May 11, 1999

Carolina Power & Light Company
ATTN: Mr. Dale E. Young
Vice President
H. B. Robinson Steam Electric Plant
Unit 2
3581 West Entrance Road
Hartsville, SC 29550

SUBJECT: NRC INTEGRATED INSPECTION REPORT NO. 50-261/99-02

Dear Mr. Young:

This refers to the inspection conducted on February 28 through April 10, 1999, at the Robinson facility. The enclosed report presents the results of this inspection.

During the six-weeks covered by this inspection period, our inspectors found that your staff generally took a safety-conscious approach to the activities conducted at the Robinson plant.

Based on the results of this inspection, the NRC has determined that one violation of NRC requirements occurred. The violation is being treated as a Non-Cited Violation (NCV), consistent with Appendix C of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or severity level of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director; Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Sincerely,

(Original signed by B. R. Bonser)

Brian R. Bonser, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure: Integrated NRC Inspection Report

cc w/encl: (See page 2)

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REGION II

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|---|---|
| Docket No: | 50-261 |
| License No: | DPR-23 |
| Report No: | 50-261/99-02 |
| Licensee: | Carolina Power & Light (CP&L) |
| Facility: | H. B. Robinson Unit 2 |
| Location: | 3581 West Entrance Road<br>Hartsville, SC 29550 |
| Dates: | February 28 - April 10, 1999 |
| Inspectors: | B. Desai, Senior Resident Inspector<br>A. Hutto, Resident Inspector<br>B. Holbrook, Project Engineer (Sections O8.3 - O8.7)<br>P. Steiner, Operator License Examiner<br>G. Wiseman, Reactor Engineer (Sections F1-F7) |
| Approved by: | Brian R. Bonser, Chief<br>Reactor Projects Branch 4<br>Division of Reactor Projects |

Enclosure

# EXECUTIVE SUMMARY

H. B. Robinson Power Plant, Unit 2
NRC Integrated Inspection Report 50-261/99-02

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a six-week period of resident inspection. In addition, it includes the results of a fire protection inspection by a regional based reactor inspector and an operator work around inspection led by a regional project engineer.

## Operations

- The conduct of operations was professional, risk informed, and safety-conscious (Section O1.1).

- A system walkdown found that the 125 volt DC system was appropriately aligned for current plant conditions. A procedural discrepancy identified was immediately corrected by the licensee (Section O2.2).

- A clearance associated with valve maintenance provided adequate isolation conditions for personnel safety and protection of plant equipment. The clearance was implemented in accordance with the licensee's procedures (Section O2.3).

- A walkdown of the important field operator actions identified by the Probabilistic Safety Analysis determined that the operator was knowledgeable and that necessary equipment was appropriately staged to perform necessary tasks in a timely manner (Section O2.4).

- A discrepancy between the Reactor Turbine Generator Board indication and the radiation monitoring system recorder indication for the letdown radiation monitor was observed. Operators exhibited inattention to detail in not recognizing the discrepancy (Section O4.1).

- The licensee had established adequate procedural guidance for the identification, tracking and resolution of Operator Workarounds (OWA). One new OWA was identified that had not been identified by the licensee (Sections O8.3, O8.4).

- The inspectors did not identify any reduction in system or component reliability or availability due to OWAs or compensatory measures. The simulator and training staff were adequately maintaining the simulator like the plant and also were incorporating modeling changes necessary to mimic the actual plant deficiencies (Section O8.5).

- Except for one example, the licensee effectively identified OWAs, established reasonable corrective actions, and satisfactorily assessed OWAs for overall cumulative effect on safe operations of the plant. The recent self-assessments dealing with OWAs

were thorough, detailed, and self-critical. Senior site management routinely reviewed the results of the OWA cumulative assessments and were aware of ongoing problems, compensatory measures, and scheduled corrective actions (Sections O8.6 and O8.7).

Maintenance

- Maintenance activities were conducted in accordance with applicable work documents and procedures. Personnel were properly trained and knowledgeable of their assignments (Section M1.1).

- A review of completed surveillance test packages demonstrated acceptable test results (Section M2.1).

- Preventive maintenance on the "B" containment spray pump breaker was performed by knowledgeable electricians. A violation was identified involving an electrician's failure to follow the preventive maintenance procedure during annunciator checks of the breaker (Section M4.1).

Engineering

· Weaknesses in the operability evaluation associated with an emergency diesel generator lube oil leak were identified. The root cause analysis performed by the licensee associated with the lube oil gasket failure was thorough and resulted in appropriate corrective actions
(Section E3.1).

Plant Support

- Radiological controls and security practices were properly conducted. Areas observed in the radiological control area were appropriately posted and secured. The security plan was effectively implemented and compensatory actions were initiated when required (Section R1.1, S1.1).

- The licensee identified the source of increased Reactor Coolant System (RCS) coolant activity as a secondary source leak. The total antimony activity released to the coolant was negligible with respect to Technical Specification (TS) limits for gross specific activity. The licensee's action plan for dealing with the antimony was thorough and made good use of industry operating experience (Section R1.2).

· An emergency drill met its objectives and provided beneficial training to the site emergency organization (Section P5.1).

· The licensee's implementation of the combustible control procedures and plant operational practices in safety-related areas were consistent with the approved fire protection program. Plant housekeeping and trash control was satisfactory. There

was no adverse trend in the number of significant fire prevention program problems during the past two years (Section F1.1).

- During the period 1997 through 1999, there were four incidents of fire, smoke, or significant equipment overheating within Unit 2 safety-related plant areas. Fire related conditions were identified and mitigating actions were taken in a timely manner. No significant increase or decrease in the number of fire related incidents occurred over the time period (Section F1.2).

- Personal protective fire fighting equipment provided to the brigade was in good condition, well staged, properly maintained, and provided a sufficient level of personal safety needed to handle onsite fire emergencies (Section F2.1).

- Appropriate emphasis had been placed on the operability of the fire protection equipment and components. The number of degraded fire protection components was low. Manual fire fighting equipment, automatic fire detection systems, and fire barrier features of fire zone/area walls, floors, and ceilings were operational and were well maintained. A National Fire Protection Association Code compliance vulnerability had been identified by the licensee and included in the plant corrective action program. No adverse trends had been observed for fire detection system spurious alarms and Electric Thermal Link fire damper resistance values for the carbon dioxide and Halon fire suppression systems (Section F2.2).

- The fire brigade pre-fire strategies were found to be satisfactory and met the requirements of the NRC approved fire protection program (Section F3.1).

- The fire brigade drill program and fire drill participation met the requirements of the site fire protection program. The fire brigade demonstrated good response and fire fighting performance during a simulated fire brigade drill conducted during this inspection. A number of fire brigade drills had been performed in risk significant plant locations (Section F5.1).

- The licensee's Nuclear Assessment Section assessments of the facility's fire protection program for a two-year period were effective in reporting fire protection program performance to management. The licensee’s corrective actions in response to previously identified issues were comprehensive and timely (Section F7.1).

## Report Details

Summary of Plant Status

Robinson Unit 2 operated at 100 percent power until April 7. On April 7, 8 and 9 power was reduced to 98 percent for approximately three hours each day to accommodate routing the Reactor Coolant System (RCS) letdown through the deborating demineralizer. Power was returned to 100 percent on April 9.

