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402/636-2000

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LIC-95-0224

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-137
Washington, DC 20555

References: 1. Docket No. 50-285
2. Letter from OPPD (T. L. Patterson) to NRC (Document Control Desk) dated October 2, 1995 (LIC-95-0191)
3. Letter from NRC (J. E. Dyer) to OPPD (T. L. Patterson) dated November 6, 1995
4. Letter from OPPD (T. L. Patterson) to NRC (Document Control Desk) dated November 30, 1995 (LIC-95-0221)

SUBJECT: NRC Inspection Report No. 50-285/95-17, Reply to a Notice of Violation

The subject report transmitted a Notice of Violation (NOV) resulting from an NRC inspection conducted August 13 through September 23, 1995 at the Fort Calhoun Station. Attached is the Omaha Public Power District (OPPD) response to this NOV.

If you should have any questions, please contact me.

Sincerely,

T. L. Patterson
Division Manager
Nuclear Operations Division

TLP/epm

Attachment

c: Winston and Strawn
L. J. Callan, NRC Regional Administrator, Region IV
L. R. Wharton, NRC Project Manager
W. C. Walker, NRC Senior Resident Inspector

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REPLY TO A NOTICE OF VIOLATION

Omaha Public Power District **Docket: 50-285**
Fort Calhoun Station **License: DPR-40**

During an NRC inspection conducted on September 5-12 and October 10-19, 1995, two violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions" (60 FR 34381; June 30, 1995), the violations are listed below:

A. Regulatory Guide 1.33, Appendix A, Section 8.b, states, in part, that surveillance tests listed in the Technical Specifications should be covered by written procedures.

Surveillance Test Procedure OP-ST-DG-0001, "Diesel Generator 1 Check," Revision 12, Attachment 6, Section 39, requires the operator to place and hold Diesel Generator DI Governor Switch CS-65/D1 (CB 20) in the LOWER position for at least 15 seconds.

Contrary to the above, on August 16, 1995, the licensed operator performing the test inadvertently manipulated the voltage regulator switch instead of the governor switch, which resulted in Emergency Diesel Generator 1 starting in an abnormal condition.

This is a Severity Level IV violation (285/9517-01) (Supplement I).

OPPD Response

A. The Reason for the Violation

Fort Calhoun Station was operating at 100% power on August 24, 1995, when the reactor tripped. The reactor trip is detailed in LER 95-005. On a reactor trip, DG-1 and DG-2 both receive an auto-start signal to start the engines and accelerate them to idle speed. Both diesel generators started as designed, however, DG-1 accelerated to full speed. After recovery actions were completed, the control room operators performed a normal shutdown of DG-1.

For a detailed description of the event please refer to Reference 4.

The causes of the procedural violation were identified as 1) the wrong switch was manipulated by the operator, 2) the inability to detect DG governor position by the operator, 3) inadequate administrative controls, and 4) a failure to add governor position indication, as requested by the PRC in April of 1995, in a timely fashion.

The PRC was first made aware of the potential for a diesel generator to re-energize 480 VAC loads prior to 480 VAC load center load shed in April of 1995. In that incident, which occurred on March 27, 1995, DG-2 was given an idle speed auto-start signal during Engineered Safeguards surveillance testing. Instead of accelerating to idle speed, DG-2 accelerated to 800 rpm. When an OPLS signal was manually initiated with DG-2 at near rated speed and voltage, the diesel generator output breaker closed so quickly, that there was insufficient time for the 480 VAC load center load shed to occur. Design Engineering presented the same conclusion that the loading of normally sequenced Engineered Safeguards and non-safety related loads and dead loads is considered to be an unanalyzed condition for plant operation. The PRC concluded that since this event resulted from a refueling functional test, and would not be expected to occur at power because of procedural controls already in place, that the event did not meet any of the reporting criteria of 10 CFR 50.72 or 10 CFR 50.73. System Engineering was tasked with placing this administrative control (i.e., running the diesel governor to its low speed stop after the completion of any test) in procedures involving diesel generator starts or governor manipulation and presenting the resolution to the PRC when completed. All the applicable procedures were reviewed and the only one that required revision was the procedure used during the outage test.

