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ACCESSION NBR: 9001290138      DOC. DATE: 90/01/17      NOTARIZED: NO      DOCKET #  
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SUBJECT: Responds to violations noted in Insp Rept 50-261/89-23.

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JAN. 17 1990

Robinson File No: 13510C

Serial: RNP/90-0232

United States Nuclear Regulatory Commission  
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NRC INSPECTION REPORT 50-261/89-23: REPLY TO NOTICE OF VIOLATION

Gentlemen:

Carolina Power and Light Company (CP&L) provides this response to the Notice of Violation identified by NRC Inspection Report No. 50-261/89-23.

Severity Level IV Violation (RII-89-23-04-S14)

- A. 10CFR50 Appendix B, Criterion III, requires measures to be established for the selection and review for suitability of processes that are essential to the safety-related functions of systems. Modification Test Procedure, M-1018, Field Revision 19, AT-2, and welding processes associated with modification M-960 are processes essential to the functions of the auxiliary feedwater (AFW) and service water systems, respectively.

Contrary to the above, measures were not adequately established for the review of suitability of processes in that:

- 1) Test procedure AT-2 of field revision 19 of M-1018 did not apply Bernoulli's equation correctly in the establishment of a comparison of field data to an analytic model. This had the potential to incorrectly validate an analytic mode which was being used to determine operability of the AFW system.
- 2) Modification M-960 did not adequately consider the impact of welding performed on service water piping. This resulted in chunks of the coal tar lining plugging tubes in the containment fan coolers.

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Reply

1. Admission or Denial of the Violation

CP&L acknowledges the violation.

2. Reason for the Violation

The cause for each of the examples cited in the Notice of Violation is attributed to failure to perform an adequate design review of the technical information applicable to the work to ensure suitability of processes. Each example is individually addressed as follows:

- 1) Test procedure AT-2 for field revision 19 of Modification M-1018 was prepared in a format which would allow the recording and analysis of field data in successive steps of the procedure to determine the acceptability of the analytical model for the motor driven auxiliary feedwater pumps suction piping. The recording of field data and analysis was to be performed under many flow conditions (i.e., 100 gpm, 200 gpm, design flow, etc.) and required a substantial number of pipe line pressure drop calculations. These calculations required the application of Bernoulli's equation. In the format of AT-2, the equation was listed once, and then a tabular matrix was provided for its use. In preparing AT-2 for this application, the design engineer inadvertently omitted the elevation head and velocity change head terms from the equation and application matrix when total pressure drop between the test points was being summarized.
- 2) Modification M-960 required the welding of attachments to the exterior of service water piping lined with coal tar enamel. An evaluation was performed to establish proper welding procedures for this configuration, and it was determined that damage to the lining would be minimized by keeping weld heat input as low as possible in conjunction with the heat dissipation capability of the pipe material and water in the piping. In addition, material samples were taken at each weld location to determine the carbon content of the piping to assure that the weld process to be used was suitable for the piping. Based on analysis of these samples, it was determined that pipe preheat was required to produce sound welds. However, during welding preparation, it was discovered that the weld preheat could not be obtained with the pipe full of water. This issue was discussed by the design personnel familiar with the welding requirements, and it was decided that the only way to obtain the proper preheat would be to weld the pipe empty. It was the engineers professional judgement that, without proper preheat, the consequences of unsound welds would be difficult to detect and possibly result in damage to the piping. However, in evaluating the importance of proper preheat, the potential

for liner damage and its impact on the system was not felt to be severe enough to warrant inspection and flushing following welding. The on-going monthly pressure differential measurements on HVH-4 would identify accumulation of liner debris if it existed. It was then decided that welding with the pipe empty could be allowed.

