UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

May 2, 2005

Carolina Power and Light Company
ATTN: Mr. John Moyer
Vice President - Robinson Plant
H. B. Robinson Steam Electric Plant
Unit 2
3851 West Entrance Road
Hartsville, SC 29550

SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT - NRC SAFETY SYSTEM DESIGN AND PERFORMANCE CAPABILITY INSPECTION REPORT NO. 05000261/2005006

Dear Mr. Moyer:

On March 4, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed a safety system design and performance capability team inspection at your H.B. Robinson Steam Electric Plant, Unit 2. The enclosed report documents the inspection findings which were discussed with you and other members of your staff on March 4, 2005. Following completion of additional in-office and on site review, a final exit was held on site with you and other members of your staff on March 24, 2005.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspection team reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified Severity Level IV violation and one NRC-identified finding of very low safety significance (Green) involving a violation of NRC requirements. However, because of their very low safety significance and because they are entered into your corrective action program, the NRC is treating these violations as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the H.B. Robinson Steam Electric Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

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Charles R. Ogle, Chief
Engineering Branch 1
Division of Reactor Safety

Docket No.: 50-261
License No.: DPR-23

Enclosure: NRC Inspection Report 05000261/2005006
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	50-261
License No.:	DPR-23
Report No.:	05000261/2005006
Licensee:	Carolina Power and Light (CP&L)
Facility:	H.B. Robinson Steam Electric Plant, Unit 2
Location:	3581 West Entrance Road Hartsville, SC 29550
Dates:	February 14-18, 2005 February 28 - March 4, 2005 March 23-24, 2005
Inspectors:	M. Thomas, Senior Reactor Inspector (Team Lead) D. Jones, Resident Inspector D. Mas-Penaranda, Reactor Inspector L. Mellen, Senior Reactor Inspector (March 23-24, 2005) T. Nazario, Reactor Inspector R. Reyes, Resident Inspector C. Smith, Senior Reactor Inspector
Approved by:	Charles R. Ogle, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000261/2005-006; 02/14 - 18/2005, 02/28 - 03/04/2005, 03/23 - 24/2005; H.B. Robinson Steam Electric Plant, Unit 2; Safety System Design and Performance Capability Inspection.

This inspection was conducted by a team of inspectors from the NRC Region II Office. The team identified two findings. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

SL IV: The inspectors identified a Severity Level IV (SL IV) non-cited violation (NCV) of 10 CFR 50.59 requirements for the licensee's failure to fully evaluate a change to the plant which potentially involved an unreviewed safety question (USQ). Specifically, the licensee implemented a plant change in 1992 which directed the discharge of safety injection system (SIS) relief valve SI-857A to an open floor drain in the auxiliary building (contrary to the Updated Final Safety Analysis Report), without evaluating the effects on dose consequences. The potential USQ was related to an increase in the dose consequences, if valve SI-857A, which is located outside containment, were to lift (and potentially fail to reseat) during post-LOCA recirculation conditions.

This finding was evaluated using traditional enforcement and is more than minor because it was a change to the facility which would require NRC review and approval prior to implementation. This finding affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to preclude undesirable consequences. However, the technical issue was determined to be of very low safety significance, given the low likelihood of a scenario involving a loss of coolant accident and actuation of SI-857A. The licensee entered this issue into the corrective action program as Action Request 151238. (Section 1R21.2.21.b)

Green: The inspectors identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, for inadequate design control, in that, the licensee failed to assure that applicable design requirements were correctly translated into Procedure EPP-9, Transfer to Cold Leg Recirculation. Specifically, the licensee did not incorporate the postulated failure of a residual heat removal pump to stop on demand as a design input into Engineering Service Request ESR-99-00273, Large Break Loss of Coolant Accident Switchover Analysis.

This finding is more than minor because it affected the design control attribute of the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to preclude undesirable consequences. This finding was determined to be of very low safety significance because the licensee provided field validation information for Procedure EPP-9 which indicated that, under worst case conditions, margin was available to achieve the switchover to recirculation within the time assumed in the accident analyses. The

licensee entered this issue into the corrective action program as Action Request 154571 and initiated a revision to Procedure EPP-9. (Section 1R21.2.22.b)

B. Licensee-Identified Violations

None.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events and Mitigating Systems

1R21 Safety System Design and Performance Capability (71111.21)

The team evaluated the capability of installed plant detection and mitigation equipment which provide the high pressure safety injection, low pressure safety injection, and recirculation functions during a loss of coolant accident (LOCA) at H.B. Robinson. The high pressure safety injection function is provided by the high head safety injection (HHSI) system and the low pressure safety injection function is provided by the low head safety injection (LHSI)/residual heat removal (RHR) system. The recirculation phase is initiated manually by operator actions when the contents of the refueling water storage tank (RWST) are depleted. During recirculation, the injection of subcooled water into the core continues by taking suction from the containment emergency core cooling system (ECCS) sump, cooling the sump fluid through the RHR heat exchanger and delivering it to the reactor coolant system (RCS) cold legs or hot legs using the HHSI or RHR pumps.

.1 System Needs

.11 Process Medium

a. Inspection Scope

The team reviewed the water sources required during the LOCA event to verify their availability and reliability. These included the RWST and the condensate storage tank (CST). The review included design documentation, drawings, Updated Final Safety Analysis Report (UFSAR), Technical Specifications (TS), and corrective action history. The team reviewed the RWST as a viable ECCS suction source. The calculation for sizing of the RWST vent was reviewed to verify that the vent was adequately sized for the maximum RWST volume draw-down, and the team walked down the RWST to verify the vent was installed in accordance with design and vendor documents. In addition, maintenance records were reviewed to verify adequate preventive maintenance on the vent. The team reviewed RWST calculations to verify that the minimum water level required to prevent vortexing in the RWST was addressed. The team reviewed the design and testing of the diesel driven fire pump to verify the capability of the pump to refill the CST. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.12 Energy Sources

a. Inspection Scope

The team reviewed Nuclear Generation Group Analysis/Calculation RNP-E-8.002, AC Auxiliary Electrical Distribution System Voltage/Load Flow/Fault Current Study, and selected attachments, in order to verify that the HHSI and the RHR pump motors would have adequate terminal voltage to perform their design function under degraded voltage conditions. This review also included vital power to the RHR pump pit cooling fans and power from motor control centers (MCC) 1 and 2 to the RHR sump pumps. The team also reviewed Calculation RNP-E-8.042, AC MOV Protection Evaluation Based on Computer Program "Motor Guard 3.1", and selected attachments in order to verify that the listed motor operated valve (MOV) motor operators were adequately protected by thermal overloads, and that the torque developed by the MOV motor operators was acceptable under degraded voltage conditions. The team specifically reviewed Attachment O to Calculation RNP-E-8.002, Degraded Grid Voltage Relay Setpoint Basis Calculation, to verify the adequacy of the steady state voltages at 480 Volt Emergency Busses E1 and E2, in addition to MCCs 5 and 6. The team also reviewed Attachment EE to Calculation RNP-E-8.002, Minimum Voltage Requirements at E1, E2, MCCs 5, 6, 9, 10, 16 and 18, in order to verify that positive margin existed between the available and required load terminal voltages for the HHSI and RHR pump motors. The team reviewed Attachment 1 to Engineering Service Request (ESR) 00-00175, RNP-E-8.002 Rev. 4, Impact Evaluation, Rev. 0, and the mechanical setup calculations for the MOVs to verify the adequacy of the torque developed by MOV motor operators. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.13 Instrumentation and Controls

a. Inspection Scope

The team reviewed the instrumentation used for initiation and control of HHSI and RHR systems to verify the controls would be functional and provide desired control during events requiring the high pressure injection function. In addition, the team reviewed test documentation and calibration records to verify that the testing and inspection of the HHSI and RHR instrumentation were adequate to monitor and identify any equipment degradation. The team reviewed the setpoints and uncertainty calculations for the instrument loops related to the RWST to containment sump switchover function to verify that the existing setpoints for these instruments were in accordance with the operating limits. Also, the team reviewed the last two completed surveillance procedures and calibration test records for these instruments to verify that the instruments were properly calibrated and maintained in accordance with design output documents and vendor specifications. The team also reviewed control wiring diagrams of selected MOVs to verify that the control systems were in accordance with their design bases and would be

functional and provide desired control during accident/event conditions. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.14 Operator Actions

a. Inspection Scope

The team reviewed the emergency operating procedure network (PATH-1), including end path procedures (EPPs), abnormal operating procedures (AOPs) and annunciator panel procedures (APPs) that would be used in the identification and mitigation of a LOCA event. The team focused on installed equipment and operator actions that could be used to mitigate the event. The review was done to verify that the instructions were consistent with the UFSAR description of a LOCA event and with the Westinghouse Owners' Group (WOG) Emergency Response Guidelines (ERGs), any step deviations were justified and reasonable, and the instructions were written clearly and followed the emergency operating procedures (EOP) writer's guide. The team held discussions with licensed operators and training instructors and reviewed job performance measures pertaining to a LOCA event to confirm that training was consistent with the applicable operating procedures. In addition, the team observed simulation of LOCA scenarios on the plant simulator and walked down portions of applicable procedures to verify that operator training, procedure guidance, and instrumentation were adequate to identify a LOCA event and implement post-LOCA mitigation strategies. The manual operator action times for performance of LOCA mitigation activities were reviewed for consistency with UFSAR accident analyses, ERGs, and operator training. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.15 Heat Removal

a. Inspection Scope

The team reviewed heat load calculations for cooling the RHR pump rooms and reviewed the calculated peak temperature responses during a LOCA for these rooms. The team reviewed the engineering evaluation that described the acceptable service water leakage criteria for the safety related room cooling coils HVH-8A and HVH-8B. The team reviewed the preventive maintenance and corrective maintenance history on the coolers to verify that the coolers were being properly maintained. Vendor hydraulic and thermal design specifications for the coolers were reviewed and compared with design basis requirements to verify acceptable cooler heat removal capability. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.2 System Condition and Capability