The PRC questioned the adequacy of the administrative control in June of 1995 when System Engineering informed the PRC that the requirement to hold the governor in the "LOWER" position for at least 15 seconds had been incorporated into the appropriate procedures. The PRC was informed of the possibility that the governor could inadvertently be left in the full speed position by missing a procedure step, but, it was noted by PRC members that a number of other controls related to safety are implemented procedurally.

The desire for a governor position supervisory circuit was first identified in April of 1995, by PRC review of the March 1995 incident. Design Engineering was tasked to evaluate the feasibility of the circuit. The evaluation results were provided to PRC on September 7, 1995. It indicated the feasibility of providing indication and recommended issuing a modification request to install the supervisory circuit.

The original plant design required that the diesel generators start and be ready for automatic loading within 10 seconds, in the event of a DBA coincident with a LOOP. From an original architect engineer document, the diesel generator starts at time 0.0, receives a full speed signal at 2.5 seconds (undervoltage relay actuation plus 0.5 seconds for bus voltage decay) into the event and is ready-to-load at 9.5 seconds into the event. The possible effects of malfunctions of other equipment, like diesel generator full speed operation without sufficient 480 VAC load

shed time, during the automatic operations sequence were not discussed in the document.

Records of discussions between the architect engineer and the diesel generator vendor, suggest that the possibility of governor misposition was considered in the original design. At that time it appears that it was deemed acceptable to allow an operator to run the governor back. The same document noted that the governor should be run back to idle after engine shutdown. A detailed discussion of how critical these actions were to proper operation was not provided.

B. Corrective Steps Which Have Been Taken and the Results Achieved

Included in Reference 4 are the following corrective actions which have been taken (the numbers indicated are the same as they were used in Reference 4). These actions are quoted below.

"2. Operators are now required to use independent verification that the diesel governor has been run back when a Diesel Generator (DG) is shut down. This guidance has been incorporated into all applicable procedures.

3. A review of the DG operating and testing procedures has been conducted to ensure that the operability of the DG is adequately addressed.

6. Training documents have been reviewed to assure that an accurate, detailed discussion of DG idle speed start requirements exist. Training on this material has been provided to all licensed and nonlicensed operators."

C. Corrective Steps Which Will be Taken to Avoid Further Violations

Reference 4 also included the following corrective actions which will be taken to avoid this type of event in the future (the numbers indicated are the same as they were used in Reference 4). These actions are quoted below.

"1. Modification request 95-15 was submitted to provide positive governor position indication to the operators. The modification will be installed by December 31, 1995.

4. Engineering Assistance Request EAR 95-117 is evaluating the feasibility of replacing the control switches that are being used on the diesel generator voltage regulator and governor control switches with distinctly different styles. This evaluation will be completed by December 31, 1995.

5. The design basis documents will be updated by December 31, 1995, to provide a detailed discussion of the idle speed start affects on diesel generator operation.

7. All licensed and non-licensed operators will receive training on the importance of self-checking and peer-verification. This training will be completed by February 29, 1996.

8. A best estimate analysis of the DG loading capability has been completed. The effect of this analysis on the safe operation of the plant has been evaluated and incorporated into revision 1 to LER 95-006. The PRA oversight committee met to further discuss possible generic implications of this event. Although no specific problems were identified based on a preliminary review, a more systematic study was recommended. OPPD's Nuclear Safety Review Group (NSRG) will perform a study to identify other equipment with similar susceptibilities. This NSRG study and subsequent PRA Oversight Committee review will be completed by August 31, 1996."

After the modification to install the diesel generator governor position indication is complete (item "1" above and in reference 4), OPPD will no longer use an independent operator to verify the position of the governor speed control (item "2" above and in reference 4). This control will be treated in a fashion similar to any other critical control in the Control Room.