## I. Operations

### O1 Conduct of Operations

O1.1 General Comments (71707)

The inspectors conducted frequent control room tours to verify proper staffing, operator attentiveness and communications, and adherence to approved procedures. The inspectors routinely attended operations turnover meetings, management review meetings, and plan-of-the-day meetings to maintain awareness of overall plant operations. Operator logs, Condition Reports (CR), and instrumentation were routinely reviewed. Plant tours were conducted to verify operational safety and compliance with Technical Specifications (TS), as well as to assess plant housekeeping. In general, the inspectors concluded that the conduct of operations was risk informed, professional, and safety-conscious.

### O2 Operational Status of Facilities and Equipment

O2.1 Verification of RCS Leak Rate Determination (61726, 71707)

The inspectors observed performance of Operations Surveillance Test OST-051, "Reactor Coolant System Leakage Evaluation (Every 72 Hours During Steady State Operation and Within 12 Hours After Reaching Steady State Operation)," Revision 24, and independently verified the results. OST-051 is a volumetric balance of RCS inventory taken over a minimum of one hour. The longer the interval between data collection, typically the more accurate the leak rate determination. Values for total leak rate, identified leak rate, and unidentified leak rate are obtained by performing OST-051. The inspectors collected data and independently calculated an RCS leak rate. The inspectors value of 0.15 gpm, all unidentified leakage, taken over a one hour period, compared favorably to the licencee's calculation of 0.13 gpm, all unidentified leakage, taken over a three hour period. The inspectors concluded that the RCS leak rate determination performed by the licensee was technically sound and correctly performed.

O2.2 Engineered Safety Feature System Walkdown

a. Inspection Scope (71707)

The inspectors conducted a walkdown of the 125 volt DC electrical system. The scope of the walkdown included the supply breakers to the battery chargers from the 480 volt AC motor control centers, battery chargers, batteries, and inverters. The system engineer for the 125 volt DC system accompanied the inspectors.

b. Observations and Findings

The walkdown assessed the general condition of system components, including labeling, to verify that system alignment matched the system drawings and station operating procedures, and to assess plant housekeeping around system components. The inspectors also reviewed the system file maintained by the system engineer. This included a review of maintenance rule performance indicator data trending.

The inspectors determined that the 125 volt DC electrical system was properly aligned for current plant conditions. Housekeeping and component labeling were adequate. Minor corrosion on the “A” battery, cell number 45 was observed, for which a Deficiency Log Entry (DLE) was initiated. The frequency for preventive maintenance(PM) related to cell cleaning was recently changed from monthly to quarterly. The system engineer plans to monitor future battery conditions to assess if the PM frequency should be reverted to monthly. The inspectors also identified a procedural discrepancy which was immediately corrected by the licensee.

c. Conclusions

A system walkdown found that the 125 volt DC system was appropriately aligned for current plant conditions. A procedural discrepancy identified was immediately corrected by the licensee.

O2.3 Clearance Walkdown (71707, 62707)

The inspectors verified proper implementation of clearance, 99-00387, during a walkdown on April 1. The inspectors verified that valves, as well as electrical breakers, were aligned appropriately to provide an adequate boundary for the scheduled maintenance activity. No discrepancies were identified during verification of the clearance. The inspectors verified that the clearance was implemented in accordance with the licensee’s procedures.

O2.4 Probabilistic Safety Analysis (PSA) Important Operator Actions Review

a. Inspection Scope (71707)

The inspectors walked down “Important Operator Actions” steps identified by the Robinson PSA to verify status and readiness to mitigate an accident.

b. Observations and Findings

The inspectors reviewed the PSA summary document to determine the important field operator actions, and their importance, during accident mitigation. The inspectors accompanied an operator and walked down some of the affected systems to determine the status and readiness of the staged equipment to accomplish the prescribed actions, and the operator's knowledge of the actions necessary to mitigate accidents. These actions included:

- provide alternate cooling to charging pumps
- identify/isolate service water pipe rupture
- supply alternate suction to auxiliary feedwater pumps
- supply alternate cooling to auxiliary feedwater pumps

The inspectors determined that for the systems walked down, the operator was knowledgeable, and equipment was appropriately staged to perform the necessary tasks in a timely manner. The inspectors made several observations during the review which were given to the licensee. The licensee initiated procedure correction forms or immediately acted on the inspectors' observations. These items did not compromise the operator's ability to accomplish the required task.

c. Conclusions

A walkdown of the important field operator actions determined by the PSA determined that the operator was knowledgeable and that necessary equipment was appropriately staged to perform necessary tasks in a timely manner.

## O4 Operator Knowledge and Performance

### O4.1 Radiation Monitoring Setpoints

a. Inspection Scope (71707)

The inspectors reviewed and assessed the performance of Operations Management Manual OMM-14, "Radiation Monitor Setpoints," Revision 31. This is a monthly check of alarm setpoints for the area, process, and accident radiation monitors, including the alarm setpoints associated with the Radiation Monitoring System Recorder, RR-1.

b. Observations and Findings

The inspectors observed the control room operator's performance of OMM-14 which included obtaining the alarm setpoint data and a comparison with the required alarm settings. The inspectors also verified with Environmental and Radiation Control (E&RC) personnel the effluent monitor alarm setpoints. These are checked monthly with environmental monitoring procedures consistent with OMM-14. The inspectors verified that alarm setpoint calculations used in OMM-14 are updated by E&RC.

OMM-14 requires the operator to obtain the current radiation levels as indicated on each radiation monitor display on the reactor turbine gauge board (RTGB) and on RR-1. The inspectors noted that the indication for R-9, letdown radiation monitor, was approximately 50 percent higher on the RR-1 display than on the RTGB. The inspectors pointed this out to the operator and asked if this was a normal condition for the readings to disagree by that amount. The operator and control room shift supervisor (CRSS) responded that they did not know what would account for the discrepancy. The inspectors followed up with the system engineer who determined that the RR-1 indicator was likely stuck on the higher reading. This condition probably existed since sometime after a release of antimony in the coolant as the result of a secondary source leak (Section R1.2). A work request (WR/JO 99 ABLW1) was initiated and the item was placed on the emergent work list.

OMM-14 does not specifically instruct the operator to cross check readings between the RTGB and RR-1. However, the licensee's expectations for operators are to routinely compare redundant indications of plant parameters. Additional operator awareness would be expected with respect to R-9 due to the increased radiation levels that resulted from the leaking secondary source. The operators demonstrated an inattention to detail by not noticing the discrepancy. Additionally, the operators did not immediately pursue investigating the problem once it was brought to their attention by the inspectors. A CR was written by the licensee documenting this occurrence (CR 99-00747). Additionally, it is the inspectors' assessment that the procedure could be enhanced by including instructions for the operator to note any discrepancies between the RTGB readings and RR-1 readings.

c. Conclusions

A discrepancy between the RTGB indication and the radiation monitoring system recorder indication for the letdown radiation monitor was observed. Operators exhibited inattention to detail in not recognizing the discrepancy.