.21 Installed Configuration

a. Inspection Scope

The team performed field walk downs of HHSI and RHR components to observe the material condition and configuration. The team walked down 480 volt emergency busses E1 and E2, and the HHSI pump motors to verify that the configuration for each component was consistent with the corresponding design drawings. The team reviewed the settings for the emergency bus undervoltage protection relays to verify that they were set in accordance with the requirements of the analysis performed for the emergency bus degraded grid voltage relay settings. The team performed field walk downs of the RWST level instrumentation to verify that the installed configuration of the instruments was consistent with design drawings and setpoint calculations. The team also examined the material condition of the level instruments. This review was performed to verify that the observable material condition was acceptable and that the instruments were adequately installed. The team performed field walk downs of the RHR heat exchangers, HHSI pumps, containment spray pumps, component cooling water pumps and heat exchangers, charging pumps, RWST, and the CST, to observe the material condition and configuration and to verify that valve positions were as specified in system operating procedures and design drawings. The team also performed field walk downs of the RHR pump rooms to observe the material condition of the RHR pumps, valves, and room coolers. This included reviewing actions being taken in the main control room to monitor a small leak on the RHR pump B room cooler. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

Introduction: The inspectors identified a Severity Level IV (SL IV) non-cited violation (NCV) of 10 CFR 50.59 requirements for the licensee's failure to fully evaluate a change to the plant which potentially involved an unreviewed safety question (USQ). Specifically, the licensee implemented a plant change in 1992 which directed the discharge of safety injection system (SIS) relief valve SI-857A to an open floor drain in the auxiliary building (contrary to the UFSAR), without evaluating the effects on dose consequences. The potential USQ involves an increase in the dose consequences, if valve SI-857A, which is located outside containment, were to lift (and potentially fail to reseat) during post-LOCA recirculation conditions.

Description: The UFSAR Section 6.3.2.2.3 states that those portions of the SIS located outside containment which are designed to circulate radioactively contaminated water under post-accident conditions will meet certain requirements. One of the requirements was collection of the discharges from the SIS relief valves into closed systems. The inspectors determined that this requirement existed in the UFSAR during original plant licensing and has not changed. During review of design drawings and in-plant

walkdowns, the inspectors observed that the installed configuration for SIS relief valve SI-857A was not in accordance with UFSAR Section 6.3.2.2.3. The inspectors determined that the licensee implemented a plant modification in 1992 which directed the discharge of SIS relief valve SI-857A to an open floor drain in the auxiliary building.

Based on a review of historical documents, the inspectors noted that the licensee initiated Adverse Condition Report (ACR) 92-079 and issued Licensee Event Report (LER) 92-005 in 1992 when a configuration was identified which constituted a potential release path during LOCA conditions. The LER stated that SIS relief valve SI-857B was a single containment isolation barrier which discharged to an open floor drain in the auxiliary building. During a LOCA, failure of SI-857B to reseat after lifting would result in the release of post-accident radioactively contaminated water. ACR 92-079 was resolved when the licensee implemented Modification 1128 in 1992 to remove relief valve SI-857B and cap the associated line. The modification package stated that upon removal of SI-857B, relief valve SI-857A would provide over-pressure protection for a portion of the SIS. The modification package also identified that the existing discharge path of relief valve SI-857A was unacceptable because it discharged to the RWST. As a corrective action, Modification 1128 also rerouted the discharge piping of SI-857A from the RWST to the same open floor drain where SI-857B had previously relieved. (The inspectors determined that the relief discharge path to the RWST for SI-857A, which was not in accordance with UFSAR Section 6.3.2.2.3 either, existed from original plant licensing until it was changed in 1992 by Modification 1128). The licensee's 10 CFR 50.59 safety evaluation for rerouting the discharge piping of SI-857A, stated that there were no new safety issues because SI-857B had previously relieved to that same floor drain. The 10 CFR 50.59 evaluation did not recognize that re-directing the relief discharge of SI-857A from the RWST to this floor drain was not in compliance with UFSAR Section 6.3.2.2.3 and, as a result, the modification could increase the consequences of an accident evaluated previously in the safety analysis report (i.e., a LOCA). This represented a potential USQ. The inspectors based this conclusion on the fact that, if SI-857A were to lift (and potentially fail to reseat) during post-LOCA recirculation conditions, the discharge from SI-857A could be as much as 20 gallons per minute (per vendor documentation and ESR 97-00594), whereas, licensee post-LOCA evaluations of the radiological consequences of leakage from systems outside containment that could contain highly radioactive fluids (e.g., RHR and SIS) were based on an assumed combined maximum allowable leakage of two gallons per hour. However, the issue was determined to be of very low safety significance due to the low likelihood of SI-857A lifting, as discussed in the Analysis section below. Failure to identify the requirement in UFSAR Section 6.3.2.2.3 resulted in the licensee implementing this change without evaluating the effects on dose consequences of SI-857A lifting (and potentially failing to reseat).

The inspectors also determined that the licensee had multiple opportunities to identify that the installed configuration for relief valve SI-857A was not in accordance with UFSAR Section 6.3.2.2.3. Some of these missed opportunities included:

- Development and issuance of the SIS design basis document in 1988

- Implementation of Modification 1128 in 1992 which removed relief valve SI-857B and rerouted the relief discharge of SI-857A to the auxiliary building floor drain

- UFSAR validation project in 1997

- Initiation of Action Request (AR) 9702265 and related ESR 97-00594 in 1997 to address the lifting of relief valve SI-857A during surveillance testing.

The inspectors noted that relief valve SI-857B was reinstalled in the SIS in 1993 by Modification 1142. The relief discharge for SI-857B was routed to the pressurizer relief tank inside containment. This configuration for SI-857B was in accordance with UFSAR Section 6.3.2.2.3. In addition, the inspectors noted that one of the corrective actions for AR 9702265 involved changing the lift setting for relief valve SI-857B. The lift setting for SI-857B was set below that of SI-857A, which was intended to cause SI-857B to lift before SI-857A.

Analysis: This finding is more than minor because it was a change to the facility which would require NRC review and approval prior to implementation. This finding affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to preclude undesirable consequences. The significance of this violation was not formally evaluated under the Reactor Oversight Process per the Enforcement Policy because the Agency views 10 CFR 50.59 issues as potentially impeding the regulatory process (i.e., it precluded NRC review of a change to the facility). However, the technical issue was determined to be of low significance, given the low likelihood of a scenario involving a LOCA and actuation of SI-857A. The likelihood of this scenario is further reduced, given the fact that the relief setting of SI-857B is below that of SI-857A. As a result, the regulatory significance was categorized as a Severity Level IV violation under Supplement I of the current Enforcement Policy.

Enforcement: The version of 10 CFR 50.59 that existed at the time of the change stated, in part, that a licensee may make changes in the facility as described in the safety analysis report, without prior Commission approval, unless the proposed change involves an unreviewed safety question. 10 CFR 50.59 further states that a proposed change, shall be deemed to involve an unreviewed safety question if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased.

UFSAR Section 6.3.2.2.3 states, in part, that relief valves on portions of the SIS located outside containment which circulate radioactively contaminated water under post-accident conditions, are required to discharge into closed systems. This requirement existed in the UFSAR during initial plant licensing and has not changed.

Contrary to the above, in 1992, the 10 CFR 50.59 evaluation for Modification 1128 was not adequate, in that, it did not fully evaluate the effects on dose consequences of relief valve SI-857A lifting (or failing to reseat after lifting) when the discharge path of SIS relief valve SI-857A was directed to an open floor drain in the auxiliary building instead of a closed system. The modification resulted in a configuration which was not in accordance with UFSAR Section 6.3.2.2.3 and potentially involved a USQ. The potential USQ involves an increase in dose consequences if relief valve SI-857A, located outside containment, were to lift (and potentially fail to reseat) during post-LOCA

recirculation conditions. The licensee's failure to route the discharge of relief valve SI-857A to a closed system has existed since original plant licensing.

