



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

April 26, 2000

Mr. John P. Cowan, Vice President
Nuclear Operations
Florida Power Corporation
ATTN: Manager Nuclear Licensing (NA1B)
Crystal River Energy Complex
15760 West Power Line Street
Crystal River, FL 34428-6708

SUBJECT: NRC INSPECTION REPORT NO. 50-302/00-01

Dear Mr. Cowan:

This refers to the inspection conducted on February 13 through April 1, 2000, at the Crystal River facility. The enclosed report presents the results of this inspection.

During the inspection period, your conduct of activities was generally characterized by safety conscious operations and comprehensive response to emergent issues.

Based on the results of the inspection, the NRC has determined that one violation of NRC requirements occurred. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VII B.1.a of the NRC 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, the Resident Inspector at your facility, 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,

/RA/

Leonard D. Wert, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Docket No. 50-302
License No. DPR-72

Enclosure: NRC Inspection Report No. 50-302/00-01

cc w/encl: (See page 2)
cc w/encl:

Daniel M. Roderick, Director

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-302
License No: DPR-72

Report No: 50-302/00-01

Licensee: Florida Power Corporation

Facility: Crystal River 3 Nuclear Station

Location: 15760 West Power Line Street
Crystal River, FL 34428-6708

Dates: February 13 through April 1, 2000

Inspectors: M. Franovich, Acting Senior Resident Inspector
S. Sanchez, Resident Inspector
G. Kuzo, Senior Health Physicist (Sections R1.1-1.2, R2.1, R7.1)
G. Wiseman, Senior Reactor Inspector (Sections F1.1 -1.2, F2.1-2.3, F3.1, F5.1, F7.1)

Approved by: L. Wert, Chief
Projects Branch 3
Division of Reactor Projects

Enclosure

EXECUTIVE SUMMARY

Crystal River 3 Nuclear Station NRC Inspection Report 50-302/00-01

This integrated inspection included aspects of licensee operations, maintenance and plant support. The report covers a seven-week period of resident inspection; in addition, it includes the results of announced inspections by regional inspectors in the areas of radiation protection and fire protection.

Operations

- A detailed walkdown of the high pressure injection portion of the Makeup and Purification System and the piggyback portion of Low Pressure Injection system determined that the material condition and alignment of the systems were adequate (Section O2.1).
- Three examples of thorough response to emergent issues were noted. The examples included detailed contingency planning to cope with a potential loss of offsite power during a brush fire directly under the 230kV and 500kV transmission lines (Section O4.1).
- The licensee conducted an effective emergency drill that demonstrated staff and operator proficiency in responding to an event and identified areas for enhancements. Operators properly executed emergency procedures (Section O4.2).

Maintenance

- Maintenance activities were performed in accordance with procedures. Work associated with risk significant structures, systems, and components was properly evaluated to determine its impact on the plant's risk profile (Section M1.1).

Plant Support

- Implementation of transient combustible controls in areas containing potential lubrication oil and diesel fuel leaks were consistent with the approved fire protection program. Transient combustible fire hazards issues resulting from the licensee's weekly fire inspections were properly identified in Precursor Cards and the corrective actions taken were appropriate (Section F1.1).
- Personal protective fire fighting equipment provided for fire brigade use at the fire brigade staging area and lockers was accessible, maintained in good condition, and provided a sufficient level of personal safety needed to handle onsite fire emergencies (Section F2.2).
- Battery powered emergency lighting system lamps were operational and the lighting heads were aimed to provide adequate illumination for access to safe shutdown equipment and to perform the required shutdown manual actions denoted in the plant remote shutdown procedure (Section F2.3).

- The fire brigade pre-fire strategies and plan drawings properly reflected as-built plant conditions (Section F3.1).
- The brigade demonstrated effective fire fighting tactics, proper use of the pre-fire plan and fire fighting equipment, and adequate recovery/smoke removal operations during a simulated fire brigade drill conducted during this inspection period. Overall fire brigade responses and drill participation for drills conducted in 1999 was satisfactory. A number of drills had been performed in risk significant plant locations (Section F5.1)
- The Nuclear Quality Assessment organization fire protection program audit conducted in 1999 was effective in identifying fire protection program performance issues to plant management (Section F7.1).
- Radiological controls were maintained and implemented in accordance with Updated Final Safety Analysis Report, Technical Specification, and 10 CFR Part 20 requirements. Occupational worker doses were within administrative and regulatory limits (Section R1.1).
- Chemistry laboratory technicians were proficient in conducting a main stack atmospheric effluent pathway gaseous grab sampling, filter change-out and associated radionuclide analyses (Section R1.2)
- The observed Radiation Monitor System equipment installation, and detector electronic and source calibrations met established regulatory requirements (Section R2.1)
- Licensee actions for the radiological controls quality issues reviewed were technically correct and completed in a timely manner (Section R7.1).
- A non-cited violation with two examples for failure to follow procedures for conducting radiation surveys was identified (Section R7.1).

