of this violation.

2. Reason for Violation

The unacceptable voltage output from DG's 1 and 2 was not immediately recognized or brought to the attention of the control room operator as abnormal plant behavior (i.e., precluding automatic DG output breaker closure). This oversight is the direct cause of the violation.

The control room operator did check the electrical distribution system realignment after the turbine generator trip. It was determined to be properly aligned for a loss of the startup transformer with the back-up transformer supplying the vital buses as designed. The diesel generators were running but not required to be closed in on the vital buses, therefore the undervoltage condition on DG's 1 and 2 went unnoticed from the control room. The Plant engineer at the DG local control panel noticed the low voltage condition and notified the control room operator (CRO). It was not brought to the attention of the CRO that this condition inhibited automatic closure of the DG output breakers nor did the CRO recognize this at the time. Therefore a judgement error was made and no entry was made into the CRO log or reactor trip records.

3. Corrective Steps Which Have Been Taken

- a. The Operations Department Manager has reinforced, to Operations personnel, via a memorandum dated March 5, 1985, the need to identify abnormal plant conditions. This was included as required reading for all Plant Operators.
- b. Between February 28, 1985 and March 15, 1985 the Operations Manager held the following staff meetings with Operations personnel:
 - 1) Crews B,C,E & F between February 28 and March 6, 1985 regarding NRC enforcement conference, which included a discussion on improving operating logs.
 - 2) Crews B & F on March 7, 1985, Crews A,C & D on March 12, 1985 and Crew E on March 15, 1985 regarding Management philosophy on the DG issue. Emphasis on the completion of the post trip review via PPM 1.3.5 was discussed during these staff meetings.
- c. Control room panel meter green bands for DG voltage and frequency have been modified to indicate acceptable voltage ranges. This will facilitate earlier identification of incorrect voltage levels.
- d. Shift Engineers normally assist Operations in preparing the Reactor Trip Record. The need for improved performance in this area was stressed by the Plant Engineering Supervisor, Reactor Systems, at a weekly staff meeting with the Shift Engineers.
- e. Previously much of the data required to complete this record was time consuming to obtain. Since this event, the data acquisition process has been streamlined such that a process which used to require 4-5 hours now requires approximately 15 minutes. An automated special information retrieval program for the Transient Data Acquisition System (TDAS) has been developed and implemented which provides Operations and Shift Engineers with Plant operation data for the Reactor Trip Record after a minimal effort. This enables the Shift Engineer to become more involved in assisting Operations personnel in identifying and assessing abnormal conditions (refer to Violation D, response 3).

The Results Achieved:

In summary, positive corrective action has been implemented by way of required reading, staff meetings, training and the use of an automated scram report data retrieval system.

4. Corrective Steps To Be Taken

A detailed review of the effectiveness of the post trip evaluation process (i.e., PPM 1.3.5, Reactor Trip and Recovery) will be performed by the Technical Staff and Nuclear Safety Assurance Group. The revision will provide for a post scram participants review session and concentrate on general procedure improvements.

5. Date When Full Compliance Will be Achieved

- a) With the exception of the PPM 1.3.5 review and revision, full compliance was achieved by March 15, 1985.
- b) The PPM 1.3.5 review and revision will be completed prior to Plant startup following our May-June 1985 outage.

D. Notice of Violation

10 CFR 50.72(b)(1)(iv) requires that the licensee notify the NRC Operations Center within one hour of any event that results or should have resulted in Emergency Core Cooling System discharge into the reactor coolant system.

10 CFR 50.72(b)(2) requires that the licensee notify the NRC Operations Center within four hours of certain events, including (i) any event, found while the reactor is shut down, that, had it been found while the reactor was in operation, would have resulted in the nuclear power plant, including its principal safety barriers, being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety, or (ii) any event or condition that results in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS).

Contrary to these requirements:

1. More than one hour elapsed on January 31, 1985, before the licensee notified the NRC Operations Center that the High Pressure Core Spray System (an ECCS system) had actuated and discharged coolant into the WNP-2 reactor vessel. This actuation occurred at 7:57 a.m. PST on January 31, 1985, and the licensee notified the NRC Operations Center at 10:07 a.m. PST.
2. More than four hours elapsed on January 31, 1985 and February 1, 1985, after diesel generators DG-1 and DG-2 were found to be inoperable before the licensee reported this event to the NRC Operations Center. Diesel Generators DG-1 and DG-2 were found to be inoperable at about 8:00 a.m. PST on January 31, 1985. The licensee notified the NRC of this event at 5:07 p.m. PST on February 1, 1985.
3. More than four hours elapsed on February 14, 1985, before the licensee notified the NRC Operations Center that an automatic actuation of the Reactor Protection System had occurred. This actuation occurred (while the reactor was shut down) at 4:20 a.m. PST, and the licensee notified the NRC Operations Center at 8:35 a.m. PST.

These are Severity Level IV Violations (Supplement I).

1. Validity of Violation

This violation addresses three separate events. The Supply System agrees with violations for the first and third events as stated.

However, the Plant had not analyzed the second event as preventing automatic DG breaker closure until the afternoon of February 1, 1985. Upon completing this analysis, the event was reported within the four hour time limit to the NRC. The incident was therefore reported within the time limit, after the analysis of the event determined it to be reportable, and the action taken is interpreted to be in compliance with the reporting requirements.

2. Reason For Violations

The first event can be attributed in part to the reactor scram, isolations and electrical problems encountered during the event on January 31, 1985. The Shift Manager's attention to the reactor scram recovery and restoration of plant electrical distribution system was a contributing factor. The scram event was known to be in the 4 hour reportable category, however after the first hour had passed a review determined that the HPCS injection was a one hour reportable category.

The second event as stated was not analyzed as preventing automatic DG breaker closure until the afternoon of February 1, 1985. This report was thought to be within the reporting requirement based upon the time at which the event was declared reportable.

The third event on February 14, 1985, was an automatic actuation of the RPS while the reactor was shutdown. Initially the event was mistakenly determined to be a planned evolution during APRM surveillance testing and consequently not reported at that time.

3. Corrective Steps Taken/Results Achieved

The Operations Manager has reinforced, to operations personnel, via a memorandum dated March 5, 1985, the need to perform reportability assessment and implement the NRC notification within the required time frame. This has been achieved by initially considering each event as requiring a one hour report and requesting assessment from the Shift Engineer during the first 1/2 hour, while the operating crew's attention may be directed towards stabilizing plant conditions.

The Results Achieved:

All reportable events have been reported in the proper time frame since the date of the violation.

4. Corrective Steps To Be Taken

Not applicable

5. Date When Full Compliance Will be Achieved

Full compliance was achieved on March 5, 1985.

GENERAL DISCUSSION

The Plant's first line of defense during abnormal situations is with the on-duty Operations personnel. Plant management has supported a professional environment which emphasizes a team concept that supports Operations. Efforts will be continued in this area with emphasis placed on improving the process by:

- 1) improving the problem identification process,
- 2) improving communications between different groups of the Plant staff,
- 3) maintaining an active management involvement in Plant operations, and
- 4) continuing Plant operations with an overall attempt at improving performance in all areas.

Our perception is that once problem areas have been identified, the resolution effort and timeliness of the correction exemplify the characteristics required in a competent staff. The efforts outlined in this response are aimed at not only maintaining this level of proficiency, but at improving our performance. This effort will build on identified strengths, resolve areas of weakness, complete the transition to a mature operating organization and improve our working relationship with regulatory agencies.