Section 8.1.3 of the NRC Enforcement Manual states that violations which existed under the old and new rule should be categorized using the current enforcement guidance. This finding is assessed as a Severity Level IV violation, based on the low likelihood of this scenario, as noted above in the Analysis section. The failure to obtain NRC review and approval, through a license amendment, prior to implementation of a change in the facility potentially involving a USQ, as required by 10 CFR 50.59, is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. This item is identified as NCV 05000261/2005006-01, Failure to Fully Evaluate a Change to the Discharge Path of Relief Valve SI-857A Which Potentially Involves an Unreviewed Safety Question. The licensee entered this issue into the corrective action program as AR 151238.

.22 Operation

a. Inspection Scope

The team walked down selected portions of emergency operating procedures to check for human factors in the procedures and in the plant; including clarity, accuracy, lighting, labeling, noise, communications, and accessibility. The team also checked if selected system alignments were consistent with design and licensing basis assumptions. In addition, the team checked if the times required to perform the local operator actions were consistent with the times available for the actions as described in analyses and calculations. Included in these walk downs were selected local manual operator actions from procedures EPP-1 and EPP-9. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

Introduction: The inspectors identified a Green, non-cited violation, of 10 CFR 50, Appendix B, Criterion III, for inadequate design control, in that, the licensee failed to assure that applicable design requirements were correctly translated into Procedure EPP-9, Transfer to Cold Leg Recirculation. Specifically, the licensee did not identify nor incorporate the postulated failure of an RHR pump to stop on demand as a design input into ESR 99-00273, Large Break Loss of Coolant Accident Switchover Analysis.

Description: In 1999, the licensee performed engineering evaluation ESR 99-00273, Large Break Loss of Coolant Accident (LBLOCA) Switchover Analysis, to establish the operator action times for realigning the suction of the RHR pumps from the RWST to the containment sump in Procedure EPP-9, Transfer to Cold Leg Recirculation. The inspectors reviewed Procedure EPP-9 and ESR 99-00273. During this review, the inspectors identified a scenario, involving a postulated failure of an RHR pump to stop on demand, that was a more limiting scenario during switchover from injection to cold leg recirculation for certain LOCAs. The licensee's evaluations did not incorporate this postulated failure of an RHR pump to stop as a design input and/or assumption. The inspectors determined from a review of related engineering evaluations and discussions with licensee personnel, that this postulated failure scenario had not been previously

identified nor validated by the licensee in engineering calculations performed to support the times assumed in the UFSAR Chapter 15 accident analyses for completion of the manual operator actions required to accomplish the switchover. UFSAR Section 6.3.1.3 states that postulated single active failures in the SIS will not impair the ability of the system to perform its design objectives.

The licensee's failure to consider an RHR pump failure scenario as a design input resulted in Procedure EPP-9 being inadequate in some scenarios. Procedure EPP-9 provides the manual operator actions to realign the suction of the RHR pumps from the RWST to the containment sump, and is entered when the RWST low-level alarm is received during a LOCA. To ensure that adequate time is available for the operators to perform the necessary realignment, EPP-9 directs the operators to secure the RHR pumps to reduce the flow from the RWST shortly after the procedure is initiated. Failure of an RHR pump to stop on demand, reduces the available time for the operators to accomplish the transfer of the RHR pumps' suction from the RWST to the containment sump. If the transfer is not completed prior to reaching the RWST low-low level alarm, procedure EPP-9 directs the operators to secure all ECCS flow until the realignment is completed. Failure to re-start the ECCS pumps within the times assumed in the accident analyses could result in the plant being in an unanalyzed condition.

Analysis: The performance deficiency was that the licensee did not incorporate the postulated failure of an RHR pump to stop on demand as a design input or assumption into ESR 99-00273. This performance deficiency, which occurred in 1999, resulted in the licensee issuing an inadequate emergency procedure (i.e., Rev. 22 to Procedure EPP-9). EPP-9, Rev. 22 was inadequate because it had no operator instructions or guidance for responding to a failure of an RHR pump to stop on demand. Failure to secure the RHR pump in a timely manner would reduce the time available to perform the required manual operator actions. As a consequence of this procedural omission, the control room would have to identify, diagnose, and dispatch an operator to locally secure the RHR pump during this time critical evolution, without procedural guidance. This finding is more than minor because it affected the design control attribute of the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to preclude undesirable consequences.

Using IMC 0609, Appendix A, Determining the Significance of Reactor Inspection Findings for At-Power Situations, the inspectors determined that this finding applied to the mitigating systems cornerstone. The finding is a design deficiency. However, this deficiency did not result in a loss of function or a loss of safety system function per Generic Letter (GL) 91-18, Rev. 1. Although failure to secure the RHR pump in a timely manner would reduce the time available for performing the manual operator actions required for switchover to recirculation, the licensee provided the inspectors with recent field validation information for Procedure EPP-9 which indicated that, under worst case conditions, margin was available to achieve the switchover to recirculation within the time limits assumed in the accident analyses. Therefore, this finding screened as Green in the Mitigating Systems Cornerstone in the Phase 1 worksheet, a finding of very low risk significance.

Enforcement: 10 CFR 50, Appendix B, Criterion III, Design Control requires in part, that measures shall be established to assure that applicable regulatory requirements and the design bases are correctly translated into specifications, drawings, procedures, and instructions. Licensee Procedure EGR-NGGC-0005, Engineering Change, requires that design inputs shall be specified to the level of detail necessary to permit the activity to be carried out in a correct manner and to provide a consistent basis for making decisions, accomplishing design verification measures and evaluating design changes. Procedure EGR-NGGC-0005 further states that basic design inputs include operational requirements such as emergency operation including postulated accident conditions.

Contrary to the above, in 1999, the licensee did not identify nor incorporate the postulated failure of an RHR pump to stop when called upon as a design input into Engineering Service Request ESR 99-00273. The failure to include the design input in ESR 99-00273 resulted in Procedure EPP-9 being revised and issued without instructions or guidance for responding to a postulated failure of the RHR pump to stop on demand. This failure by the licensee to assure that applicable design requirements were correctly identified and incorporated into Procedure EPP-9 was identified as NCV 05000261/2005006-02, Failure to Identify and Translate Design Inputs and Assumptions into Emergency Procedures. The licensee entered this issue into the corrective action program as Action Request 154571 and initiated a revision to Procedure EPP-9.

.23 Design

a. Inspection Scope

Mechanical Design Review

The team reviewed design calculations, specifications, and the UFSAR to verify that system and equipment design functions were appropriately evaluated and maintained. Surveillance test procedures and equipment monitoring activities were reviewed to verify that design criteria were appropriately translated into acceptance criteria. The team reviewed calculations and system configurations to assess whether adequate NPSH was available to the RHR, HHSI, and containment spray pumps during the period of maximum flow from the RWST, during the period just before switchover to containment sump recirculation, and during RHR pumps operation from the containment sump. The system design and configuration controls were reviewed to assure pump minimum flow requirements were adequate to prevent flashing from occurring and pump run out protection was provided. A specific list of documents reviewed is included in the Attachment to this report.

Electrical, Instrumentation and Controls Design Review

The team reviewed the setup calculations and the post-test evaluation of static test results for selected ECCS MOVs in order to verify that acceptance criteria for the MOV motor operators met vendor recommendations and the installed thermal overloads were correctly sized based on motor load currents. The team also reviewed control wiring diagrams of selected MOVs to verify that the control systems were in accordance with their design bases and would be functional and provide desired control during accident/event conditions.

b. Findings

No findings of significance were identified.

.24 Testing and Inspection

a. Inspection Scope

The team reviewed performance and post-maintenance testing of selected ECCS pumps and valves to verify that the tests and inspections were appropriately confirming that the assumptions of the licensing and design bases were being maintained and that performance degradation would be identified. The team reviewed post-test evaluation of the static test results for selected ECCS MOVs in order to verify that acceptance criteria for MOV motor operators were being met, as demonstrated by test results. The team also reviewed the disposition of test deficiencies identified during MOV static testing of MOV motor operators to ensure that the test deficiencies were adequately reviewed and evaluated by engineering personnel, and that final resolution of the test deficiencies was technically acceptable. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.3 Selected Components

.31 Component Degradation

a. Inspection Scope

The team reviewed surveillance and maintenance records to verify that the components were continuing to perform within the limits specified by the design basis. The review also included engineering change documentation, drawings, UFSAR, TS, corrective actions history, and foreign material exclusion history for the ECCS. Walkdowns of the boron injection tank room, HHSI pump room, and RWST exterior were performed to verify the structural integrity and condition of supports, hangers, base plates, and structural attachments associated with the ECCS equipment. Calculations were reviewed to verify that design criteria were appropriately implemented into the design.