Report Details

Summary of Plant Status

The plant began the inspection period at full rated thermal power and remained at that level until February 16, when power was lowered to 85 percent to perform cleaning of a condenser waterbox. The unit was returned to 100 percent power on February 17, and operated at that level until March 3. On March 3, power was reduced to 60 percent following a plant runback when the B condensate pump uncoupled. The unit was restored to 100 percent on March 5 and operated at that level for the remainder of the period.

I. Operations

O1 Conduct of Operations

O1.1 Conduct of Operations Reviews (71707)

The inspectors routinely reviewed plant operations, including shift turnovers, operator narrative logs, temporary modifications and tagging indexes, and toured plant risk significant areas. The inspectors verified the alignment of selected, risk significant systems and verified implementation of Technical Specifications (TS) requirements. Noteworthy observations are discussed in subsequent paragraphs. The inspectors observed that operators demonstrated thorough control and awareness of plant evolutions. Control room operators consistently used three-way communication techniques, minimized distractions, and closely monitored the reactor controls. Shift turnover meetings were effectively conducted. Temporary modifications were appropriately tracked and controlled. The inspectors also noted that the licensee performed a comprehensive self-assessment of each operating crew. The inspectors considered this licensee effort as timely and effective in evaluating the new alignment of shift managers and shift supervisors. The licensee also identified areas for improvement.

O2 Operational Status of Facilities and Equipment

O2.1 High Pressure Injection System Walkdown

a. Inspection Scope (71707)

The inspectors completed a detailed walkdown of the high pressure injection (HPI) portion of the makeup and purification (MU) system and the portion of the low pressure injection (LPI) system that can supply water to HPI (i.e., piggyback operations). The inspection also included the borated water storage tank (BWST) to identify potential common mode failures of HPI. Maintenance rule effectiveness, maintenance requests, and corrective action backlogs were also reviewed and compliance with TS was verified. Applicable sections of the Final Safety Analysis Report (FSAR) were also reviewed and system engineering personnel were interviewed.

b. Observations and Findings

The inspectors compared the flow diagram for the HPI system with the as-found plant configuration and identified that a portion of piping containing a test and drain valve was not correctly depicted in the flow diagram. The inspectors also identified several maintenance deficiency tags that were still affixed to HPI equipment, even though a work package had been completed on most of these components or the work request had been deleted. Inspectors discussed with the licensee those items that were deleted and determined that an adequate technical basis supported the licensee's conclusions. The licensee implemented actions to correct these minor discrepancies. Several minor valve packing leaks which were being captured and monitored by the licensee were noted during the walkdown. An active body-to-bonnet leak on valve MUV-110 was monitored by operators (approximately 0.8 liters per minute). No system or component misalignments were identified.

The licensee performed a video inspection of the BWST in 1994 and identified resin that settled on the bottom of the tank which was subsequently removed. The licensee also performed a visual inspection of the tank prior to an outage in 1996. Using a high-power light through a manway, the inspection was performed to assess water clarity for refueling operations. Water clarity was adequate and no foreign material was identified. The inspectors determined that the licensee had reasonable assurance that no foreign material existed in the BWST that could affect operability of the HPI system.

c. Conclusions

A detailed walkdown of the HPI portion of the MU system and the piggyback portion of LPI concluded that the material condition and alignment of the systems were adequate.