**O8 Miscellaneous Operations Issues (92901, 40500, TI 2515/138)**

An inspection was conducted to evaluate the cumulative effect of operator workarounds (OWAs) on the ability of operators to safely operate the plant and effectively respond to abnormal and emergency plant conditions. Information gathered during this inspection will be used to support an evaluation of the need for additional NRC industry guidance concerning OWAs. The inspection was conducted in accordance with Temporary Instruction (TI) 2515/138, "Evaluation of the Cumulative Effect of Operator Workarounds." The results of the OWA inspection are documented in Sections O8.3 - O8.7.

O8.1 (Closed) Licensee Event Report (LER) 50-261/98-04-00: Failure to Adequately Meet Acceptance Criteria for Technical Specification Surveillance Requirements. This issue was dispositioned as NCV 50-261/98-09-01, missed technical specification required

surveillance for valve position verification, at which time licensee corrective actions were reviewed.

O8.2 (Closed) LER 50-261/98-02-00: Failure to Meet Operability Requirements of Improved Technical Specifications for Supporting Equipment. This issue was identified as NCV 50-261/98-02-01: Failure to have two RHR trains operable in Mode 6. The inspectors verified that OMP-003, Shutdown Safety Function Guidelines, Revision 7 had been revised to specify more clearly the required support equipment for RHR trains in Mode 6.

O8.3 Operator Workaround Procedures and Criteria

a. Inspection Scope (TI 2515/138)

The inspectors reviewed procedures and criteria that the licensee used for identifying, tracking, and resolving OWAs and evaluating their cumulative effects. The procedures reviewed included the following:

- Operations Management Manual (OMM)-001- 8, "Control of Equipment and System Status," Revision (Rev.) 8.

- OMM-001-1, "Operations Unit Organization and Administration," Rev. 9.

b. Observations and Findings

The inspectors found that the licensee's current procedure for identifying, tracking, and resolving OWAs provided a detailed description of personnel responsibilities and the processes for management of OWAs. The inspectors noted that additional procedural detail was introduced in the most recent revision of the procedure completed in February 1999, in response to a self assessment. Consequently, whereas licensee personnel had several years experience in the identification, tracking, and resolution of OWAs, personnel had limited experience using the current procedural guidance.

The inspectors found that OMM-001-1 defined an OWA as "An equipment deficiency that significantly affects or could affect normal, abnormal, or emergency plant operations or cause operators to take significant compensatory actions beyond the intended design." The procedure also contained examples of OWAs and defined terms such as adverse impact, compensatory actions, daily operations, and transient operations. The inspectors noted that the licensee use of "significantly effects" in their definition could introduce subjectivity into the identification of an OWA. Licensee management stated that all items were included so that the cumulative effect, even from small tasks, could be measured.

The inspectors noted that procedure OMM-001-8 provided the general guidelines for processing OWAs and that there was no direct tie or reference to procedure OMM-001-1 that contained the definition of an OWA, clarifying definitions, and examples of OWAs. Although several individuals interviewed were not aware of the guidance in procedure

OMM-001-01, the inspectors did not identify that this unclear link presented any significant problems for the identification and processing of OWAs.

In accordance with OMM-001-8, on-shift operations personnel are responsible for screening all identified control room deficiencies. If the operator determines that a condition constitutes a potential OWA then the Control Room Shift Supervisor (CRSS) was informed. The potential OWA was assessed by the CRSS or another Senior Reactor Operator (SRO), using an attachment to the procedure, to determine if an adverse impact on plant operations existed. The assessment was made for the deficiency alone and in combination with other existing OWAs (aggregate impact). Some of the elements the assessment focused on included: core damage frequency, system reliability or availability, power operations, shutdown operations, the operators ability to respond to plant transients involving the use of abnormal and emergency procedures, emergency plan accident assessment, and the potential for increased operator error. All deficient items assessed for potential OWAs were reviewed by the Operations Manager.

The procedure requires the CRSS or another SRO and the Operations Manager to review the screening of the OWA, assess the adequacy of the compensatory measures, and direct additional compensatory measures if necessary. The OWA report was reviewed daily and work priorities were adjusted if needed. Work request and job orders initiated for the past 24 hours were reviewed for potential OWAs and the combined impact of scheduled work and OWAs were considered.

A SRO conducted a monthly assessment of the overall impact of existing OWAs on plant operations using attachment 6.2 of procedure OMM-001-08. The data from the assessment was reviewed, tracked, and trended by operations management. Approved OWAs were also routed to the Superintendent Operations Support (SOS) for additional review and trending.

The procedure identified that OWAs affecting implementation of transient response procedures or items which significantly affect daily operations should be identified and resolved as soon as possible. OWAs judged to not have a significant affect in the daily operations should by processed through the normal work processes and management channels.

The inspectors observed that the procedure clearly identified the actions required for OWA closure. The actions included completing an attachment to the procedure justifying the closure, justification review by the SOS, and final review by the Operations Manager. The inspectors found that OMM-001-1 and OMM-001-8 defined the criteria to use for assessing the cumulative effects of OWAs and that the criteria were consistent with those provided in TI 2515/138.

c. Conclusions

The licensee had established adequate procedural guidance for the identification, tracking and resolution of OWAs. The licensee's definition of OWAs contained all the

elements identified in TI 2515/138, however, the licensee use of "significantly effects" in their definition could introduce subjectivity into the identification of an OWA. The current procedure revision contained guidance for assessing the cumulative effects of OWAs consistent with the criteria provided in TI 2515/138.

O8.4 Identification of OWAs

a. Inspection Scope (TI 2515/138)

The inspectors interviewed licensed operators, senior reactor operators, shift technical advisors, and engineering personnel to assess their knowledge of OWAs. The inspectors reviewed OMM-001-8, the current list of OWAs, selected Surveillance Procedures, Emergency Operating Procedures, Off Normal Operating Procedures, and Alarm Response procedures to identify any OWAs that had not been previously identified by the licensee. Additionally, condition reports, overdue condition reports and condition reports on equipment identified by the Individual Plant Examination (IPE) as important were reviewed to identify OWAs.

b. Observations and Findings

The inspectors interviewed licensee staff in an attempt to determine if there were any OWAs in existence that should be on the licensee's list but were not. There were no additional items identified. In general, the interviewed personnel demonstrated sufficient knowledge of all licensee identified OWAs and their required compensatory actions. The inspectors assessed the operators ability to identify an OWA using the licensee procedure. Some of the operators interviewed believed that if an item was determined to not have a "significant effect", it would be added to the maintenance work list, but would not be added to the OWA list. The operators could not identify specific examples of this concern. The inspectors observed that operations personnel demonstrated a high level of awareness for deficiency identification and assessment for potential OWAs and could effectively use the OWA procedures.

The inspectors reviewed the licensee's IPE for a current list of system and operator actions which are important to safety. The inspectors did not find any existing operator workarounds which effected either the operator actions important to safety or systems with a high importance factor.

The inspectors observed control room operations with two different crews. During that time, the inspectors reviewed the caution tag log, deficiency (blue dot) log, night orders, operator aid logs, turnover sheets, and the temporary modification log. The inspectors also walked down the control boards and cross checked all identified deficiencies with the above mentioned procedures and administrative controls. While reviewing the caution tag log, the inspectors identified an OWA that was not on the licensee's list.