The team reviewed surveillance and maintenance records, performance trending data, equipment history as identified by plant work orders and corrective actions history, and system health reports to assess the licensee's actions to verify and maintain the safety function, reliability, and availability of selected components. Also reviewed were potential common cause failure mechanisms due to maintenance, parts replacement, and modifications. The team reviewed completed work orders (WOs) of preventive maintenance activities performed for the HHSI and RHR pump motors and/or the motor feeder circuit breakers. The team reviewed completed surveillances and preventive

maintenance work orders for selected RHR flow and pressure instruments. The reviews were performed to verify that potential degradation was monitored or prevented and that the component replacement parts satisfied the technical and quality requirements of the parts being replaced. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.32 Equipment/Environmental Qualification

a. Inspection Scope

The team reviewed environmental qualification records of the HHSI and RHR pump motors and selected SIS MOVs, in order to verify that equipment qualification was suitable for the environment expected under all conditions. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.33 Equipment Protection

a. Inspection Scope

The team performed field walkdowns of internal flood mitigation equipment in the auxiliary building and the RHR pump pit to observe general material condition, identify degraded conditions, and verify that the installed configuration was consistent with design drawings and design inputs to calculations. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.34 Component Inputs/Outputs

e. Inspection Scope

The team reviewed selected MOV operator requirements calculations to assess the capability of the MOVs to perform their design function under degraded voltage conditions. The team reviewed the setpoints and uncertainty calculations for the instrument loops related to the RWST and containment sump switchover function to verify that the existing setpoints for these instruments were in accordance with the operating limits. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.35 Operating Experience

a. Inspection Scope

The team reviewed the licensee's applicability evaluations, extent of condition reviews, and corrective actions for industry and station operating experience issues related to ECCS equipment problems, such as foreign material in the RHR pump suction, to verify that plant specific issues were being appropriately addressed. The team reviewed WOs, procedures, performed field observations, and held discussions with engineering staff to verify that operating experience related corrective actions were being accomplished. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

.4 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed selected system health reports, maintenance records, calibration and surveillance test records, and ARs to verify that design and performance problems were identified and entered into the corrective action program. The team assessed the scope of the licensee's extent-of-condition reviews and the adequacy of the corrective actions. Additionally, the team reviewed a sample of corrective maintenance work orders on the selected pumps and valves. A specific list of documents reviewed is included in the Attachment to this report.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Meetings, Including Exit

The lead inspector presented the inspection results on March 4, 2005, to Mr. J. Moyer, Site Vice President, and other members of his staff. Following completion of additional in-office and on site review, a final exit was held on site with Mr. Moyer and other members of his staff on March 24, 2005. The licensee acknowledged the findings presented. Proprietary information is not included in this inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. Bailey, Senior Nuclear Self Evaluation Specialist/Operating Experience Coordinator
C. Baucom, Supervisor, Licensing/Regulatory Programs
D. Blakeney, Supervisor, Plant Support
C. Castell, Lead Engineer, Licensing/Regulatory Programs
C. Church, Engineering Manager
B. Clark, Manager, Nuclear Assessment
W. Farmer, Superintendent, Systems Engineering
J. Hendrickson, Lead Engineer, Systems Engineering
J. Huegel, Manager, Maintenance-Nuclear
R. Ivey, Operations Manager
K. Jones, Supervisor, Reactor Systems
J. Lucas, Manager, Support Services-Nuclear
G Ludlam, Training Manager
J. Moyer, Vice President-Robinson Plant
W. Noll, Director of Site Operations
V. Smith, Senior Nuclear Procedure Writer, Plant Support
J. Stanley, Superintendent, Technical Services
D. Stoddard, Plant General Manager
J. Valentino, Lead Engineer, Licensing/Regulatory Programs

NRC

P. Fredrickson, Chief, Projects Branch 4, Division of Reactor Projects
R. Hagar, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000261/2005006-01	NCV	Failure to Fully Evaluate a Change to the Discharge Path of Relief Valve SI-857A Which Potentially Involves an Unreviewed Safety Question (Section 1R21.2.21.b)
05000261/2005006-02	NCV	Failure to Identify and Translate Design Inputs and Assumptions into Emergency Procedures (Section 1R21.2.22.b)

Discussed

None

Attachment

LIST OF DOCUMENTS AND EQUIPMENT REVIEWED

Report sections

Section 1R21.1.11a Process Medium

Procedures

End Path Procedure, EPP-1, Loss of All [Alternating Current] Power, Rev. 33
End Path Procedure-1 Basis Document, Rev. 33

Drawings

5379-1567, Refueling Water Storage Tank, Rev. 5
5379-1573, RWST 6-Inch Mushroom Vent, Rev. 0
G-190199, Service and Cooling Water System Flow Diagram Sheet 2 of 13, Rev. 63
G-190199, Service and Cooling Water System Flow Diagram Sheet 10 of 13, Rev. 43
G-190197, Feedwater, Condensate, Air Evacuation System Flow Diagram, Sheet 1 of 4, Rev. 74
G-190197, Feedwater, Condensate, Air Evacuation System Flow Diagram, Sheet 4 of 4, Rev. 54
HBR2-8255, Fire Protection System Intake Structure Flow Diagram, Sheet 1 of 6, Rev. 12
HBR2-8255, Fire Protection System Intake Structure Flow Diagram, Sheet 2 of 6, Rev. 27

Calculations

RNP-M/MECH-1637, CS/SI/RHR System Hydraulic Model
Project No. 94-0041, RNP Post LOCA Long Term Core Cooling Switchover Time Allowance, dated 6/10/94
CPL-R2-MP-17, Emergency Fire Water Pump

Work Orders

WOs 00061051, 00065233, 00213300, 00424446, Inspect/Clean RWST Vent

Section 1R21.1.12a Energy Sources

Calculations:

RNP-E-8.002, Nuclear Generation Group Analysis/Calculation, AC Auxiliary Electrical Distribution System Voltage/Load Flow/Fault Current Study, Rev. 5A
RNP-E-8.002, Attachment EE, Minimum Voltage Requirements at E1, E2, and MCCs 5, 6, 9, 10, 16 and 18, Rev. 5
RNP-E-8.002, Attachment O, Degraded Grid Voltage Relay Setpoint Basis Calculation, Rev. 5
RNP-E-8.002, Attachment Z, Computer Output/Reports/Documents, Rev. 5
RNP-8.042, A.C. MOV Protection Eval Based on Computer Program “Motor Guard 3.1,” Rev. 2
RNP-E-8.042, Attachment M, “Motor Guard 3.1," calculated input Data and Results at DGVR Setpoints, Rev. 2
RNP-E-8.042, Attachment N, Minimum Available MOV Torque for Various Voltages and Accident Scenarios, Rev. 2
ESR 00-00175, RNP- 8.002 Rev. 4 Evaluation, Revision 0.

Design Change Backup Form (DCBF) RNP- E- 8.042, dated May 10, 2002
Analysis ID RNP-I/INST-1010, Analysis for Emergency Bus -Degraded Grid Voltage Relay for H.B. Robinson, Unit 2, Rev. 3
RNP- M/MECH-1205, Setup Calculation for MOV SI-860A, Rev. 8
RNP- M/MECH-1206, Setup Calculation for MOV SI-860B, Rev. 8
RNP- M/MECH-1283, Setup Calculation for MOV SI-861A, Rev. 8
RNP- M/MECH-1284, Setup Calculation for MOV SI-861B, Rev. 8
RNP- M/MECH-1285, Setup Calculation for MOV SI-862A, Rev. 6
RNP- M/MECH-1286, Setup Calculation for MOV SI-862B, Rev. 6
RNP- M/MECH-1286, Setup Calculation for MOV SI-862B, Rev. 6
RNP- M/MECH-1439, Setup Calculation for MOV SI-863A, Rev. 8
RNP- M/MECH-1440, Setup Calculation for MOV SI-863B, Rev. 10
RNP- M/MECH-1409, Setup Calculation for MOV CC-749A, Rev. 9
RNP- M/MECH-1410, Setup Calculation for MOV CC-749B, Rev. 9

Drawings

G-190626, Main and 4160 Volt One Line Diagram, Sheet 1 of 3, Rev. 4
5379-5374, 480 Volt One Line Diagram, Rev. 22.
B-190628, SI-860A CV Sump Recirculation Suction, Sheet 266, Rev. 10
B-190628, SI-860B CV Sump Recirculation Suction, Sheet 267, Rev. 9
B-190628, SI-861A CV Sump Recirculation Suction, Sheet 268 Rev. 11
B-190628, SI-861B CV Sump Recirculation Suction, Sheet 269, Rev. 9
B-190628, SI-862A RHR Loop RWST Isolation, Sheet 248, Rev. 16
B-190628, SI-862B RHR Loop RWST Isolation, Sheet 249, Rev. 14
B-190628, SI-863A RHR Pump A Discharge to SI Pump Suction, Sheet 280, Rev. 13
B-190628, SI-863B RHR Pump B Discharge to SI Pump Suction, Sheet 281, Rev. 13
B-190628, CC-749A, RHR Heat Exchanger A Cooling Water Outlet, Sheet 218, Rev. 11
B-190628, CC-749B, RHR Heat Exchanger B Cooling Water Outlet, Sheet 219, Rev. 12
B-190628, Residual Heat Removal Pump A, 52/22A, Sheet 214, Rev. 19
B-190628, Residual Heat Removal Pump B, 52/26B, Sheet 216, Rev. 20
B-190628, Safety Injection Pump A, 52/21C, Sheet 237, Rev. 18
B-190628, Safety Injection Pump B, 52/29C, Sheet 238, Rev. 19
B-190628, Safety Injection Pump C, 52/23B, Sheet 239, Rev. 18
B-190628, Sheet 554/553, RHR Pump A/B Pit Recirculation Fans HVH-8A/B
B-190628, Sheet 222/223, RHR Pit Sump Pump A/B