O4 Operator Knowledge and Performance

O4.1 Response to Emergent Issues

a. Inspection Scope (71707, 62707)

The inspectors observed and evaluated the licensee's performance in addressing three separate emergent issues. Operator preparedness and response, contingency planning, and maintenance work planning and troubleshooting were reviewed.

b. Observations and Findings

On February 16, 2000, operators implemented a preplanned reactor/turbine load reduction to 85 percent power to support cleaning of a condenser waterbox. During the power reduction, main feed water (MFW) pump 2B stopped responding to the load reduction at approximately 87 percent power. The inspectors observed troubleshooting which did not conclusively identify the cause of the problem. Engineering and Maintenance determined that the condition existed when very gradual changes in the B MFW pump demand occurred. The operators discussed contingency actions should a plant runback occur and the B MFW pump did not respond. The mechanical linkages

on the pump's governor were greased and the unit was restored to full power with no further MFW pump problems.

On March 3, 2000, the B condensate pump uncoupled. This caused a plant runback and operators stabilized the reactor at approximately 60 percent power. The inspectors responded to the control room and observed recovery actions. No operator errors or other equipment malfunctions were observed. Excess carbon buildup from brush wear was the direct cause for the uncoupled pump. The carbon buildup caused arcing in the motor, which resulted in several blown fuses in a control circuit. Repairs were made and the unit was returned to full power on March 5, 2000. Long-term corrective actions and maintenance rule implications were under review at the end of the inspection period.

On March 15, 2000, the licensee received reports of a significant off-site fire directly under the 230 kilovolt (kV) and 500kV transmission lines from the Crystal River site. The fire burned an estimated 650 acres of brush approximately four miles from the site. During the fire, the B emergency diesel generator (EDG) was out-of-service for preplanned routine maintenance. To reduce plant risk, the licensee restored, in a timely manner, the EDG to available status and placed the EDG in Engineered Safeguards (ES) standby alignment. The inspectors reviewed the scope of the deferred maintenance activities and verified that the remaining work did not affect EDG operability. Ventilation for the Control Complex was also placed in normal recirculation as a precaution when some light smoke migrated onsite. The inspectors also observed a detailed briefing of the control room and plant operators on Emergency Operating Procedures (EOPs) and Abnormal Procedure actions for a loss of offsite power and station blackout. The licensee also used industry operating experience to assess potential NRC reportability issues and other relevant experience. No electrical grid disturbances occurred during the event.

c. Conclusions

Three examples of thorough response to emergent issues were noted. The examples included detailed contingency planning to cope with a potential loss of offsite power during a brush fire directly under the 230kV and 500kV transmission lines.

O4.2 Emergency Drill and Simulator Observation

a. Inspection Scope (71707, 71750)

The inspectors observed a quarterly emergency drill from the control room simulator (CRO). Operator performance, emergency and abnormal procedure adherence, event classifications, post-drill critique, and corrective actions were evaluated.

b. Observations and Findings

On March 1, 2000, the licensee conducted a quarterly emergency drill with activation of the Technical Support Center and Emergency Operations Facility. The drill scenario involved a tornado strike of the switchyard (complete loss of offsite power) followed by a delayed failure of the one operable EDG (i.e., station blackout). Following recovery of

the failed EDG, a steam generator tube rupture was simulated. The inspectors determined the following:

- The drill scenario was challenging, clearly supported by the probabilistic safety assessment identified contributors to the core damage frequency, and incorporated industry operating experience.
- Operators made timely notifications and correctly classified the events.
- No operator errors were identified. CRO participants adhered to station communication standards.
- The shift manager conducted periodic and thorough crew briefs with looks ahead for procedural actions and plant equipment status.
- Drill controllers and participants provided detailed verbal and written post-drill critiques.

The drill objectives were satisfied. Areas for enhancement were identified including procedure improvements. The principal issue involved a restriction in EOP-12, Station Blackout, that delayed entry into EOP-6, Steam Generator Tube Rupture, by approximately one hour. These items were appropriately entered into the licensee's corrective action program.

c. Conclusions

The licensee conducted an effective emergency drill that demonstrated staff and operator proficiency in responding to an event and identified areas for enhancements. Operators properly executed emergency procedures.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Maintenance and Surveillance Testing Activities

a. Inspection Scope (61726, 62707)

Using Inspection Procedures 62707 and 61726, the inspectors observed all or portions of the following work requests (WR), preventive maintenance (PM) packages, surveillances and associated documentation. The following activities were included:

- SP-354B, Monthly Functional Test of the 1B Emergency Diesel Generator
- SP-130, Engineered Safeguards (ES) Monthly Functional Test
- SP-358C, Operations ES Monthly Automatic Actuation Logic Functional Test #3
- SP-169D, Diesel Generator Instrumentation Calibration
- PM-130A, Vital Bus Static Inverters and Static Switches
- WR 364598 and 364599, Static Inverter Card Replacement

b. Observations and Findings

The inspectors witnessed selected surveillance tests to verify that approved procedures were used; test equipment was calibrated; test prerequisites were met; system restoration was completed; and acceptance criteria were met. In addition, the inspectors reviewed or witnessed routine maintenance activities to verify, where applicable, that approved procedures were used; prerequisites were met; equipment restoration was completed; and maintenance results were adequate. The maintenance and surveillance activities were properly approved by operations personnel. Work associated with risk significant structures, systems, and components was properly evaluated to determine its impact on the plant's risk profile. Appropriate TS action statements were implemented and surveillance requirements satisfied.

Prior to testing the A EDG, the licensee noted that a normally illuminated light associated with a shutdown relay was extinguished. A blown fuse was found in the diesel shutdown relay circuitry. Subsequent review indicated that the fuse had most likely blown during work on a lube oil pressure switch. During the work, a wire had contacted a metal cover and an arc had been seen. A precursor card was written (PC 00-1013) to document this issue and determine whether the terminal lugs were adequately insulated and the extent of condition for the other switches and the other diesel. No operability issues were identified due to this condition.

In January of this year, the manufacturer of control boards associated with vital bus transfer switches at CR-3 issued a 10 CFR Part 21 notice. The problem with these components was with a transistor that had been identified to sometimes cause random, sporadic transfers of the static switch due to a higher level of sensitivity to noise spikes on the input line. The licensee determined that of the eight assemblies installed, four were of the referenced lot in the Part 21 notice and three were in stock. The licensee further determined that there was no significant safety impact because the static switches would still transfer when needed, in spite of any random transfer that could occur when not needed. The licensee appropriately and promptly initiated corrective actions to fix this deficiency. The inspectors observed card replacement and testing on all transfer switches and noted no concerns or issues.

c. Conclusions

Maintenance activities were performed in accordance with procedures. Work associated with risk significant structures, systems, and components was properly evaluated to determine its impact on the plant's risk profile.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) Licensee Event Report 50-302/00-001-00: Surveillance Requirement Was Not Performed Within the Required Time Frame of Improved Technical Specifications (ITS).

ITS 3.6.3, Containment Isolation Valves (CIVs), provides conditions and required actions necessary to maintain the CIVs operable. ITS 3.6.3.3 requires, in part, verification every 31 days that each containment isolation manual valve located outside containment is closed. Makeup and Purification Valve MUV-520 had not been verified closed in accordance with ITS 3.6.3.3 requirements between the end of the October 1999 refueling outage and January 11, 2000. Valve MUV-520 is a small (3/4 inch) manual valve with a threaded cap that was reclassified as a CIV following a system modification performed during the October 1999 refueling outage. Operations personnel discovered the missed surveillance when a revised CIV procedure was subsequently issued on January 11, 2000, to include MUV-520. Upon discovery of the missed surveillance, the licensee found that MUV-520 was in the correct position (closed and capped). The cap and a second normally closed 3/4 inch valve in the line (also verified in the correct position) reduced the potential for containment leakage if MUV-520 had been mispositioned. The root cause was that licensee personnel did not implement the modification process properly. The inspectors verified that these issues were addressed in the licensee's corrective actions. The licensee's extent of condition did not identify any additional containment penetrations affected by recent plant modifications. This licensee-identified issue constitutes a violation of minor significance and is not subject to formal enforcement action.

IV Plant Support

F1 Control of Fire Protection Activities

F1.1 Fire Hazards Reduction/Combustible Material and Housekeeping Controls

a. Inspection Scope (64704)

The inspectors reviewed Section 3.0 of the site "Fire Protection Plan," revision 15, dated July, 1998, and surveillance procedure SP-809, "Weekly Inspection Fire Protection," revision 9, dated January 24, 2000, to determine if the objectives established by the licensee's commitments to implement the NRC-approved fire protection combustible control program were being met. Using procedure SP-809, the inspectors toured with the site fire protection specialist, twelve (12) of the highest ranked dominant fire risk locations identified in the licensee's Individual Plant Examination of External Events, dated March 24, 1997. The inspectors examined these areas to verify proper implementation of the combustible control program. The inspectors also reviewed the results of the licensee's corrective action program Precursor Cards (PC) for 1999, to verify that transient combustible fire hazards issues and corrective actions were identified.