A caution tag was in place for valve MS-60, the inlet valve to pressure control valve (PCV) - 1380 associated with the Turbine Cylinder Heating Steam System. PCV-1380 is designed to maintain five pounds differential pressure across the main turbine steam

seal labyrinth for one end of the turbine. PCV-1380 was stuck in the full open position. An identical regulator, PCV-1381, supplies steam to the other turbine end labyrinth seal. The inspectors walked down these systems and observed that each PCV has a bypass valve around the regulator and both bypass valves were throttled open. Each bypass valve had an operator aid posted, stating that the bypass valves were throttled as needed to provide adequate sealing steam to the labyrinth seals. The on-shift Shift Superintendent - Operations (SSO) informed the inspectors that following a reactor/turbine trip it was necessary to close the PCV bypass valves to prevent uncontrolled cooldown. The SSO stated that the problem actually occurred a year or so ago during his shift and the bypass valves were required to be closed to control RCS cooldown.

The inspectors discussed the system and valve problem with the system engineer. The engineer stated that the PCV should maintain five pounds differential pressure or greater across the turbine seals. The reason that the PCV bypass valves were open was that following the last turbine refurbishment, the turbine would not rotate due to rubbing. The rubbing surface of the turbine casing was ground down to allow the turbine to rotate. After the surface was ground down, it was observed that steam was issuing from the rear of the turbine. The PCV bypass valves were opened to provide additional steam as the regulator was full open and could not maintain the differential pressure. This action prevented steam from issuing out of the turbine.

The inspectors determined that this problem met the licensees definition of an OWA that the licensee had not identified. The inspectors concluded that the required plant operator action to close the bypass valves did not create an overwhelming cumulative burden. The inspectors discussed the stuck open valve deficiency and required operator action with licensee management. The inspectors were later informed that this problem had been added to the open OWA list and the valve was scheduled to be repaired during the next refueling outage. However, the PCV bypass valves would probably remain open until scheduled turbine work is completed in 2002.

The inspectors observed that there was no system operating procedure for the Turbine Cylinder Heating Steam System. The system is lined up when the Main and Reheat Steam System valve checklist is performed. Procedure GP-004, “Post Trip Stabilization,” Rev. 0, Step 5.44 states, “Verify the Turbine Cylinder Heating Steam System is operating correctly.” The inspectors discussed the procedure step with the SSO. The SSO did not have a clear understanding of how to ensure the system was operating properly. The inspectors discussed this observation with licensee management. The inspectors were informed that the system and the need for specific guidance would be reviewed. The inspectors did not view the lack of specific procedure guidance as a significant safety concern. Operations personnel were aware of the compensatory actions required to close the valves.

c. Conclusions

In general, the licensee had effectively identified OWAs and assessed their significance and cumulative burden to plant operations. The inspectors identified one OWA that met

the licensee's definition of an OWA that had not been previously identified. The OWA did not present any concern for the cumulative burden of operations. Operations personnel demonstrated a high level of awareness for deficiency identification and assessment for potential OWAs and could effectively use the OWA procedures.

O8.5 Assessment of Individual OWAs

a. Inspection Scope (TI 2515/138)

The inspectors reviewed OWAs to assess their impact on plant operational safety.

b. Observations and Findings

The inspectors reviewed the 11 open licensee identified OWAs and did not identify any significant cumulative impact on plant operational safety. The licensee identified OWAs in accordance with plant procedures which included caution tags, deficiency tags, work request, job orders, and procedure revisions. Operators interviewed did not voice any concerns with regard to operational difficulties or increased potential for error. The inspectors reviewed each individual OWA for operator burden and system reliability and availability. The inspectors concluded that there were no compensatory actions that were beyond the scope of the licensed and non-licensed operators knowledge and abilities.

The inspectors reviewed each individual OWA for its impact on operator actions during abnormal or emergency conditions. The inspectors also evaluated the OWAs influence on the potential for causing a plant transient or reactor trip. While there were several items the inspectors identified that could cause a transient or reactor trip, none of the items affected the operator actions important to safety as identified in the licensee's IPE.

The inspectors did identify some items that could potentially affect the timeliness for the completion of abnormal or emergency procedure actions. However, none of these items were cumulative in nature such that the burden presented to the operators would be beyond the scope of their abilities. The licensee had considered the timeliness aspect of the actions.

The inspectors reviewed all licensee identified OWAs and verified that the deficiencies were correctly modeled in the simulator. The inspectors walked down the simulator and compared the deficiencies with those of the actual plant. The simulator and training staff had adequately maintained the simulator like the plant and also had incorporated modeling changes necessary to mimic the actual plant deficiencies. The inspectors noted that the simulator did not contain an OWA reference book that is present in the main control room (MCR). The inspectors interviewed training staff personnel with regards to OWAs. The training staff stated that they include drills which required operators to perform the compensatory actions of OWAs.

c. Conclusions

Current OWAs did not significantly impact plant operational safety. The inspectors identified no reduction in system or component reliability or availability due to OWAs or compensatory measures. The simulator and training staff had adequately maintained the simulator like the plant and also had incorporated modeling changes necessary to mimic the actual plant deficiencies.

O8.6 Cumulative Effect of OWAs

a. Inspection Scope (TI 2515/138)

The inspectors review OWAs to assess the cumulative effect on plant operations.

b. Observations and Findings

All personnel were responsible to identify and report discrepant and non-conforming conditions and the operations staff conducted an initial screening of the condition using Attachment 6.1 of procedure OMM-001-8. The inspectors observed that the attachment for the recently revised procedure included the majority of the assessment elements identified in TI 2515/138. The cumulative effect of all identified conditions was a specific assessment element of the procedure attachment. The inspectors noted that the procedure required a screening assessment for each item identified as a potential OWA. If the screening identified a potential OWA problem the CRSS or another SRO conducted an aggregate assessment and compensatory action review of the problem using Part III of Attachment 6.1. The inspectors noted that Part III of the attachment contained the assessment elements identified in TI 2515/138. Additionally, operations supervision personnel conducted a monthly aggregate impact assessment of all OWAs. The operations crew on shift performed a weekly review of OWAs in accordance with procedure OST-013, “Weekly Checks and Operations,” Rev. 39.

The inspectors concluded that the current procedure was thorough, detailed and provided sufficient guidance to effectively assess potential OWAs. However, the inspectors noted that the previous revision of the procedure did not require a detailed assessment. For example, the previous procedure did not require an assessment of the individual effect of each material deficiency including compensatory actions with respect to system or components that affected core damage frequency, system reliability, impact on power and shutdown operations, and whether the OWAs increased the probability of an operator error. The inspectors noted that the licensee had been assessing the cumulative effect of OWAs during the past two years. Senior site management routinely reviewed the results of cumulative assessments and were aware of ongoing problems, compensatory measures, and scheduled corrective actions.

The inspectors reviewed the licensee’s list of 11 open OWAs and 14 selected previously closed OWAs and did not identify any significant cumulative effect on operations ability to

respond to normal plant operations, transients, or accident conditions. The inspectors did not identify any concerns with respect to the licensee's identification and assessment of the OWAs for the overall cumulative effect.

