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SUBJECT: Responds to NRC ltr re violations noted in insp rept 50-261/  
 92-11. Corrective actions: issuance of Hot work permits,  
 operations personnel will be trained & procedure changes  
 would impact mod on all modes of sys operations.

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
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NRC INSPECTION REPORT NO. 50-261/92-11: REPLY TO A NOTICE OF VIOLATION

Gentlemen:

Carolina Power and Light Company (CP&L) hereby provides this reply to the Notice of Violation provided within NRC Inspection Report No. 50-261/92-11. This Inspection Report described three occurrences which were identified as violations of NRC requirements.

Enclosure 1 provides a description of each occurrence, the causal factors and root causes identified for each, and a discussion of the corrective actions taken and planned to address each occurrence.

Should you have any questions regarding this matter, please contact Mr. James L. Harrison at (803) 383-1433.

Very truly yours,

C. R. Dietz  
Vice President

Robinson Nuclear Project Department

CTB:lkg

Enclosure

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REPLY TO A NOTICE OF VIOLATION

RII-92-11-01-SL4, "Failure to Implement FP-005 Resulted in Alert Declaration"

Technical Specification 6.5.1.1.1.f requires Fire Protection Program procedures to be implemented. Fire Protection procedure FP-005, Attachment 7.1, Section III, requires fire suppression systems be inhibited, if necessary, prior to performing hot work activities.

Contrary to the above, on April 15, 1992, Fire Protection Program procedure FP-005 was not implemented in that the north cable vault fire suppression system was not inhibited as specified on Attachment 7.1, Section III, prior to hot work authorization. This resulted in actuation of the north cable vault carbon dioxide fire suppression system.

This is a Severity Level IV violation.

Reply

1. Reason for the Violation

The primary reason for the unplanned actuation of the carbon dioxide (CO<sub>2</sub>) suppression system was the failure to correctly follow procedural requirements. More specifically, the requirements of FP-005, "Hot Work Permits," were not correctly followed due to an informal and commonly used method of issuing Hot Work Permits during Cold Shutdown conditions. This method consisted of completing the permit signoffs which authorize the hot work, but informally reaching an agreement with the craft personnel to notify the Fire Protection (FP) Technical Aide prior to starting the hot work. When this notification was made, special actions, such as inhibiting a fire suppression system, would then be completed.

This practice became accepted over time since it allowed FP personnel to minimize the amount of time that a suppression system was inhibited, and therefore unavailable to protect equipment and personnel in the affected work area. This practice was typically used when hot work had been temporarily suspended but was to resume later in the shift (for lunch breaks, etc.), thereby providing for the reinstatement of the suppression or protection system without having to cancel the existing Hot Work Permit and reissue another permit when work was ready to resume. Also, craft personnel had routinely been allowed to begin setting up equipment for work covered by the permit prior to inhibiting the suppression system, thus maximizing the availability of the suppression or protection feature. Over time, this arrangement was also identified as a method to prevent the craft personnel from having to wait for the permit's approval signature following completion of any required special actions.

However, and as demonstrated by this occurrence, this method relied upon informal communications between the FP Technical Aide and the craft personnel to ensure that any required special actions, such as the inhibiting of a suppression system, were performed immediately prior to starting work. In this instance, the on-shift FP Technical Aide expected to be notified by the craft personnel prior to the performance of hot work, however, the craft personnel were unaware of this informal agreement, and work was started based upon the Hot Work Permit having been approved.

An additional reason for this violation was the lack of involvement of appropriate Operations personnel in the issuance of Hot Work Permits during Cold Shutdown conditions. FP-005 requires Shift Supervisor approval of Hot Work Permits during all plant conditions except Cold Shutdown, during which time FP personnel are allowed to approve these permits. As such, an inherent assumption within FP-005 was that appropriate Operations personnel would remain aware of hot work activities during Cold Shutdown conditions.

2. Corrective Steps That Have Been Taken and the Results Achieved

On April 16, 1992, an Evaluation Team was activated to review this occurrence, determine root cause and causal factors, and recommend corrective actions to preclude recurrence. The results of this review are documented within Adverse Condition Report (ACR) No. 92-103, and are reflected within this Reply to the Notice of Violation.

Until implementation of corrective actions resulting from ACR No. 92-103 are completed, interim instructions for the issuance of Hot Work Permits have been implemented by Operations Special Order 92-005. This Special Order, which was effective April 17, 1992, requires that compensatory or special actions necessary for a Hot Work Permit commence with the issuance of the permit, thereby ensuring proper completion of paperwork and the establishment of conditions without the need for follow-up verbal notifications. As specifically stated within this Special Order, "when the permit is issued, the job will be treated as if the barriers have already been breached and the work has begun." This Special Order will remain in effect until the corrective actions discussed below have been accomplished, or until canceled by the Manager - Operations.