b. Observations and Findings

The inspectors observed that the controls being maintained for transient combustibles in areas containing potential lubrication oil and diesel fuel leaks were consistent with the approved fire protection program. Lubricants and oils for normal maintenance activities were placed in approved safety containers and stored within approved fire resistive flammable liquids storage cabinets located only in those safety related areas designated by the plant fire protection program procedures. There was no excessive accumulation of combustible material or waste in safety-related areas. The inspectors observed that transient combustible fire hazards issues resulting from the licensee's weekly fire inspections were properly identified in PCs. The licensee's corrective actions taken for transient combustible control program issues were appropriate.

F1.2 Frequency of Fire Related Incidents and Fire Reports

a. Inspection Scope (64704)

The inspectors reviewed plant fire occurrence reports and equipment failure precursor cards resulting from fire, smoke, sparks, arcing, and equipment overheating incidents for the 3-year time period of 1997-1999, to assess trends of maintenance-related or material condition problems with plant systems or equipment that may initiate fire events.

b. Observations and Findings

The inspectors verified that the fire reporting and documentation requirements of section 5.3.7 of the fire protection plan were met when significant fire-related events occurred. The licensee's fire reports and PC issues indicated that during the period 1997-1999 there were ten incidents of fire, smoke, sparks, arcing, and equipment overheating incidents observed within safety-related plant areas. The inspectors determined that this indicated an average of three fire initiating incidents per reactor year of operation. Additionally, the inspectors noted that three of the ten incidents had occurred within the 3B emergency diesel generator room (Fire Zone AB-119-7B). Two of these incidents involved lubrication oil and diesel fuel leaks. One incident involved an electrical wiring fault.

The fire occurrence reports and equipment failure precursor card documentation indicated that mitigating actions were taken in a timely manner so as to limit damage to the original source and prevent serious exposure to other safety-related equipment or cables.

F2 Status of Fire Protection Facilities and Equipment

F2.1 Fire Protection Water Supply (64704)

The inspectors reviewed procedures the licensee used to verify the correct fire pump and valve alignments to establish the fire suppression water supply flow path to selected fire risk plant locations. The procedures reviewed included the following:

- Operating procedure OP-880, "Fire Service System," revision 21.
- Surveillance procedure SP-367, "Fire Service Valve Alignment and Operability Check," revision 21.

Using the monthly fire service valve position checklist in procedure SP-809, for the fire pumps, the fire service storage tanks and yard area, the inspectors inspected nine (9) manual control valves in the outside fire protection water supply system. The valves were found to be properly aligned and sealed in position.

F2.2 Fire Brigade Equipment

a. Inspection Scope (64704)

The inspectors examined the fire brigade staging and locker area in the maintenance shop adjacent to the turbine building and observed the condition of fire brigade equipment. The purpose of the inspection was also to verify that the fire brigade equipment specified in the NRC-approved fire protection program was accessible, in good condition, and available in the staging area and fire brigade lockers.

b. Observation and Findings

The inspectors observed that the personal protective fire fighting equipment provided for fire brigade use at the fire brigade staging area and lockers was accessible, maintained in good condition, and provided a sufficient level of personal safety needed to handle onsite fire emergencies.

The inspectors observed that there was no backup lighting provided at the fire brigade staging and locker area. The lack of backup lighting was a fire brigade vulnerability in that a power failure due to any cause could delay the dress out and response of the fire brigade during a fire emergency. The licensee initiated PC No. 3-C00-0653 to address the inspectors' observation.

c. Conclusions

Personal protective fire fighting equipment provided for fire brigade use at the fire brigade staging area and lockers was accessible, maintained in good condition, and provided a sufficient level of personal safety needed to handle onsite fire emergencies.