The inspectors reviewed three self-assessments conducted within the past two years that, dealt in part, with OWAs. The inspectors noted that the self-assessments were thorough, detailed, and self-critical. The inspectors observed that, as a result of the self-assessments, new OWAs were identified, previously closed OWAs were added back on the open list, procedures were revised, and the overall awareness of OWAs was increased. Deficiencies identified during the self-assessment had either been corrected or were being tracked in the corrective action program for resolution. The extent and schedule for completing corrective actions were appropriate for the significance of the issues.

c. Conclusions

The current procedure was thorough, detailed and provided sufficient guidance to effectively assess potential OWAs. The licensee identified OWAs, established reasonable corrective actions, and satisfactorily assessed OWAs for overall cumulative effect on safe operations of the plant. There were no significant concerns identified with respect to the overall cumulative effect of OWAs. The recent self-assessments dealing with OWAs were thorough, detailed, and self-critical. Senior site management routinely reviewed the results of cumulative assessments and were aware of ongoing problems, compensatory measures, and scheduled corrective actions.

O8.7 Licensee Performance in Assessment and Resolution of OWAs

The inspectors reviewed procedure ADM-NGGC-0104, "Work Management Process," Rev. 5, the licensee's list of 11 open OWAs, and 16 selected previously closed OWAs to assess the prioritization and resolution of the problems.

The inspectors noted that work being controlled by this procedure and OMM-001-08, required that OWAs affecting implementation of transient response procedures or items which significantly affect daily operations should be resolved as soon as possible. Additionally, the procedure identified that OWAs judged to not have a significant affect in the daily operations category should be processed through the normal work control and management processes. The inspectors did not identify any instance where problem prioritization or completed work was unreasonable. Of the 11 outstanding OWAs four were identified to be corrected during the September 1999 refueling outage. One was identified to be corrected during the next forced outage or the next scheduled refueling outage and the remaining OWAs were in the review and planning stage. The oldest OWA associated with a waste gas compressor problem was identified in 1996. The licensee stated that this problem was complex, several items had already been corrected but more work was required. The inspectors concluded that the compensatory actions for this problem was not significant.

The inspectors observed that the number of licensee identified OWAs was relatively stable for the past several years with an average of about 10. Since 1996, 45 items were assessed for OWAs. Of this number, 12 items were disapproved, and 19 had been corrected and closed. The inspectors reviewed the selected disapproved items and did not identify any concerns with their disposition. The licensee recently increased emphasis on OWAs and completed a self-assessment during the week of October 5, 1998, that resulted in adding some previously closed OWAs back on the open list.

The inspectors concluded that, except for one example, the licensee had effectively identified, assessed, scheduled, and resolved OWAs based upon safety significance.

## II. Maintenance

### M1 Conduct of Maintenance

M1.1 Observation of Maintenance Activities (62707)

The inspectors observed all or portions of the following work requests (WR):

- CM-122, "Limitorque H-BC Operators, Size 0 through 3," Revision 7
- WR/JO AHLH 004, Inspection and Testing of 52/33C (CCW "A" Pump)
- PM-163, "Inspection and Testing of Circuit for 480 volt Bus E2," Revision 5

The inspectors determined that the maintenance observed was properly approved and was included on the plan of the day. The inspectors found that the work observed was thorough, and performed with the work package present and in use. Accompanying documents such as procedures and supplemental work instructions were properly followed. Personnel were properly trained and knowledgeable of their assignments. The inspectors noted that supervisors and system engineers monitored the jobs on a frequent basis.

### M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Review of Completed Surveillance Test Packages (61726)

The inspectors reviewed test package documentation for the following completed surveillance tests:

- OST-624, "Fire Damper Inspection (18 month)," Revision 27
- OST-643, "AUT Deluge System Flow Test (annual)," Revision 11
- LP-10, "RC Delta T, Taverage, Deviation Alarm," Revision 10

· OST-51, “Reactor Coolant System Leakage Evaluation,” Revision 24

No problems were identified. Completed surveillance test packages demonstrated acceptable test results.

M4 Maintenance Staff Knowledge and Performance

M4.1 Containment Spray Pump Breaker Maintenance

a. Inspection Scope (62707)

The inspectors observed and assessed PM performed on the “B” containment spray pump breaker 52/25C, as performed under work request WR/JO AHMG 004.

b. Observations and Findings

On April 6 procedure PM-163, “Inspection and Testing of Circuit Breakers for 480 Volt Bus E2,” Revision 5, was performed by maintenance instrumentation and control (I&C) personnel for the “B” containment spray pump breaker 52/25C. The inspectors observed performance of selected parts of this PM. The inspectors found the mechanics to be thorough in their inspection of various components within the breaker. The electricians were knowledgeable with respect to the various breaker components and their functions. Equipment used by the electricians was found to be in calibration. The inspectors observed that the procedure was not followed as written.

In PM-163 Section 7.29, “DB-50 Annunciator Check,” the procedure states to manually close the breaker, trip it, rack it to the test position, install control power fuses, then check for the proper annunciators to light. The steps as performed were, rack in the breaker, install control power fuses, locally close the breaker using the push button (this energizes the closing coil), trip the breaker, then check the annunciator light. This discrepancy was brought to the attention of the electrician and the auxiliary operator (AO) by the inspectors. The inspectors asked the electrician if that was normally the way he performed the procedure, to which he responded “yes”. The test was halted and the situation was discussed with the shift superintendent of operations (SSO) and the CRSS in the control room. Additionally, the I&C electrician notified his supervisor. The licensee personnel agreed that the procedure was not performed as written, and the steps were re-performed as written without further incident. No operability issues existed. The fact that the electrician performed the PM in a manner not specified by the procedure without consulting his supervisor or seeking a procedure change was potentially significant as the proper technical reviews were not performed. A condition report was initiated to document the discrepancy (CR 99-00735). Corrective actions included additional training and counseling for the I&C electrician in procedural usage. PM-163 was classified as a reference use procedure by the licensee. Administrative Procedure AP-006, “Procedure Use and Adherence,” Revision 10, required that reference use procedures shall always be adhered to during the course of activities. TS Section 5.4.1.a requires that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide (RG)

1.33, Revision 2, Appendix A. Appendix A of RG 1.33, Revision 2 includes procedures for maintenance that can affect the performance of safety-related equipment. The failure to perform the annunciator checks in accordance with PM-163 is considered a violation. This Severity Level IV violation is being treated as a Non-Cited Violation consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CR 99-00735. This violation is identified as 50-261/99-02-01, Failure to Follow Procedures During Safety Related Breaker Maintenance.

c. Conclusions

Preventive maintenance on the "B" containment spray pump breaker was performed by knowledgeable electricians. Inspections performed were thorough and detailed. A violation was identified that involved a failure to follow the preventive maintenance procedure during annunciator checks of the breaker.

## III. Engineering

### E3 Engineering Procedures and Documentation

E3.1 "A" Emergency Diesel Generator (EDG) Lube Oil Leak

a. Inspection Scope (37551, 62707)

The "A" EDG had developed an oil leak due to the installation of the incorrect size gaskets during the initial startup following on-line maintenance on January 25. This issue was discussed in NRC Inspection Report 50-261/99-01 and licensee evaluation was still ongoing. The inspectors reviewed the completed root cause evaluation and a past operability determination.

b. Observations and Findings

The operability determination was completed on April 8, and it concluded that the EDG had been operable, though the two gaskets on a lube oil line connection were of incorrect size. The incorrect, larger size gaskets, were pinched which ultimately resulted in the lube oil leak. The inspectors reviewed the operability determination and had the following observations:

- The initial operability determination did not specifically address the impact on plant licensing basis of the manual operator actions relied upon in the operability determination.