3. Corrective Steps That Will Be Taken to Avoid Further Violations

To address the issues identified regarding implementation of FP-005, a revision to this procedure will be made. This revision will include guidance to ensure that all necessary special precautions and actions are performed prior to authorizing hot work, and to ensure that appropriate Operations personnel are made aware of planned hot work and the special actions taken to support this work. To help ensure personnel safety in areas where hot work will be performed, this revision to FP-005 may include additional administrative controls on inhibited CO2 fire suppression systems. Finally, the FP-005 revision may also reference Operations procedure, OMM-007, "Equipment Inoperable Record," for tracking out-of-service times for fire protection and detection equipment.

To help ensure the consistent application of the revised guidance provided within FP-005, Operations personnel will be trained on the above referenced changes.

Also, further actions will be taken to address the generic implications associated with the failure to follow FP-005, and the informal, long-standing work method associated with the issuance of Hot Work Permits. A review of "key" plant work processes and practices is being conducted to determine if other procedure "work-arounds" exist. This review includes three work practices which include the Confined Space Program, Equipment Clearances, and Radiation Work Permits. These reviews will generate specific recommendation for improvements in each area, and will provide a representative sample of plant work processes to establish whether a more generic problem exists.

4. Date When Full Compliance Will Be Achieved

The above corrective actions will be completed by August 31, 1992.

RII-92-11-03-SL4, "Failure To Implement Appropriate Instructions During SW-374 and 376 Maintenance"

10CFR50, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions. Removal of components from a system which can affect the seismic qualification of a safety-related system is an activity affecting quality.

Contrary to the above, on April 21, 1992, activities affecting quality were not accomplished in accordance with established instructions (i.e., outage schedule) in that the A and B service water pump discharge check valves (SW-374 and 376, respectively) were removed from the service water piping before the core was fully unloaded.

This resulted in the piping associated with the available train of service water being in a configuration other than that addressed in existing seismic analysis.

This is a Severity Level IV violation.

Reply

1. Reason for the Violation

On April 22, 1992, when it was recognized that the removal of service water pump discharge check valves had altered the seismic configuration of the operating portion of the service water system, ACR No. 92-121 was initiated. Review of this ACR has been completed, and a number of issues were identified as causal or contributing factors.

One causal factor was identified as the failure of Maintenance personnel to adhere to the outage Daily Schedule Report (DSR). Instead, the check valves were worked as had appeared on a prior seven-day look-ahead schedule. Schedule slippage during the intervening time frame, however, had resulted in the seven-day look-ahead schedule no longer reflecting the actual plant status and configuration.

The reliance on the seven-day look-ahead schedule was further compounded by certain procedural issues and standard work practices. Maintenance procedure, MMM-001, "Maintenance Administration Program," was revised in 1990 to include guidance regarding the removal of any section of piping (valve, pump, etc.) that could affect the seismic integrity of that system. This guidance states that a seismic review and analysis is not required for such maintenance activities lasting seven days or less, based on the low probability of a seismic event occurring during this short time period. Also, a standard work practice for Maintenance personnel was the understanding that a component is ready for work once Operations issues the required equipment clearance and declares the component out-of-service. Since Service Water pumps "A" and "B" had previously been declared out-of-service with the associated equipment clearance established, and the planned maintenance fell within the existing guidance provided within MMM-001, Maintenance personnel believed that proceeding with the check valve removal was appropriate.

A further contributing factor to this occurrence was inadequate communications. The Technical Support Unit, Outage Planning and Scheduling group, and Shift Outage Managers had previously been made aware of the implications of proceeding with certain concurrent service water system work activities prior to the completion of the full core off-load. However, this information was not effectively communicated to Maintenance personnel, and was not reflected on outage schedules.

Therefore, Maintenance personnel were not aware of key schedule interdependencies, and did not have an understanding of the need to wait for completion of the full core off-load prior to removal of these check valves.

2. Corrective Steps That Have Been Taken and the Results Achieved

On April 22, 1992, at 0955 hours, Operability Determination No. 92-004 was initiated to evaluate the seismic concern that was inadvertently created by the removal of check valves, SW-374 and SW-376. This evaluation, which was completed on April 24 by the Nuclear Engineering Department (NED), determined that the structural configuration created by the removal of these check valves was seismically qualified for operability. On this basis, Operability Determination No. 92-004 was closed on April 24 at 1640 hours. Also, and as stated above, ACR No. 92-121 was initiated on April 22, 1992, to review this occurrence and establish causal factors, root cause, and corrective actions.

It should be noted that the Operability Determination evaluation was based on full wall piping. During the time that the evaluation was being finalized, information was made available concerning the potential for exterior corrosion of Service Water lines adjacent to the Service Water pumps. However, at that time no quantitative evidence existed that would invalidate the Operability Determination evaluation. The evaluation of the effects of the pipe wall thinning is currently in progress.