F2.3 Emergency Lighting for Performance of Alternative Shutdown Capability

a. Inspection Scope (64704)

The inspectors reviewed the design and operation of the 8-hour battery powered emergency lighting. The inspectors' reviewed the fire protection plan, Section 5.2, "Emergency Lighting" and 10 CFR 50 Appendix R, Section III.J., and verified that the design of the 8-hour battery powered emergency lighting system installed in six plant areas were properly provided to allow access to safe shutdown equipment and

performance of safe shutdown manual actions reflected in operations procedure AP-990, revision 14, "Shutdown From Outside the Control Room," (steps 3.1, 3.13, and 3.14).

b. Observation and Findings

The inspectors walked down remote shutdown equipment identified in procedure AP-990. The walk down included equipment in the 4160 volt switchgear rooms (fire zones CC-108-107 and 108), the control complex corridor (fire zone CC-108-102), the 480 volt switchgear rooms (fire zones CC-124-116 and 117), and the control rod drive room (fire zone CC-124-111). The inspectors observed approximately 12 lighting units in these areas. The inspectors found that the emergency lighting unit lamps were operational and the lighting heads were aimed to provide adequate illumination for access to safe shutdown equipment and to perform the required shutdown actions denoted in the procedure.

c. Conclusions

Battery powered emergency lighting system lamps were operational and the lighting heads were aimed to provide adequate illumination for access to safe shutdown equipment and to perform the required shutdown manual actions denoted in the plant remote shutdown procedure.

F3 Fire Protection Procedures and Documentation

F3.1 Fire Brigade Pre-Fire Strategies (64704)

The inspector reviewed fire brigade pre-fire strategies described in procedure AMI-06, "Preparation and Control of CR-3 Pre-Fire Plans," for six risk significant plant areas where fire brigade drills had been performed. Plant tours were also performed to verify the fire strategies reflected as-built plant conditions and potential fire conditions.

Each of the fire brigade pre-fire strategies and plan drawings addressed the fire potential, area location, means of fire brigade approach, location of important equipment, fire protection equipment available, fire brigade actions, hazards to be considered, ventilation systems, and communications available. During plant tours, the inspectors compared the pre-fire strategy plan drawings with as-built plant conditions. The inspectors found that the fire brigade pre-fire strategies and plan drawings properly reflected the as-built plant conditions.

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 and observed a fire brigade response associated with an unannounced fire brigade drill.

b. Observations and Findings

The inspectors witnessed an unannounced fire brigade drill for operations shift "D", on February 28, 2000. The fire scenario involved a simulated battery charger cabinet fire in battery charger room 3A (Fire Zone CC-108-106). The brigade demonstrated effective fire fighting tactics, proper use of the pre-fire plan and fire fighting equipment, and adequate recovery/smoke removal operations. The fire brigade response and drill performance met the established drill objectives. The inspectors observed that the nominal fire brigade performance response time to place an effective fire suppression agent on the fire was about 14 minutes. The critique of this drill was effective in identifying a performance improvement observation involving the use of fire drill props such as enhanced digital images of the fire scene to improve communication of the fire drill scenario to fire brigade personnel. The licensee initiated PC No. 3-C00-0643 to address the performance improvement observation.

To evaluate other operating shifts' drill performance, the inspectors reviewed the drill critique data for selected shift drills conducted during 1999. 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 nominal fire brigade performance response time to place an effective fire suppression agent was about 13 minutes. The inspectors noted that a number of drills had been performed in risk significant plant locations.

c. Conclusions

The brigade demonstrated effective fire fighting tactics, proper use of the pre-fire plan and fire fighting equipment, and adequate recovery/smoke removal operations during a simulated fire brigade drill conducted during this inspection period. Overall fire brigade responses and drill participation for drills conducted in 1999 was satisfactory. A number of drills had been performed in risk significant plant locations.

F7 Quality Assurance in Fire Protection Activities**F7.1 Fire Protection Audits (40500)****a. Inspection Scope**

The following 1999 audit report of the fire protection program and the plant corrective action program response to the issues were reviewed Audit Report 99-05, "The Fire Protection Program," dated July 13, 1999.

The licensee's Nuclear Quality Assessment organization performed an audit of the fire protection program during the period of May 10, 1999 through June 14, 1999. The triennial audit was performed in accordance with Section 1.5.7.2 of the plant fire protection plan. The audit encompassed a review of ten fire protection program inspection areas.