- The operability determination had to be revised based on inspectors questions with regard to implications of the oil leak on fire protection.

- The operability determination had not initially considered a catastrophic failure of the coupling gasket.

The licensee revised the operability evaluation to address the inspectors concerns.

The inspectors also reviewed the causes associated with the selection and installation of the wrong size gaskets, as documented in CR 99-00447.

The evaluation traced the problem to September 1995, when the licensee had identified and procured the incorrect gaskets. These gaskets were bought commercial grade directly from the supplier and were dedicated by the licensee. Prior to 1995, the licensee had bought the gaskets, qualified, from the EDG vendor. The licensee has now updated the material data base to include the correct gasket.

Additionally, the root cause evaluation concluded that though the mechanics encountered difficulty during installation of the gaskets due to the wrong size, they proceeded without questioning the appropriateness of the parts, which was due to a mindset that new gaskets are hard to install. The inspectors verified that it is common industry practice, and specifically mentioned in the licensee quality assurance program, to not have specific procedures that prescribe gasket installation. Gasket installation is considered to be “skill of the craft”.

c. Conclusions

Weaknesses in the operability evaluation associated with an EDG lube oil leak were identified. The root cause analysis performed by the licensee associated with the lube oil gasket failure was thorough and resulted in appropriate corrective actions.

**E8 Miscellaneous Engineering Issues (92903)**

E8.1 (Closed) Violation ( VIO) 50-261/97-12-04: Failure to Accomplish Modification Related Activities for the Containment Air Recirculation Cooling System. The licensee responded to this violation in a letter dated January 21, 1998. The corrective actions completed by the licensee included real time training and modification to the containment air recirculation cooling system. The inspectors reviewed and verified completion of licensee corrective actions.

E8.2 (Closed) Inspector Followup Item (IFI) 50-261/97-12-03: Review Safety Injection Discharge Piping Configuration: The inspectors had opened the IFI following an event involving lifting of a relief valve on the safety injection (SI) discharge piping during an inservice inspection. A CR, 97-02265 was initiated by the licensee which evaluated the condition as well as the test methodology. The inspectors reviewed the evaluation which concluded that no adverse affects existed as a result of the relief valve lifting as well as the acceptability of the test methodology. Notwithstanding, the licensee implemented a change to better coordinate the relief setpoints of the two relief valves on the SI injection line. The inspectors verified that PM models had been updated to reflect the changed relief setpoints.

E8.3 (Closed) LER 50-261/98-01-00: Open travel limit for containment purge valves found to exceed requirements of Technical Specification 3.6.3. LER 98-01-01, which supplemented LER 98-01-00 was closed by dispositioning the issue as a NCV. This was documented in NRC Inspection Report 50-251/98-06, issued on July 16, 1998.

E8.4 (Closed) Unresolved Item (URI) 50-261/98-09-02: Agastat E7000 Series Relay Replacement Schedule. This issue was initially discussed in the NRC Architectural Engineering Inspection Report 50-261/97-201, and subsequently in NRC Report 50-261/98-09 as an URI. The issue involved the licensee not having a preventative maintenance procedure for the replacement of E7000 series Agastat relays prior to the end of service life. NRC review of work requests and purchase documentation showed that none of the E7000 Agastat relays had exceeded the ten year service life. The licensee initiated CR-98-02742. The licensee is currently evaluating the operating environment of the E7000 relays to establish optimal frequency for replacement. These relays are subject to a moderate energy environment. The vendors ten year service life is based on a high energy environment. The licensee plans to resolve this issue through the CR process prior to exceeding the ten year service life.

## IV. Plant Support

### R1 Radiological Protection and Chemistry Controls

R1.1 General Comments (71750)

The inspectors periodically toured the Radiological Control Area (RCA) during the inspection period. Radiological control practices were observed and discussed with radiological control personnel including RCA entry and exit controls, survey postings, locked high radiation area controls, and radiological area material condition. The inspectors concluded that radiation control practices were being conducted in accordance with procedures. The inspectors also toured the radwaste building and found that radwaste storage containers and laundry bags were in good condition and appropriately labeled. In addition, outside radwaste storage areas and structures were properly posted and exhibited correct labeling and effective housekeeping. The inspectors found that housekeeping throughout the plant was effective in maintaining areas free of unnecessary equipment and debris. Relatively few contaminated areas were noted and posted locked high radiation areas were properly secured against unauthorized entry.

R1.2 Leaking Secondary Source

a. Inspection Scope (71707)

The inspectors reviewed and assessed activities related to a leaking secondary source and the resulting increase in reactor coolant gross activity. Source assemblies are loaded in the core to provide source neutrons during reactor startup.

b. Observations and Findings

On March 4, radiation levels on R-9, letdown line radiation monitor, increased from a normal reading of approximately 35 millirem/hour (mrem/hr) to approximately 90 mrem/hr. Licensee radiation control and chemistry personnel verified dose rates on the letdown line and collected and analyzed samples. It was determined that the increased radiation levels were a result of antimony isotopes Sb-122 and Sb-124. Since these were the predominant isotopes contributing to the coolant activity increase, along with the relative ratio between the two isotope concentrations, the licensee determined that a leaking secondary source was the cause. The total increase in RCS activity was well below the TS limit for gross specific activity. The licensee performed increased radiological surveys within the auxiliary building, and as a result of the increased radiation levels, the non-regenerative and seal water heat exchanger room was posted and controlled as a locked high radiation area. This was the only area in the auxiliary building that required more restrictive postings.

The inspectors attended management briefings, reviewed data, and held discussions with radiation control and chemistry, and reactor engineering personnel concerning the secondary source leak. Operating experience (OE) information from several plants that also had secondary source leaks was obtained from the licensee and reviewed. The inspectors also walked down and verified all locked high radiation areas in the auxiliary building were locked, and verified that control of these areas was in accordance with the licensee's procedures.

The inspectors reviewed the licensee's action plan to address the source leak. The plan focused on coolant cleanup, work planning, dose impact, and outage impact. The inspectors found the plan to be comprehensive in dealing with potential issues. Relevant OE was incorporated into the plan. The licensee plans to bring on line one of two deborating demineralizers to clean up the antimony. The inspectors discussed the potential for reactivity changes during this evolution with operations personnel. Licensee controls over this evolution, that potentially impacts reactivity, were safety conscious. The licensee plans to remove the secondary sources during the next refueling outage.

c. Conclusions

The licensee identified the source of increased RCS coolant activity as a secondary source leak. The total antimony activity released to the coolant was negligible with

respect to TS limits for gross specific activity. The licensee's action plan for dealing with the antimony was thorough and made good use of industry OE.