Miscellaneous Documents

Attachment 10.10, Test Nos. 04132014 and 04132007, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-860A), dated 5/11/2004
Attachment 10.10, Test No. 1, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-860B), dated 4/19/2001
Attachment 10.10, Test Nos. 04128003 and 04128005, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-861A), dated 5/7/2004
Attachment 10.10, Test No. 3, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-861B), dated 4/19/2001
Attachment 10.10, Test No. 04124001, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-863A), dated 5/3/2004

Attachment 10.10, Test No. 04125001, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-863B), dated 5/4/2004

Work Orders

WO 00226400-01, Inspection and Testing of 52/22A, RHR-PMP-A-MTR, dated 05/21/2003
WO 00065334-01, Inspection and Testing of 52/22A, RHR-PMP-A-MTR, dated 12/26/2001
WO 00416769-01, Inspection and Testing of 52/26B , RHR-PMP-B-MTR, dated 08/23/2004
WO 00065316-01, Inspection and Testing of 52/26B , RHR-PMP-B-MTR, dated 11/26/2001
WO 00069244-01, Inspection and Testing of 52/21C, (SI Pump Motor A), dated 01/24/2002
WO 00065327, Inspection and Testing of 52/21C, (SI Pump Motor A), dated 11/14/2000
WO 00407618-01, Inspection and Testing of 52/21C, (SI Pump Motor A), dated 11/03/2004
WO 00206171-01, Inspection and Testing of 52/29C, (SI Pump Motor B), dated 04/03/2003
WO 00201320, Inspection and Testing of 52/23B, (SI Pump Motor C), dated 03/13/2003
WO 00405219, Inspection and Testing of 52/23B, (SI Pump Motor C), dated 10/20/2004

Components Reviewed

HHSI Pump Motors A, B, C
RHR Pump Motors A, B
MOV CC-749A
MOV CC-749B
MOV SI-860A
MOV SI-860B
MOV SI-861A
MOV SI-861B
MOV SI-862A
MOV SI-862B
MOV SI-863A
MOV SI-863B

Section 1R21.1.13a Instrumentation and Controls

Procedures

MMM-006, Calibration Program, Rev. 24
PIC-002, D/P Electronic Transmitter (4-20 mA Output), Rev. 12
LP-303, Containment Water Level (Channels 1 and 2), Rev. 10
PIC-103, Electrical Indicators, Rev. 12
PIC-019, Beckman Series 8000 Alarm Switch, Rev. 3
PIC-006, Pressure Transmitter (4-20 mA Output), Rev. 12

Calculations

RNP-I/INST-1058 Containment Water Level Instrument Uncertainty Calculation, Rev. 2
RNP-I/INST-1023 Refueling Water Storage Tank Uncertainty and Scaling Calculation, Rev. 3
RNP-I/INST- 1009 RHR Pump Discharge Uncertainty and Scaling Calculation, Rev.1

RNP-I/INST- 1067 RHR Flow Instrument Uncertainty and Scaling Calculation, Rev.0
RNP-I/EQ-1177 Gems Water Level Transmitter Loop Accuracy, Rev. 0

Surveillances (Work Orders)

WO 00308071 Calibrate the RHR Pump A Discharge Pressure Instrument,3/5/04
WO 00126786 Calibrate the RHR Pump A Discharge Pressure Instrument,9/12/02
WO 00308071 Calibrate the RHR Pump A Discharge Pressure Instrument,1/12/01
WO 00447483 Calibrate the Refueling Water Storage Tank Level transmitter, 2/10/04
WO 00380761 Calibrate the Refueling Water Storage Tank Level transmitter, 6/24/03
WO 00316037 Calibrate the Refueling Water Storage Tank Level transmitter, 1/10/03
WO 00591583 Calibrate the RWST level Instruments, 11/11/04
WO 00516936 Calibrate the RWST level Instruments, 5/24/04
WO 00447482 Calibrate the RWST level Instruments, 12/12/03
WO 00138667 Calibrate the Containment Water Level Channels, 2/1/03
WO 00064999 Calibrate the Containment Water Level Channels, 3/23/01
WO 00327902 Calibrate the Containment Water Level Channels, 3/5/04
WO 00501655 Calibrate the RHR Flow Transmitter, 10/7/04
WO 00366661 Calibrate the RHR Flow Transmitter, 11/5/03
WO 00226689 Calibrate the RHR Flow Transmitter, 12/5/02
WO 00144147 Calibrate Safety Injection Flow Transmitter, 9/23/02
WO 00067332 Calibrate Safety Injection Flow Transmitter, 4/11/01
WO 00141945 Calibrate the SIS Flow Transmitter and Indicator, 7/24/02
WO 00315585 Calibrate the SIS Flow Transmitter and Indicator,12/11/03
WO 00065638 Calibrate the SIS Flow Transmitter and Indicator, 3/5/01
WO 00348206 Calibrate the SIS Boron Injection Tank Header Pressure Transmitter, 5/23/04
WO 00164228 Calibrate the SIS Boron Injection Tank Header Pressure Transmitter, 9/19/02
WO 00065221 Calibrate the SIS Boron Injection Tank Header Pressure Transmitter, 6/4/01

Vendor Manuals

SLC 500 Modular Hardware Style (Cat. Nos. 1747-L511, 1747-L514, 1747-L524,1747,L532) Allen-Bradley, Installation and Operational Manual,
SLC 500 Thermocouple/mV Input Model (Cat. No. 1746-NT4, Series B) User Manual

Components

RWST Level instrumentation LT-948, LT-969, LIC-947
Containment Sump Water Level transmitters LT-801, LT-802
RHR Pump Discharge pressure PT-602 A, PI-602A
RHR Flow Instrument FT-605
SI Header Pressure PT-934
SI Header Flow FT-943
SI Hot Leg Injection FT-932, FT-933

Section 1R21.1.14a Operator Actions

Procedures

Path-1, Rev. 18
Path-1 Basis Document, Rev. 18
End Path Procedure, EPP-7, Safety Injection Termination, Rev. 23
End Path Procedure, EPP-8, Post Lost of Coolant and Depressurization, Rev. 14
End Path Procedure, EPP-9, Transfer to Cold Leg Recirculation, Rev. 29
End Path Procedure Basis Document, Rev. 29
End Path Procedure, EPP-10, Transfer to Long Term Recirculation, Rev. 18
End Path Procedure, EPP-24, Isolation of Leakage in the RHR Pump Pit, Rev. 6
OMM-022, Emergency Operating Procedures User's Guide, Rev. 26
Abnormal Operating Procedure, AOP-016, Excessive Primary Plant Leakage, Rev. 15
Annunciator Panel Procedure, APP-002, Engineering Safeguards, Rev. 45
OMM-043,Verification and Validation, Rev. 13
OMM-044, Emergency Operating Procedure Program, Rev. 5
OMM-001-2, Shift Routines and Operating Practices, Rev. 43
EGR-NGGC-0005, Engineering Service Requests, Rev. 10 and Rev. 11
Nuclear Generation Group Standard Procedure, Engineering Change, Rev. 22
OMM-041, Writers Guide for Flowpath and Two Column Format Procedures, Rev. 10

Miscellaneous Documents

WOG Emergency Response Guidelines, ES-1.3, Transfer to Cold Leg Recirculation, Dated 9/30/97
WOG Emergency Response Guidelines, E-1, Loss of Reactor or Secondary Coolant, Dated 9/30/97
Emergency Operating Procedure Setpoint Reference Document, Dated 1/5/05
Abnormal Operating Procedure Setpoint Reference Document, Dated 1/6/05
Job Performance Measure, JPM lP-044, Perform Attachment 2 of EPP-9, Local Cold Leg Recirculation Lineup, Rev. 6
Job Performance Measure, JPM lP-038, Perform Attachment 1 of EPP-9, Local Cold Leg Recirculation Lineup, Rev. 5
Job Performance Measure, JPM lP-146, Raise Containment Vessel Pressure for Containment Vessel Sump Blockage In Accordance With Supplement O, Rev. 0
NRC Safety Evaluation for the H. B. Robinson Steam Electric Plant, Unit Number 2 - Procedures Generation Package, dated 3/6/90
NRC Inspection Report, 50-261/94-07, dated 4/7/94
Carolina Power and Light Letter, Response to NRC Inspection Report Number 50-261/89-16, dated 12/8/89
Engineering Service Request, ESR 99-00273, Large Break Loss of Coolant Accident Switch over Analysis
UFSAR, Section 15.6.5, Loss of Coolant Accidents
Calculation RNP-M/MECH-1637, Containment Spray, Safety Injection, Residual Heat Removal System Hydraulic Model
Calculation RNP-M/MECH-1114, Residual Heat Removal Pump Parameters and Component Flow and Resistance Characteristics