D. Date When Full Compliance Will Be Achieved

OPPD is currently in full compliance.

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B. 10 CFR Part 50, Criterion XVI, Appendix B, states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, corrective action taken after the March 27, 1995, discovery that the Emergency Diesel Generator 2 governor was not in its normal idle speed setting, due to a procedural inadequacy, was not completed in a timely manner to prevent a similar event recurring on August 24.

This is a Severity Level IV violation (285/9517-02) (Supplement I).

OPPD Response

A. The Reason for the Violation

While the Plant Review Committee (PRC) understood that failing to run the diesel generator governor to its lower position placed the plant in an unanalyzed condition if it occurred during power operation, it was determined that the existing procedural requirements would prevent this event from occurring at power. This determination was based upon the understanding that all of the procedures that operate the diesel generator while the plant is at power adequately cover the type of event that occurred on March 27, 1995, and that it had not been identified as a problem previously. Therefore, the time frame for the further corrective actions (such as governor position indication) was determined by PRC to be acceptable.

On March 27, 1995 the diesel generator governor was not placed in its lower position. This is a procedural requirement in all the other diesel generator surveillance tests, however, in this case the procedure had undergone a revision that had neglected to include this step. More specifically, the procedure that governs performance of OP-ST-ESF-0006 "Engineered Safety Features Offsite Power Low Signal (OPLS) Functional Test" was changed to direct performance of a new test OP-FT-DG-0001 "183 Master Electrical Switch (183/MS) Functional Test" and upon completion to return to OP-ST-ESF-0006. The new procedure, OP-ST-DG-0001, did not

include the steps to ensure the governor was placed in its lower position.

The Plant Review Committee (PRC), while reviewing the incident, discussed the lack of position indication for the diesel governor speed control in the control room. At this time the PRC requested an evaluation to assess the need for a supervisory circuit for the diesel governor speed control. A review of all remaining diesel generator operating and surveillance test procedures noted that the proper steps were included to ensure that the governor was run to its lower stop at the conclusion of testing. Following a plant refueling outage, the diesel generators are tested prior to plant startup. The PRC concluded, at that time, that appropriate corrective actions had been taken after the first event. Thus, it was concluded that this incident would not occur at power due to the administrative controls already present and past experience of proper diesel performance.

On August 24, 1995, following performance of a previous surveillance test, it was discovered that the governor for Diesel Generator # 2 was not properly rundown. Although procedural steps were included for running down the governor, it was later determined that the wrong switch had been manipulated by the control room operator. The wrong switch is in close proximity of the governor control switch. Thus, there were two separate event causes with similar results.

In reviewing these two events, management has concluded that the PRC could have taken additional actions following the March 27 event to strengthen the administrative and procedural controls that were already in place concerning the operation of the diesel governor control switch. It has since been determined that the only barrier to placing the diesel generator in the unanalyzed condition it experienced during the eight days preceding the August twenty-fourth event was a single operator, without any indication to confirm that a critical operation in an evolution had been performed correctly. Analyses that has been performed since the August event have determined that the diesel is able to function in the condition that existed during the eight days prior to the diesel start on August twenty-fourth.

For a detailed description of the event please refer to Reference 4.

B. Corrective Steps Which Have Been Taken and the Results Achieved

A PRC meeting was held by the Plant Manager and available PRC members to discuss this event.

C. Corrective Steps Which Will be Taken to Avoid Further Violations

The following corrective actions will be taken:

Training, using a case study, will be conducted for all PRC members and their alternates no later than February 29, 1996 to discuss this incident and its causes. The following items will be addressed in the study:

- The PRC's responsibility for taking timely and conservative corrective actions to ensure nuclear safety margins are maintained.

- Over-reliance on past experience or favorite indications during decision making processes.

This case study will be included in initial training for all new PRC members.

D. Date When Full Compliance Will Be Achieved

OPPD is currently in full compliance.