The licensee audit team determined that the fire protection program was effective and in good general conformance with the Fire Hazards Analysis (FHA). The audit report identified 16 PCs that were initiated to address the audit issues. The most significant audit issues involved a decline in the reliability and aging degradation of fire protection features and systems. This included equipment-related performance issues primarily involving spurious fire detection system alarms, spurious fire system actuations, and fire door issues. The licensee's evaluation of these issues did not identify any safety significant concerns or reportable events.

b. Observations and Findings

The inspectors verified that the audit issues were documented through the corrective action program process. The inspectors reviewed the final audit report, the PCs tracking the identified issues, and the planned corrective actions identified in the associated root cause reports. The 1999 fire protection program audit was effective in identifying fire protection program performance issues to plant management. The inspectors observed that the licensee's Plant Issues listing maintained by Systems Engineering indicated that the fire protection reliability issue was one of the top 10 issues (number 3).

c. Conclusions

The Nuclear Quality Assessment organization fire protection program audit conducted in 1999 was effective in identifying fire protection program performance issues to plant management.

R1 Radiological Protection and Chemistry Controls**R1.1 Conduct of Radiological Protection Controls (83750, 84750)****a. Inspection Scope**

During Radiological Control Area (RCA) tours, the inspectors observed work activities in progress, discussed procedural and Radiation Work Permit (RWP) requirements with workers, and verified selected radiation survey results. Radiological controls and housekeeping practices for the auxiliary building, reactor building, and for outside RCA locations used for radioactive material control/storage and for solid radioactive waste processing and storage were observed. Dosimetry use, area postings, container labels, housekeeping, and controls for high radiation areas (HRA), locked-HRAs, and very-HRAs were reviewed and evaluated.

The implementation of radiation protection activities was compared against applicable sections of the Updated Final Safety Analysis Report (UFSAR), Technical Specifications (TS), and 10 CFR Part 20.

b. Observations and Findings

Radiological controls including HP coverage, required protective clothing, personnel dosimetry use, and air sampling were established and implemented in accordance with established procedures. High radiation areas and locked-HRAs were controlled appropriately. Workers and Health Physics (HP) technicians were knowledgeable of RWP requirements and significantly elevated source terms within the auxiliary building following completion of the most recent refueling outage. For calendar year 1999 and year-to-date 2000, occupational doses resulting from worker exposure to external and internally deposited radioactive source material were below regulatory limits. The maximum 1999 calendar year and 2000 year-to-date worker total effective dose equivalents (TEDE) reported were 2255 millirem (mrem) and 116 mrem, respectively.

c. Conclusions

Radiological controls were maintained and implemented in accordance with Updated Final Safety Analysis Report, Technical Specification, and 10 CFR Part 20 requirements. Occupational worker doses were within administrative and regulatory limits.

R1.2 Radioactive Effluent Processing, Analysis and Release (84750)

Ongoing gaseous effluent release program activities were evaluated. The inspectors directly observed and evaluated sampling, quantitative radionuclide analyses and waste permit processing conducted by chemistry technicians for a March 2, 2000 auxiliary building ventilation system change-out. Equipment operability, procedural adequacy and chemistry staff proficiency were evaluated through review and discussion of sample collection and subsequent radiological analyses. License program guidance, actions

and results were evaluated against applicable sections of 10 CFR Part 20, TS, Offsite Dose Calculation Manual (ODCM) and approved procedural requirements.

Chemistry laboratory technicians demonstrated appropriate knowledge of procedural requirements, and proficiency in completing a March 2, 2000 main stack atmospheric effluent pathway gaseous grab sample, filter collection, and subsequent radionuclide analyses. No significant concerns were noted for sampling, analysis methods and the associated release permit calculations.

R2 Status of Radiological Protection and Chemistry Equipment

R2.1 Radiation Monitor System (RMS) Installation and Calibrations (84750)

The inspectors reviewed and evaluated installed process and effluent Radiation Monitoring System (RMS) detectors, sampling lines and flow meters to implement ODCM and 10 CFR Part 20 requirements. The evaluation included, as applicable, RMS equipment walk-downs with comparisons against UFSAR commitments and vendor design specifications. Approved calibration guidance and results for the main steam line monitor (RMG-25) and the condenser vacuum pump exhaust monitor (RM-A12) were reviewed and discussed. Calibration activities and results were reviewed and evaluated against applicable UFSAR sections, TS, and ODCM requirements.