Drawings

5379-1082, Safety Injection System Flow Diagram, Sheet 1 of 5, Rev. 42
5379-1082, Safety Injection System Flow Diagram, Sheet 2 of 5, Rev. 44
5379-1082, Safety Injection System Flow Diagram, Sheet 3 of 5, Rev. 25
5379-1082, Safety Injection System Flow Diagram, Sheet 4 of 5, Rev. 27
5379-1082, Safety Injection System Flow Diagram, Sheet 5 of 5, Rev. 38
5379-685, Chemical and Volume Control System Purification and Make-Up Flow Diagram, Sheet 1 of 3, Rev. 50
HBR2-7791, Emergency Lighting (Local Battery Units) and Communications, Sheet 1, Rev. 20
5379-685, Chemical and Volume Control System Purification and Make-Up Flow Diagram, Sheet 2 of 3, Rev. 57
5379-1484, Residual Heat Removal System, Sheet 1 of 1, Rev. 40

Section 1R21.1.15a Heat Removal

Calculations

RNP-M/HVAC-1056, RHR Pump Room Heatup

Work Orders

WO 00658885-01, 0.1 Gallons Per Hour Service Water Leak On HVH-8B outlet Piping
WO 00176539-01, Inspection of HVH-8A Fan & Coolers
WO 00367318-01, Inspection of HVH-8A Fan & Coolers
WO 00417163-01, Inspection of HVH-8B Fan & Coolers
WO 00204894-01, Clean/Inspect MCC-6 HVH-8A RHR Pump B Recirculation Fan
WO 00065367-01, Clean/Inspect MCC-6 HVH-8B RHR Pump A Recirculation Fan

Miscellaneous Documents

ESR 9500152, Leakage Criteria to be Applied to Safety Related Room Coolers
EE 93-181, HVH-6/7/8 A&B Coils Acceptability Of Belzona Repairs
DBD/R87038/SD03, Design Basis Document, Residual Heat Removal System, Rev. 0
DBD/R87038/SD13, Design Basis Document, Component Cooling System, Rev. 6

Section 1R21.2.21a Installed Configuration

Procedures

REG-NGGC-0110, Regulatory Commitments, Rev. 0
OST-151-5, Comprehensive Flow Test for Safety Injection Pump B, Rev. 2
EST-112, Pressure, Safety, and Relief Valve Bench Testing, Rev. 20, dated 4/22/04 and 5/3/04
OST-155, Safety Injection System Integrity Test, Rev. 25, dated 7/7/04

Calculations

RNP-M/MECH-1735, Radiological Consequence Analysis of the Waste Gas Decay Tank

Rupture with [Alternate Source Term Implementation]
RNP-C/STRS-1207, SI-857A Discharge Piping
RNP-I/INST-1023, Refueling Water Storage Tank Uncertainty and Scaling Calculation, Rev. 3

Surveillance (WO's)

WO 00447483 Calibrate the RWST Level transmitter, 2/10/04
WO 00380761 Calibrate the RWST Level transmitter, 6/24/03
WO 00316037 Calibrate the RWST Level transmitter, 1/10/03
WO 00591583 Calibrate the RWST level Instruments, 11/11/04
WO 00516936 Calibrate the RWST level Instruments, 5/24/04
WO 00447482 Calibrate the RWST level Instruments, 12/12/03

Drawings

G-190503, Reactor Building Plan Plumbing and Drainage, Sheet 1 of 1, Rev. 3
G-190495, Reactor Auxiliary Building Ground and Mezzanine Floor Plans Plumbing and Drainage, Sheet 1 of 1, Rev. 9
5379-920, Liquid Waste Disposal System Flow Diagram, Sheet 1 of 8, Rev. 42
5379-920, Liquid Waste Disposal System Flow Diagram, Sheet 2 of 8, Rev. 40
684J878, Safety Injection System Engineering Flow Diagram, Rev. 4 and 6
5379-1082, Safety Injection System Flow Diagram, Sheet 1 of 5, Rev. 42
A-190301 Refueling Water Storage Tank Level, Rev. 2
A-190299 Instrument Hook-Up Detail, Rev. 6
5379-1082 Safety Injection System Flow Diagram, Rev. 44
G-190294 Reactor Auxiliary Building Plan at EL 226.00 Instrumentation Arrangement, Rev. 0

Components

RWST Level instrumentation LT-948, LT-969, LIC-947
Relief Valve SI-857A;
Safety Injection pumps
Safety Injection piping and valves in pipe alley;
Residual Heat Removal piping and valves in pipe alley

Miscellaneous Documents

ESR 9700594, Relief Valve SI-857A
UFSAR Section 6.3.2.2.3, Net Positive Suction Head Requirements
AR 9702265, SI-857A was Leaking During Engineering Surveillance Test
Modification 1128, Removal of SI-857A Relief Valve
System Description, SD-006, Engineered Safety Features System, Rev. 9
DBD/R87038/SD02, Design Basis Document, Safety Injection System, Rev. 0
System Health Report, Residual Heat Removal, dated 8/30/04
System Health Report, Residual Heat Removal, dated 2/24/04
System Health Report, Safety Injection And Containment Spray, dated 8/1/04
System Health Report, Safety Injection And Containment Spray, dated 7/8/03
System Health Report, Chemical and Volume Control System, dated 7/30/04
System Health Report, Chemical and Volume Control System, dated 1/26/05

Section 1R21.2.22a Operation

Procedures

End Path Procedure, EPP-9, Transfer to Cold Leg Recirculation, Rev. 29
End Path Procedure Basis Document, Rev. 29
End Path Procedure, EPP-10, Transfer to Long Term Recirculation, Rev. 18
OMM-043,Verification and Validation, Rev. 13
OMM-044, Emergency Operating Procedure Program, Rev. 5
EGR-NGGC-0005, Engineering Service Requests, Rev. 10 and Rev. 11
Nuclear Generation Group Standard Procedure, Engineering Change, Rev. 22
OP-201, Residual Heat Removal System Operating Procedure, Rev. 48
OP-202, Safety Injection and Containment Vessel Spray System Operating Procedure, Rev. 61

Drawings

5379-1082, Safety Injection System Flow Diagram, Sheet 1 of 5, Rev. 42
5379-1082, Safety Injection System Flow Diagram, Sheet 2 of 5, Rev. 44
5379-1082, Safety Injection System Flow Diagram, Sheet 3 of 5, Rev. 25
5379-1082, Safety Injection System Flow Diagram, Sheet 4 of 5, Rev. 27
5379-1082, Safety Injection System Flow Diagram, Sheet 5 of 5, Rev. 38
5379-1484, Residual Heat Removal, Sheet 1 of 1, Rev. 40
HBR2-7791, Emergency Lighting (Local Battery Units) and Communications, Sheet 1, Rev. 20
HBR2-11287, Lighting Reactor Aux Bldg Ground Floor Elev 226'-0" Plan, Sheet 1 of 1, Rev. 6

Miscellaneous Documents

WOG Emergency Response Guidelines, ES-1.3, Transfer to Cold Leg Recirculation, Dated 9/30/97
Job Performance Measure, JPM lP-044, Perform Attachment 2 of EPP-9, Local Cold Leg Recirculation Lineup, Rev. 6
Job Performance Measure, JPM lP-038, Perform Attachment 1 of EPP-9, Local Cold Leg Recirculation Lineup, Rev. 5
NRC Safety Evaluation for the H. B. Robinson Steam Electric Plant, Unit Number 2 - Procedures Generation Package, dated 3/6/90
NRC Inspection Report, 50-261/94-07, dated 4/7/94
Carolina Power and Light Letter, Response to NRC Inspection Report Number 50-261/89-16, dated 12/8/89
Engineering Service Request, ESR 99-00273, Large Break Loss of Coolant Accident Switch over Analysis
Carolina Power and Light Letter Serial No. RNP-RA/01-0062, “Report of Significant Change in the Evaluation of a Large Break Loss of Coolant Accident Transfer From Injection to Recirculation,” dated 4/23/01
NRC Letter to Carolina Power and Light, “H.B. Robinson Steam Electric Plant Unit 2 - Technical Evaluation of a Large Break Loss-of-Coolant Accident Transfer From Injection to Recirculation Cooling for H.B. Robinson (TAC No. M98953),” dated 7/12/01
UFSAR, Section 15.6.5, Loss of Coolant Accidents

Calculation RNP-M/MECH-1637, Containment Spray, Safety Injection, Residual Heat Removal System Hydraulic Model
Calculation RNP-M/MECH-1114, Residual Heat Removal Pump Parameters and Component Flow and Resistance Characteristics
DBD/R87038/SD03, Residual Heat Removal System Design Basis Document, Rev. 0
SD-002, Safety Injection System Description, Rev. 11
SD-003, Residual Heat Removal System Description, Rev. 12
UFSAR Section 7.3.1.1.2.3, [Engineering Safeguards Features] Instrumentation Equipment