**P1 Emergency Preparedness**

**P5 Staff Training and Qualification in EP**

P5.1 Observation of Emergency Drill

a. Inspection Scope (71750)

The inspectors observed a training drill conducted in the simulator, Technical Support Center (TSC), and the Emergency Operations Facility (EOF).

b. Observations and Findings

The inspectors observed a training emergency drill on March 23 from the simulator control room, TSC, and the EOF. The inspectors concluded that the observed drill met its objectives and provided beneficial training to the site emergency organization. The licensee had also conducted five additional drills within the report period. The inspectors had several observations which were passed on to the licensee. Appropriate training and feedback were provided to the players with regard to the identified deficiencies. The inspectors also reviewed the results of fire drills to determine if the objectives were met and enhancements appropriately incorporated in the corrective action program.

c. Conclusions

An emergency drill met its objectives and provided beneficial training to the site emergency organization.

**F1 Control of Fire Protection Activities**

F1.1 Combustible Material, Housekeeping, and Ignition Source Controls/Fire Risk Reduction

a. Inspection Scope (64704)

The inspectors reviewed the licensee's program for control of combustibles and performed tours of selected plant areas to determine if the program objectives had been properly implemented.

b. Observations and Findings

The inspectors reviewed Fire Protection Procedure FPP-003, Rev. 12, "Control of Transient Combustibles," to determine if the objectives established by the licensee's commitments to implement the NRC-approved fire protection program were being met. The inspectors toured five (5) of the highest ranked dominant fire risk locations identified

in the licensee's Individual Plant Examination of External Events (IPEEE) submitted to the NRC on June 1995 to verify proper implementation of FPP-003.

The inspectors observed that controls were being properly maintained for limiting transient combustibles in safety related plant areas. In areas where transient combustible materials were allowed permits were properly posted as required by procedure. No transient combustible materials were stored or used in areas restricted by procedures. Controls were being maintained for combustibles in areas containing potential lubrication oil and diesel fuel leaks. The licensee made use of oil absorption materials to catch and soak up leaking fluid. The trash cans were emptied on a frequent regular basis and there was no excessive accumulation of combustible waste in safety-related plant areas.

Plant smoking policy prohibits smoking in all plant areas except in those marked outdoor areas designated specifically as smoking areas. The inspectors observed that the plant smoking policy was being enforced in the safety-related plant areas.

The inspectors reviewed records of the licensee's quarterly walkdown inspections of outstanding Transient Combustible Tags and the associated corrective action program CRs for 1997 and 1998, and determined that there was a low threshold for identification of combustible control, fire ignition source, and housekeeping issues. There was no adverse trend in the number of safety significant fire prevention problems identified over the two-year time period.

c. Conclusions

The licensee's implementation of the combustible control procedures and plant operational practices in safety-related areas were consistent with the approved fire protection program. Plant housekeeping and trash control was satisfactory. There was no adverse trend in the number of significant fire prevention program problems during the past two years.

F1.2 Fire Reports and Investigations

a. Inspection Scope (64704)

The inspectors reviewed the station fire reports, fire incident reports, and CRs resulting from fire, smoke, sparks, shorts, arcing and equipment overheating incidents for the time period of 1997 through 1999. The review was to assess whether plant fire protection requirements were being met in accordance with Fire Protection Procedure, FP-002, Revision 8, "Fire Report," for investigating fire incidents, when fire-related events occurred.

b. Observations and Findings

The licensee's fire reports and CRs indicated that during the period 1997 through 1999, there were four incidents of fire, smoke, or significant equipment overheating within Unit 2 safety-related plant areas. Three were minor equipment failure incidents and one incident involved a fire brigade response to a faulted fire detector alarm in the "B" reactor coolant pump bay within containment that occurred on June 24, 1998. In all cases, the

fire or overheating condition was identified and mitigating action was taken in a timely manner.

c. Conclusions

During the period 1997 through 1999, there were four incidents of fire, smoke, or significant equipment overheating within Unit 2 safety-related plant areas. Fire related conditions were identified and mitigating actions were taken in a timely manner. No significant increase or decrease in the number of fire related incidents occurred over the time period.

## F2 Status of Fire Protection Facilities and Equipment

### F2.1 Inspection of Fire Brigade Equipment

a. Inspection Scope (64704)

The inspectors reviewed fire brigade control procedures, toured the fire brigade staging dress out area, and inspected fire brigade equipment to determine if equipment was accessible and available in the staging area.

b. Observations and Findings

The inspectors reviewed procedure, FPP-001, Revision 32, "Fire Emergency," toured the staging dress out area within the Fire Equipment Building located outside the main power block structure and inspected four sets fire brigade turnout gear.

c. Conclusions

Personal protective fire fighting equipment provided to the brigade was in good condition, well staged, properly maintained, and provided a sufficient level of personal safety needed to handle onsite fire emergencies.

### F2.2 Maintenance of Fire Protection Systems and Equipment

a. Inspection Scope(64704)

The inspectors reviewed maintenance WR/JO and Equipment Inoperable Records (EIRs) on the facility fire protection systems and features to assess performance trends or material condition problems with fire protection/safe-shutdown systems, and equipment. Walkdown inspections were conducted in five of the highest ranked dominant fire risk locations identified in the licensee's IPEEE to determine the material condition of the fire protection water supply systems, Appendix R emergency lighting, and fire barriers in these plant areas.

b. Observations and Findings

As of March 1999, the total number of open WR/JOs related to the fire protection and safe-shutdown systems and features was 12. The 1998 through 1999 EIR records indicated that the number of fire protection impairments was relatively small and adequately monitored to limit their duration. Most of the fire protection impairments were planned activities in support of other plant work activities which were in process. For example, several fire detection zones and fire barrier doors were removed from service due to painting work in the area. Most of these items had been restored to service within 48 hours. The number of outstanding work requests related to the fire protection systems was low. There was not a backlog of open work requests.

During walk down tours, the inspectors noted that the manual fire fighting equipment, automatic fire detection systems, and fire barrier features of fire zone/area walls, floors, and ceilings were operational and were well maintained.

The inspectors observed that sprinklers were installed at ceiling level in the Auxiliary Building Hallway (Fire Area A, Zone 7), however, there were no sprinklers installed to provide coverage under large (greater than four feet wide) ductwork obstructions. The inspectors concluded that the sprinkler locations deviated from the guidance of National Fire Protection Association (NFPA ) No. 13 (1983), Section 4-4.1.3.2.1 which specifies guidance for the location of sprinklers under obstructions over four feet wide. The licensee informed the inspectors that this NFPA 13 deviation had been previously identified in a QA audit, and was documented in Condition Report No. 98-1170 to address NFPA Code compliance.

The inspectors also noted that the fire protection system engineer tracked fire detection system spurious alarms and Electric Thermal Link (ETL) fire damper resistance values for the $CO_2$ and Halon fire suppression systems to trend problems with detector sensitivity and automatic fire damper operations. The inspector reviewed the system engineer trend reports for 1998 through 1999 and concluded that no adverse trends had been observed for these systems during the period.

c. Conclusions

Appropriate emphasis had been placed on the operability of the fire protection equipment and components. The number of degraded fire protection components was low. Manual fire fighting equipment, automatic fire detection systems, and fire barrier features of fire zone/area walls, floors, and ceilings were operational and were well maintained. An NFPA Code compliance vulnerability had been identified by the licensee and included in the plant corrective action program. No adverse trends had been observed for fire detection system spurious alarms and ETL fire damper resistance values for the $CO_2$ and Halon fire suppression systems.