3. Corrective Steps That Will Be Taken to Avoid Further Violations

To ensure that the existing guidance provided within MMM-001 is valid and technically correct, a review of this procedure will be performed. The NED will assist in this review by evaluating the seismic criteria provided within MMM-001 to determine its validity. Any enhancements identified by this review will be addressed by a revision to the procedure.

Maintenance procedure, MMM-003, "Maintenance Work Requests," will be reviewed and revised to address or verify, through the System Engineer, whether the seismic configuration of the associated system will be degraded by the performance of the requested maintenance activity. In this way, issues related to seismic integrity will be addressed prior to the issuance of the work request.

The Operations Unit will review this occurrence with licensed operators to enhance their awareness of these issues, and the relationship of the analyzed system configuration to the seismic integrity of the system.

Also, Operations procedures, OMM-005, "Clearance and Test Request," and OMM-004, "Operations Work Procedure," will be reviewed to ensure that the seismic integrity of systems and components is properly addressed.

The Outage Planning and Scheduling group will review key methods of communicating risk information. The intent of this review is to ensure that key information regarding the operability, seismic integrity, and interdependency of plant systems is effectively communicated during scheduled outage conditions.

4. Date When Full Compliance Will Be Achieved

The above corrective actions will be completed by December 15, 1992.

RII-92-11-05-SL4, "Failure To Translate RHR System Design Basis Into M-1087"

10CFR50, Appendix B, Criterion III, requires measures be established to assure that the design basis for systems and components are correctly translated into specifications, drawings, procedures, and instructions. A design basis function for the Residual Heat Removal (RHR) system, as specified by GP-007 (Plant Cooldown From Hot Shutdown to Cold Shutdown), step 5.2.32.10, is the matching of the RHR heat exchanger outlet temperature within 25 degrees F of the Reactor Coolant System (RCS) temperature prior to placing the RHR system in service.

Contrary to the above, measures were not adequately established to assure that the design basis for the RHR system components were correctly translated into specifications, drawings, procedures and instructions in that modification M-1087 specified RHR system changes which would inadvertently remove the capability to warm the RHR heat exchanger outlet temperature to within 25 degrees F of the RCS prior to placing the RHR system in shutdown cooling.

This is a Severity Level IV violation.

Reply

1. Reason for the Violation

To review the design activities associated with the development of modification MOD-1087; "RHR Pumps Minimum Flow Recirculation," the Nuclear Engineering Department (NED) has initiated ACR No. 92-0041. This ACR has been classified as "significant," and therefore a root cause evaluation is required. Although the root cause evaluation is not fully complete at this time, review of the event has identified the following causal factors as contributing to this occurrence:

- The RHR system pre-heating methods and requirements are only partially identified in System Description, SD-003, "Residual Heat Removal", and do not appear in the RHR System Design Basis Document. This omission from the Design Basis Document is considered to be an isolated occurrence and does not reflect on the adequacy of the Design Basis Document Reconstitution Program.



- The modification review was inadequate. It is believed that this was the result of the unavailability of draft procedure changes at the time of the review. Draft procedure changes would have more clearly identified the impact of the modification on all modes of system operation.

It should also be noted that review of this occurrence has established this to be an operational concern, as opposed to a nuclear safety issue. The primary design focus for MOD-1087 was the maintenance of acceptable system function for the low-head safety injection system mode of operation. The ability to warm up the system prior to placing it in service for shutdown cooling has no significant impact upon the ability of the RHR system to perform its safety-related functions.

2. Corrective Steps That Have Been Taken and the Results Achieved

Immediate corrective actions taken were to revise MOD-1087 to retain the original RHR recirculation capability while continuing with the installation of the enhanced recirculation flow design. This revision was developed, processed, and implemented in accordance with existing, applicable design procedures. Also, and as referenced above, an ACR has been initiated to review this occurrence, and to establish root causes and corrective actions.

3. Corrective Steps That Will Be Taken to Avoid Further Violations

Based on the current status of the root cause evaluation, certain corrective actions have been identified. Although the ACR review may identify additional actions to be taken, the following are intended to address the primary causal factors identified:

- The RHR System Design Basis Document will be revised to clearly identify the pre-heating requirement for the RHR system. Additionally, specific requirements and instructions for pre-heating the RHR system will be included or enhanced within System Description, SD-003, "Residual Heat Removal."
- In order to enhance future modification reviews, the NED will establish a practice of involving appropriate Robinson site personnel in the development of procedure changes prior to approval of a modification for implementation. To accomplish this, the NED will issue to the site, as a minimum, a draft of all applicable proposed changes to the Operating Procedures along with the modification package when released for review.

The NED has also recently instituted a formal program for qualification of engineering personnel who are assigned to perform design verification of engineering documents, which includes plant modifications. One purpose of this program is to improve the quality of the design review process.

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4. Date When Full Compliance Will Be Achieved

The above described program for the qualification of engineering personnel assigned to perform the design verification of engineering documents will be fully implemented for Robinson engineering support personnel by September 15, 1992.

The remaining corrective actions described above will be completed by December 31, 1992.