Section 1R21.2.23a Design

Mechanical Design

Drawings

5379-0376, Component Cooling Water System Flow Diagram, Sheet 1 of 4, Rev. 36
5379-0376, Component Cooling Water System Flow Diagram, Sheet 2 of 4, Rev. 31
5379-1082, Safety Injection System Flow Diagram, Sheet 1 of 5, Rev. 42
5379-1082, Safety Injection System Flow Diagram, Sheet 2 of 5, Rev. 44
5379-1082, Safety Injection System Flow Diagram, Sheet 3 of 5, Rev. 25
5379-1082, Safety Injection System Flow Diagram, Sheet 4 of 5, Rev. 27
5379-1082, Safety Injection System Flow Diagram, Sheet 5 of 5, Rev. 38
5379-1484, Residual Heat Removal, Sheet 1 of 1, Rev. 40

Miscellaneous Documents

Project No. 94-0041, RNP Post-LOCA Long Term Core Cooling Switchover Time Allowance, dated 6/10/94
RNP-M/MECH-1658, RHR Heat Exchanger Partition Plate Stress
DBD/R87038/SD02, Safety Injection System Design Basis Document, Rev. 0
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EC 55446RO, Revise Calculation RNP-MECH-1637 on Plant Design
Modification No. 1087, RHR Pumps Minimum Flow Recirculation Lines

Electrical Design

Calculations

RNP-8.042, A.C. MOV Protection Eval Based on Computer Program “Motor Guard 3.1,” Rev. 2
RNP-E-8.042, Attachment N, Minimum Available MOV Torque for Various Voltages and Accident Scenarios, Rev. 2
Analysis ID RNP-I/INST-1010, Analysis for Emergency Bus -Degraded Grid Voltage Relay for H.B. Robinson, Unit 2, Rev. 3
RNP- M/MECH-1205, Setup Calculation for MOV SI-860A, Rev. 8
RNP- M/MECH-1206, Setup Calculation for MOV SI-860B, Rev. 8
RNP- M/MECH-1283, Setup Calculation for MOV SI-861A, Rev. 8
RNP- M/MECH-1284, Setup Calculation for MOV SI-861B, Rev. 8
RNP- M/MECH-1285, Setup Calculation for MOV SI-862A, Rev. 6

RNP- M/MECH-1286, Setup Calculation for MOV SI-862B, Rev. 6
RNP- M/MECH-1286, Setup Calculation for MOV SI-862B, Rev. 6
RNP- M/MECH-1439, Setup Calculation for MOV SI-863A, Rev. 8
RNP- M/MECH-1440, Setup Calculation for MOV SI-863B, Rev. 10
RNP- M/MECH-1409, Setup Calculation for MOV CC-749A, Rev. 9
RNP- M/MECH-1410, Setup Calculation for MOV CC-749B, Rev. 9

Drawings

B-190628, SI-860A CV Sump Recirculation Suction, Sheet 266, Rev. 10
B-190628, SI-860B CV Sump Recirculation Suction, Sheet 267, Rev. 9
B-190628, SI-861A CV Sump Recirculation Suction, Sheet 268 Rev. 11
B-190628, SI-861B CV Sump Recirculation Suction, Sheet 269, Rev. 9
B-190628, SI-863A RHR Pump A Discharge to SI Pump Suction, Sheet 280, Rev. 13
B-190628, SI-863B RHR Pump B Discharge to SI Pump Suction, Sheet 281, Rev. 13

Miscellaneous Documents

Attachment 10.10, Test Nos. 04132014 and 04132007, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-860A), dated 5/11/2004
Attachment 10.10, Test No. 1, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-860B), dated 4/19/2001
Attachment 10.10, Test Nos. 04128003 and 04128005, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-861A), dated 5/7/2004
Attachment 10.10, Test No. 3, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-861B), dated 4/19/2001
Attachment 10.10, Test No. 04124001, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-863A), dated 5/3/2004
Attachment 10.10, Test No. 04125001, Static Post Test Evaluation of GL 89-10 Program Rising Stem MOVs, (Valve No. SI-863B), dated 5/4/2004

Components Reviewed

MOV SI-860A
MOV SI 860B
MOV SI-861A
MOV SI-861B
MOV SI-863A
MOV SI 863B

Section 1R21.2.24a Testing and Inspection

Surveillance Procedures

OST-251-1, RHR Pump A and Component Test
OST-151-2, RHR Pump B and Component Test
OST-151-1, Safety Injection System Component Test - Pump A
OST-646, Fire Suppression Water System Engine Driven Fire Pump Test (Annual)

OST-154, Comprehensive Flow Test For The Safety Injection Pumps
OST-160, Pressure Isolation Check Valve Back Leakage Test
OST-013, Weekly Checks And Operations
OST-021, Daily Surveillances
CM-201, Service Water Safety Related Heat Exchanger Cleaning/Inspection
TMM-035, Static Post Evaluation of GL 89-10 Program Rising Stem MOVs

Miscellaneous Documents

RNP-M/MECH-1439, Set Up Calculation For MOV SI 863A
CP&L Manual ID 728-251-51, Ingersoll Rand Cameron Pump Div, Instructions and Parts List
CP&L Manual ID 728-800-08 A, Safety Injection Pump Installation, Operation, Maintenance, and Parts List

Section 1R21.3.31a Component Degradation

Procedures

OST-703-2, Primary Side Inservice Valve Test for the RHR System, Rev. 4
EDP-005, Auxiliary Fuse Panels, Rev. 11
OMM-007, Equipment Inoperable Record, Rev. 63
OST-935, ERFIS Indication Verification of Digital Regulatory Guide 1.97 Points, Rev. 8
EPP-027, Loss of DC Bus B, Rev. 8
CM-401, Removal and Reinstallation of Hydraulic and Mechanical Shock Suppressor, Rev. 23
CM-402, Figure 200 and 201 ITT Grinnell Shock and Sway Suppressors Maintenance, Rev. 17
CM-405, 500K Anker Holth Shock and Sway Suppressor Maintenance, Rev. 10
CM-408, Bergen-Paterson HSSA-20 and HSSA-30 Hydraulic Shock Suppressor Maintenance, Rev. 5
CM-409, Pacific Scientific Mechanical Shock Suppressor Maintenance, Rev. 6
EGR-NGGC-0308, Pipe Stress Analysis, Rev. 6
EGR-NGGC-0320, Civil/Structural Operability Reviews, Rev. 6
EGR-NGGC-0352, Baseplate Design, Rev. 4
EGR-NGGC-0353, Seismic Qualification of Rugged Parts, Rev. 4
EGR-NGGC-0354, Seismic Qualification of Electrical and Mechanical Equipment, Rev. 4
EGR-NGGC-0355, Pipe/Tube System Design, Rev. 6
EST-032, Visual Inspection of Hydraulic and Mechanical Shock Suppressor, Rev. 31
TMM-104, System Walkdown Procedure, Rev. 14
EGR-NGGC-0351, Condition Monitoring of Structures, Rev. 12
OP-923, Attachment 10.1, Containment Integrity, Rev. 23
OST-451, Liquid Waste Processing System Integrity Test, Rev. 13
MTN-NGGC-0007, Foreign Material Exclusion Program, Rev. 5

Completed Procedures

OST-254, RHR System and RHR Loop Sampling System Leak Test (Refueling), dated 5/29/04
EST-080, ISI Pressure Testing of RHR System, dated 4/21/04
SP-1007, RHR Pump Flow Test Special Procedure, Rev. 0
TMM-104, System Walkdown Report, RHR Pump Room, dated 04/16/04

TMM-104 Attachment 10.6, Attribute Inspection Checklist for Performance Monitoring of Structures, Auxiliary Building 8320, dated 05/22/96
TMM-104, System Walkdown Report, System # 8320, Auxiliary Building, dated 02/16/05

Work Orders/Work Requests

WO 00226400-01, Inspection and Testing of 52/22A, RHR-PMP-A-MTR, dated 05/21/2003
WO 00065334-01, Inspection and Testing of 52/22A, RHR-PMP-A-MTR, dated 12/26/2001
WO 00416769-01, Inspection and Testing of 52/26B , RHR-PMP-B-MTR, dated 08/23/2004
WO 00065316-01, Inspection and Testing of 52/26B , RHR-PMP-B-MTR, dated 11/26/2001
WO 00069244-01, Inspection and Testing of 52/21C, (SI Pump Motor A), dated 01/24/2002
WO 00065327, Inspection and Testing of 52/21C, (SI Pump Motor A), dated 11/14/2000
WO 00407618-01, Inspection and Testing of 52/21C, (SI Pump Motor A), dated 11/03/2004
WO 00206171-01, Inspection and Testing of 52/29C, (SI Pump Motor B), dated 04/03/2003
WO 00201320, Inspection and Testing of 52/23B, (SI Pump Motor C), dated 03/13/2003
WO 00405219, Inspection and Testing of 52/23B, (SI Pump Motor C), dated 10/20/2004
WO 00308071 Calibrate the RHR Pump A Discharge Pressure Instrument, dated 3/5/2004
WO 00126786 Calibrate the RHR Pump A Discharge Pressure Instrument, dated 9/12/2002
WO 00308071 Calibrate the RHR Pump A Discharge Pressure Instrument, dated 1/12/2001
WO 00501655 Calibrate the RHR Flow Transmitter, dated 10/7/2004
WO 00366661 Calibrate the RHR Flow Transmitter, dated 11/5/2003
WO 00226689 Calibrate the RHR Flow Transmitter, dated 12/5/2002
WO 548930-01, Boric Acid Buildup on Packing Gland
WO 548924-01, Boric Acid Buildup on Packing Gland
WO 54766-01, Boric Acid Buildup on Valve
WO 548929-01, Boric Acid Buildup on Packing Gland
WR 00183103, Substandard Grout at BIT Baseplate, dated 02/16/05