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

- 1) The acceptance test procedure for M-1018 was revised by Field Revision 22 to correct the noted deficiencies, and the modified piping was demonstrated by test to satisfy the design requirements. Further, the revised test procedure was reviewed by personnel independent of M-1018 to assure that it was correct.
- 2) The welding performed under M-960 ultimately resulted in chunks of the coal tar pipe lining plugging tubes in the Containment Fan Coolers. This was discovered when increasing pressure drops across HVH-4 cooling unit were found. Upon pipe inspection, liner damage was found adjacent to the weld locations, resulting from the welding and preheating processes. The loose and damaged material was removed by scraping where possible, and a complete flush of the service water system. Subsequent monitoring of the system has been performed, and no increase in pressure drop has been seen to date. CP&L intends to replace the piping which contains coal tar lining during the upcoming refueling outage scheduled for the fall of 1990.

4. Corrective Steps Which Will Be Taken to Avoid Further Violations

- 1) Nuclear Engineering Department Design Deficiency Report 89-45 has been issued and discussed with appropriate individuals involved in design activities on M-1018, and the importance of thorough and correct design work has been stressed.
- 2) Design Deficiency Report 90-06 has been written and is being reviewed with appropriate Engineering personnel involved with the design work of M-960. This serves to caution design engineers of the potential problems associated with pipe liner damage, and includes information for avoiding such problems.

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved with the actions stated above. No further corrective action is necessary.

Severity Level IV Violation (RII-89-23-06-SI4)

- B. 10CFR50 Appendix B Criterion V requires activities affecting quality to be prescribed by documented instructions and procedures appropriate to the circumstances and shall be accomplished in accordance with these instructions or procedures. Installation of safety-related environmentally qualified transmitter FT-494 per procedure CM-310, revision 1, and installation of FT-474, 475, 484, 485, 494, and 495 instrument manifold valves per WR/JO 89-AKKF1 and 89-AKKZ1 are activities affecting quality.

Contrary to the above, activities affecting quality were not adequately prescribed and accomplished in accordance with instructions and procedures appropriate to the circumstances in that:

- 1) Transmitter FT-494 was installed using a thread lubricant instead of a thread sealant as required by step 7.16 of CM-310.
- 2) WR/JO 89-AKKF1 and 89-AKKZ1 did not provide instructions appropriate to the circumstances in that transmitter manifold valves associated with FT-474, 475, 484, 485, 494, and 495 were installed in a configuration other than originally designed, or otherwise specified.

Reply

1. Admission of Denial of the Violation

CP&L acknowledges the violation and provides response to each of the specific examples cited.

2. Reason for the Violation

- 1) The cause of the improper use of thread lubricant instead of sealant as required by CM-310 is attributed to an inadequate review of the Corrective Maintenance procedure by the Maintenance Planner and an inadequate review of the work package by the individuals conducting the work activities.
- 2) Work Requests WR/JO 89-AKKF1 and 89-AKKZ1 cited in this example of the Notice of Violation as not providing instructions appropriate to the circumstances involved are not the documents that authorized the work in 1988. These are the work requests that were written on November 10 and 11, 1989, to inspect and secure the manifold valves that were not installed as originally designed. The Work Requests which did replace

the transmitter manifold valves in 1988 were reviewed; however, no specific instructions for mounting the new valves were provided in that work of this nature is considered to be skill of the craft. Therefore, the cause of this condition is attributed to failure of the craftsman to complete the assigned work.

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

- 1) With regard to the installation of transmitter FT-494, pressure testing for leakage has been conducted on the Patel conduit seals. FT-494 was the only transmitter that exhibited excessive leakage. WR/JO 89-AKHC1 corrected this problem.
- 2) The specific instrument manifold valves identified during the inspection to be improperly mounted have been checked and repaired as necessary to return them to their original configuration.

4. Corrective Steps Which Will Be Taken to Avoid Further Violations

- 1) Based on review of the Work Request that installed the instrument found to have seal leakage and pressure testing of the other Patel seal applications, it was determined that this is an isolated case. Therefore, no additional corrective action is necessary.
- 2) Regarding the improper installation of the instrument manifold valves, a review of Inspection Report 89-23 and this response will be conducted by Maintenance management with planning and craft personnel. The necessity for proper work planning, closeout, and adequacy of documentation of work performed will be emphasized.