## F3 Fire Protection Procedures and Documentation

F3.1 Fire Brigade Pre-fire Strategies

a. Inspection Scope (64704)

The inspectors reviewed five fire brigade pre-fire strategies for plant areas where unannounced fire drills had been performed in 1998, for compliance with the NRC-approved fire protection program. Plant tours were performed to verify that the fire strategies reflected as-built plant conditions.

b. Observations and Findings

The inspectors reviewed five pre-fire strategies for plant areas where unannounced fire drills had been performed in 1998. Each of the fire fighting strategies and plan drawings addressed the fire potential, area location, means of fire brigade approach, location of fire protection equipment, fire brigade action, hazards to be considered, ventilation, special notes and instructions, and communications available. During plant tours the inspectors compared the pre-fire strategy plan drawings with as-built plant conditions. No discrepancies were noted. The pre-fire strategies were found to be satisfactory and met the requirements of the NRC approved fire protection program.

c. Conclusions

The fire brigade pre-fire strategies were found to be satisfactory and met the requirements of the NRC approved fire protection program.

## F5 Fire Protection Staff Training and Qualification

F5.1 Fire Brigade Drill Program

a. Inspection Scope (64704)

The inspectors reviewed the fire brigade drill program for compliance with plant procedures and NRC guidelines and requirements. They also observed control room activities and fire brigade response associated with an unannounced back-shift fire brigade drill.

b. Observations and Findings

The inspectors witnessed an unannounced back-shift fire brigade drill for operations shift No. 3, on March 17. The fire scenario, involved a simulated fire in the Unit 2 Battery Room (Fire Zone 16). The brigade demonstrated good fire fighting tactics, the proper use of fire fighting equipment, and adequate recovery operations. The fire brigade leader's direction and performance was also good. Control room activities in response to the drill were timely and in accordance with procedures. Problems were identified with communications between the brigade leader, control room personnel, and the brigade

members that resulted in unsatisfactory performance of one of twelve drill objectives. The critique of this drill was effective in identifying the communication area of improvement and the overall brigade drill performance was judged to have been satisfactory.

To evaluate other operating shifts' drill performance, the drill critique data for selected shift drills conducted during the past two-year period were reviewed by the inspectors. The fire brigade drill program and fire drill participation met the requirements of the site fire protection program. The overall fire brigade response and participation for these drills was satisfactory. The inspectors noted that a number of drills had been performed in risk significant plant locations. The nominal fire brigade performance response time to place fire suppression agent on the fire was about 14 minutes.

c. Conclusions

The fire brigade drill program and fire drill participation met the requirements of the site fire protection program. The fire brigade demonstrated good response and fire fighting performance during a simulated fire brigade drill conducted during this inspection. A number of fire brigade drills had been performed in risk significant plant locations.

## F7 Quality Assurance in Fire Protection Activities

### F7.1 Fire Protection Audit Reports

a. Inspection Scope (64704)

The inspectors reviewed the Nuclear Assessment Section (NAS) Audit Reports for a two-year period and the status of the corrective actions implemented for the audit findings.

b. Observations and Findings

The inspectors reviewed NAS reports R-FP-99-01, 98-FP-01, 98-FP-02 and 97-FP-02. The inspectors determined the assessments were effective in reporting fire protection program performance to management. The audits identified concerns associated with the Appendix R safe shutdown licensing basis and emergency lighting similar to NRC findings raised during the Fire Protection Functional Inspections (FPFIs). To date, the licensee's evaluations of the audit findings have not identified any violations of Appendix R to 10 CFR 50.48, "Fire Protection." The inspectors verified that the audit findings were properly documented in the licensee's corrective action tracking program. The fire protection audits determined that implementation of the fire protection program was adequate and there were no programmatic problems. Corrective actions in response to identified issues were comprehensive and timely.

c. Conclusions

The licensee's NAS assessments of the facility's fire protection program for a two-year period were effective in reporting fire protection program performance to management. The licensee's corrective actions in response to previously identified issues were comprehensive and timely.

## S1 Conduct of Security and Safeguards Activities

S1.1 General Comments (71750)

During the period, the inspectors toured the protected area and noted that the perimeter fence was intact and not compromised by erosion or disrepair. Isolation zones were maintained on both sides of the barrier and were free of objects which could shield or conceal an individual. The inspectors periodically observed personnel, packages, and vehicles entering the protected area and verified that necessary searches, visitor escorting, and special purpose detectors were used as applicable prior to entry. Lighting of the perimeter and of the protected area was acceptable and met illumination requirements.

## V. Management Meetings

### X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on April 16 ,1999. The licensee acknowledged the findings presented at the exit meeting. No proprietary information was identified.

## PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Cleary, Manager, Operations
H. Chernoff, Supervisor, Licensing/Regulatory Programs
J. Clements, Manager, Site Support Services
R. Duncan, Manager, Robinson Engineering Support Services
J. Fletcher, Manager, Maintenance
J. Moyer, Director, Site Operations
R. Steele, Manager, Outage Management
T. Walt, Plant General Manager
R. Warden, Manager, Regulatory Affairs
A. Williams, Manager, Training
D. Young, Vice President, Robinson Nuclear Plant

NRC

B. Desai, Senior Resident Inspector
A. Hutto, Resident Inspector
G. Wiseman, Reactor Engineer
B. Holbrook, Project Engineer
P. Steiner, Operator License Examiner

## INSPECTION PROCEDURES USED

| | |
|---|---|
| TI 2515/138: | Evaluation Of The Cumulative Effect Of Operator Workarounds |
| IP 37551: | Onsite Engineering |
| IP 61726: | Surveillance Observations |
| IP 62707: | Maintenance Observation |
| IP 64704: | Fire Protection Program |
| IP 71707: | Plant Operations |
| IP 71750: | Plant Support Activities |
| IP 92901: | Followup Operations |
| IP 92903 | Followup Engineering |

## ITEMS OPENED, CLOSED, AND DISCUSSED

**Opened**

| | |
|---|---|
| 50-261/99-02-01 | NCV Failure to Follow Procedures During Safety Related Breaker Maintenance (Section M4.1). |

**Closed**

| | |
|---|---|
| 50-261/98-04-00 | LER Failure to Adequately Meet Acceptance Criteria for Technical Specification Surveillance Requirements (Section O8.1). |
| 50-261/98-02-00 | LER Failure to Meet Operability Requirements of Improved Technical Specifications for Supporting Equipment (Section O8.2). |
| 50-261/99-02-01 | NCV Failure to Follow Procedures During Safety Related Breaker Maintenance (Section M4.1). |
| 50-261/97-12-04 | VIO Failure to Accomplish Modification Related Activities for the Containment Air Recirculation Cooling System (Section E8.1). |
| 50-261/97-12-03 | IFI Review Safety Injection Discharge Piping Configuration (Section E8.2). |
| 50-261/98-01-00 | LER Open Travel Limit for Containment Purge Valves Found to Exceed Requirements of Technical Specification 3.6.3 (Section E8.3). |
| 50-261/98-09-02 | URI Agastat E7000 Series Relay Replacement Schedule (Section E8.4). |