Calculations

RNP-C/EQ-1389, BIT Tank Baseplate Qualification, System No. 2080, Rev. 0
RNP-M/MECH-1429, Setup for MOV SI-870B, Rev. 8
RNP-C/SPPT-2100, Supports for CS/SI Full Flow Test Piping, System No. 2080, Rev. 1

Engineering Changes

EC 0000049080, RHR Pump A - Evaluation of pump casing stud thread engagement, Rev. 0
EC 0000047941, Valve stroke time limit change, Rev. 2
EC 0000051299, Installation of a vent assembly in RHR system line 14-AC-9 downstream of RHR-751 in the Containment Building, Rev. 3
EC 0000052641, Consolidation of Identical MMVS Rosemount Model 1154HP5RB

Miscellaneous Documents

UFSAR Sections 3.2, 3.8, 3.9, 3.10, 5.1, 5.4, 6.3, 9.2, 9.3, 11.2
TRMS Sections 3.18, B 3.18
IE Bulletin No. 79-14, Seismic Analysis for As-Built safety-related piping systems
IE Bulletin No. 79-02, Pipe Support Designs using concrete expansion anchor bolts
System Health Report, Safety Injection and Containment Spray, Dated 8/1/04

System Health Report, Residual Heat Removal System, Dated 8/30/04
Modification No. 888, In-Situ Abandonment of [Boron Injection Tank]
Engineering Change 58307, Removal of SI-841A/B From the Engineering and Operating Basis
ESR 01-00050PT-602 and 602B Replacement, Rev.0

Components Reviewed

RHR Flow Instrument FT-605
RHR Pump Discharge Pressure Transmitters PT-602A, and PT-602B

Section 1R21.3.32a Equipment/Environmental Qualification

Environmental Qualification Documentation Package s (EQDPs)

EQDP 8.1, Westinghouse Motors, Rev. 7
EQDP 2.0, Limitorque MOV Actuators, Rev. 7

Section 1R21.3.33a Equipment Protection

Procedures

AOP-032, Response to Flooding from the Fire Protection System, Rev. 5

Generic Issues Documents

GID/R87038/0006, Generic Issues Document Pipe Failures, Rev. 4
GID/R87038/0007, Generic Issues Document Hazard Analysis, Rev. 1

Miscellaneous Documents

UFSAR Sections 3.4, 3.5, 3.6,
H.B. Robinson SEP Unit No. 2, Individual Plant Examination Final Report, dated August 1992

Section 1R21.3.34a Component Inputs/Outputs

RNP-E-8.002, Attachment Z, Computer Output/Reports/Documents, Rev. 5
RNP-8.042, A.C. MOV Protection Eval Based on Computer Program “Motor Guard 3.1,” Rev. 2
RNP-E-8.042, Attachment N, Minimum Available MOV Torque for Various Voltages and Accident Scenarios, Rev. 2

Section 1R21.3.35a Operating Experience

Procedures

CAP-NGGC-0202, Operating Experience Program

Action Requests

AR 87764, [Harris Nuclear Plant] Assessment of [Auxiliary Operator] Manual Actions
AR 117282, NSAL 04-01 (Hot Leg Switchover Time Clarification
AR 117728, A Non-Conservative Design Input Used in the LOCA Containment Integrity Analysis of Record (AOR)
AR 123165, Limitorque Gear Ratio Concerns
AR 128305, AR118930 Boric Acid Leakage Recognition
AR 131240, RWST Damaged While Draining
AR 138225, Siphoning Condition Related to Sump Leakage Detection System
AR 141564, Part 21 Auxiliary Relays
AR 145672, NRC Information Notice 2004-21, Effect of Boric Acid Leakage on Sump pH
AR 150978, CCP Runout on SI Issue
Westinghouse Technical Bulletin, NSD-TB-94-01-RO, Motor Rotor Bar Cracking

Section 1R21.4a Identification and Resolution of Problems

AR 00011473, Vacuum in RWST during safety injection
AR 0028909, Cracked grout under BIT support leg
AR 0066036, BIT tank support baseplate over auxiliary building/CV seismic gap
AR 00108878, Simultaneous failure of RHR pump rooms sump level indicators
AR 00152332, Evaluate maintenance rule criteria for RHR sump pump
AR 00126009, Plastic piece found downstream of SI-PMP-B discharge check valve
AR 00126273, FME cover for “C” SI PMP discharge had paint chips in it
AR 00142716, CCW excessive seal leakage
AR 29564, Consider revising the 12-inch Auxiliary Building flood setpoint
AR 9700284, RHR-758 Leaks by in the plant
AR 127134, SI-841A and SI-841B abandoned in place
AR 101513, Walkdown actions important to safety
AR 87764, [Harris Nuclear Plant] assessment of [auxiliary operator] manual actions
AR 67182, [Safety Injection pump emergency cooling fitting]
AR 98565, Revise EPP-9 for Generic Issue 191 (NRC Bulletin 2003-1) interim compensatory measures
AR 103327, Investigate removal of actions to rack out breakers and replace with pulling control power fuses
AR 60508, Additional concern from [condition report]
AR 59602, EPP-24 Piggy Back mode issues
AR 65302, OMM-044, Rev. 4, Emergency Operating Procedure Program
AR 0116225, Charging flow meter failed online
AR 0076766, RHR pump shaft seal failed
AR 0117303, CV spray pump oil indicates increase in trace metals
AR 0126308, Orifice diameter on CCW flow meter is incorrect
AR 0144607, Brown boric acid buildup on charging pump ‘C’
AR 0144605, Boric acid leakage on charging pump ‘A’
AR 0121862, SI pump has a possible through casing leak
AR 0108878, Simultaneous failure of RHR pump rooms sump level indicators
AR 0077042, EST-083 was listed as closed but was not fully completed
AR 0096885, Action for increased primary plant unidentified leakage

AR 0099903, ECCS pump NPSH calculation error
AR 0146020, Monitoring of active boric acid leaks
AR 0075489, Containment spray pump valve failed to lift within required set pressure

ARs Initiated due to this inspection

151238, UFSAR Inconsistent or Unclear on SI Relief Valve Requirement
151422, Evaluate Operation with Degraded Grid Relays Bypassed
151797, Investigate Changing Transition at EPP-9, Step 28
152238, ELS-84 Location not Correct on HBR2-7791, Sheet 1
152332, Evaluate Maintenance Rule Criteria for RHR Sump Pump
152372, RWST Vent Documentation Should be Improved
152397, Clarification of EPP-001, Rev. 33 Loss of All AC
152434, EC 45427 (ESR 00-00175) Impacted Documents not on ADL
152575, Misprint Errors Found on Completed WO# 315585-01
152634, OMM-044 Requirement for Periodic V&V Missed
154571, EPP-9 Potential Limiting Scenario for Switchover
154582, Missed Opportunities to Identify FSAR Discrepancy

LIST OF ACRONYMS USED

ACR	Adverse Condition Report
AOP	Abnormal Operating Procedure
APP	Annunciator Panel Procedure
AR	Action Request
CFR	Code of Federal Regulations
CST	Condensate Storage Tank
DBD	Design Basis Document
ECCS	Emergency Core Cooling System
EOP	Emergency Operating Procedure
EPP	End Path Procedure
EQDP	Environmental Qualification Documentation Package
ERG	Emergency Response Guidelines
ESR	Engineering Service Request
FME	Foreign Material Exclusion
GL	Generic Letter
HHSI	High Head Safety Injection
ISI	Inservice Inspection
JPM	Job Performance Measure
LBLOCA	Large Break Loss of Coolant Accident
LER	Licensee Event Report
LHSI	Low Head Safety Injection
LOCA	Loss of Coolant Accident
MCC	Motor Control Center
MCR	Main Control Room
MOV	Motor Operated Valve
NCV	Non-Cited Violation
NPSH	Net Positive Suction Head
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RWST	Refueling Water Storage Tank
SI	Safety Injection
SIS	Safety Injection System
SL	Severity Level
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
USQ	Unreviewed Safety Question
WO	Work Order
WOG	Westinghouse Owners' Group