5. Date When Full Compliance Will Be Achieved

The actions stated above will be completed by June 30, 1990.

Severity Level V Violation (RII-89-23-07-SL5)

- C. 10CFR50.72(b)(2)(i) and (iii) requires the licensee to notify the NRC within four hours of any event found while the reactor is shutdown, that if found while operating, would have resulted in the nuclear power plant being in an unanalyzed condition that significantly compromises plant safety and of any condition that alone could have prevented the fulfillment of the safety function of systems that are needed to mitigate the consequences of an accident.

Contrary to the above, the NRC was not notified within four hours in that:

- 1) The potential for AFW flow rates exceeding the analyzed assumptions for the main steam line break was discussed during a plant nuclear safety committee meeting on August 18, 1989, but was not reported to the NRC until October 6, 1989.
- 2) Unqualified Patel conduit seal configurations were identified on November 4, 1989, on both trains of the cold leg accumulator level instrumentation, but was not reported until 9:43 a.m. on November 6, 1989.

Reply

1. Admission or Denial of the Violation

CP&L acknowledges the violation, however, takes exception to the first example cited. Each example will be specifically addressed in this reply.

2. Reason for the Violation

CP&L's Nuclear Engineering Department (NED) has established administrative controls for reporting design deficiencies to the site for reportability consideration. It was recognized that these controls would be necessary to establish proper channels of communication for the disposition of deficiencies identified by the Design Basis Reconstitution effort. This process was utilized for reporting the AFW NPSH concern on August 16, 1989.

- 1) With regard to the first example of the violation, the Plant Nuclear Safety Committee convened on August 18, 1989, to review the AFW NPSH issues and to review options for possible corrective action. NED had not at that time identified and finalized for the site a Design Deficiency regarding the failure of the AFW Flow Control Valve FCV-1416 for reportability evaluation. Using the guidance provided by NUREG 1022, Supplement 1, that "the event date is the discovery date if the event date is not clearly defined," CP&L believes that the reportability of this condition was appropriately determined in accordance with established procedures, and that appropriate actions were taken on October 6, 1989, for notifying the NRC in accordance with the requirements of 10CFR50.72.
- 2) Regarding the second example of the violation cited, the EQ Engineer became aware of the extent of the problem on the afternoon of Friday, November 3, 1989. This was the same individual who was expending efforts to resolve the problem and failed to place sufficient emphasis on reportability of the condition at that time. On the morning of November 6, the Regulatory Compliance Unit was informed of the extent

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of the condition, and a subsequent NRC notification was made. Therefore, the cause of this violation is attributed to the failure of engineering personnel to recognize that the extent of the problem could constitute a reportable condition.

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

As a result of this issue, RNP Management has reiterated the importance of reportability determinations and increased site awareness of the importance of communication of significant conditions to appropriate organizations for reportability evaluation. In addition, the Operations Unit has published and implemented interim guidelines for operability determinations when the operability of a component or system is questioned. This guidance includes prompt involvement of the Regulatory Compliance Unit. Structured and timely operability information is a critical input to reportability determinations. Therefore, the enhancements in operability determinations will enhance reportability decisions. In its initial applications, this has been shown to be the case.

4. Corrective Steps Which Will Be Taken to Avoid Further Violations

The Operability Determination interim guidelines will remain in effect until the 1990 Refueling Outage. At that time, they will be reviewed and lessons learned will be evaluated, and a formal proceduralized process will be implemented.

5. Date When Full Compliance Will Be Achieved

A procedure to administer Operability Determinations will be approved prior to startup from the 1990 Refueling Outage, currently scheduled for the fall of 1990.

If you have any questions regarding this information, please contact Mr. J. D. Kloosterman at 383-1491.

Very truly yours,



Charles R. Dietz

Manager

Robinson Nuclear Project Department

RDC:jch

cc: S. D. Ebnetter  
L. W. Garner  
INPO