The RMS detectors and sampling lines were installed in accordance with UFSAR descriptions and vendor requirements. Monitor calibrations were conducted at the required frequencies and final results were within established acceptance criteria.

R7 Quality Assurance in Radiation Protection and Chemistry Activities (83750, 84750)

R7.1 Radiation Protection and Chemistry Condition Reports

a. Inspection Scope

The inspectors reviewed details and status of selected identified quality issues regarding occupational worker radiation control and monitoring, radiological surveys, radioactive material receipt and shipping, and specialized training activities. The reviewed issues occurred between October 1, 1999, and February 28, 2000, and were documented on Precursor Cards (PCs). The specific issues, licensee evaluations, and associated corrective actions, as necessary, were evaluated against TS, 10 CFR Parts 19, 20, 50, and 71.

b. Observations and Findings

Licensee actions for quality issues associated with radiation controls, radioactive waste, effluent processing and release, and chemistry activities as identified in the reviewed PCs were prioritized, tracked and dispositioned appropriately. The reviewed PCs documented several examples of failure to follow procedures for conduct of whole-body count (WBC) analyses, completion of routine general area radiation surveys, radioactive material shipment surveys, and lack of practical factors walk-through training.

The quality issue associated with WBC analysis involved one individual having facial contamination during the last outage who was not evaluated for internally deposited radionuclides by in vivo analysis techniques in accordance with Health Physics Procedure (HPP) - 320, Whole Body Counting System. The inspectors noted that this issue was similar to a non-cited violation (NCV) for inadequate WBC analyses documented in NRC Inspection Report 50-302/99-07, dated December 2, 1999. Licensee followup of the event verified that the individual did not receive any unintended occupational dose. The inspectors noted that the event occurred prior to implementation of corrective actions detailed in PC 99-3844. PC 99-3844 addressed the problems identified in the previously issued NCV. Detailed review and discussion of the current WBC quality concern verified that the previously planned corrective actions would have addressed this incident. Licensee actions are considered adequate to address this issue.

Two examples of failure to follow procedures for radiation surveys were reviewed and evaluated. Precursor card 99-387 documented a failure to follow established procedures for conducting radiation surveys on each side of the vehicle for an outgoing radioactive material shipment. Licensee followup evaluations determined that no Department of Transportation radiation limits were exceeded. Corrective actions included revision of HPP-204A, Receipt and Release of Radioactive Materials, to define vehicle survey requirements and elaborate the responsibilities of individuals who review the shipment records. Equipment changes were implemented to increase accessibility for conducting radiation surveys on all sides of shipment vehicles, and the involved individuals were counseled. A second quality issue involving surveys was documented in PC 99-4675. The document verified that routine RCA radiological surveys were not conducted in accordance with HPP-202A during the week of September 25, 1999. Misinterpretation of an inter-office memorandum intended to reduce redundant surveys and to minimize duplication of effort during some ongoing outage evolutions, resulted in failure to complete routine RCA surveys required by HPP-202A, Radiological Surveys and Inspections. The inspectors verified that the survey requirements were reestablished to meet HPP-202A and the identified issue did not result in significant unexpected worker exposures. Technical Specification (TS) 5.6.1.1.a, requires that written procedures be established, implemented, and maintained for the activities recommended in Appendix A of Regulatory Guide (RG) 1.33, Revision 2, February 1978. Section 7.e of the RG recommends, in part, procedures for radiation surveys, airborne radioactivity monitoring, bioassay, and training in radiation protection. The failures to follow procedures for surveying all sides of a radioactive material shipment vehicle and conducting routine radiation surveys were identified as a violation of TS 5.6.1.1. This Severity Level IV violation is being treated as a NCV, consistent with Section VII.B.1.a of the NRC Enforcement Policy, and is identified as NCV 50-302/00-01-01, Failure to Follow Radiation Protection Procedures for Radiation Surveys.

The inspectors reviewed PC 99-4596 written to address a quality concern where individuals missed practical factors walk-through training between February 17, 1999 and May 17, 1999, as specified in Radiation Safety Procedure (RSP) -101, Basic Radiological Safety Information and Instructions for Radiation Workers. In mid-February 1999, an organizational memorandum documented management's decision to cease use of the health physics staff in providing the practical factors walk-through training. The licensee assigned responsibility for job-specific practical factors training to the workers' immediate supervisors and concurrently intended to remove the practical factors walk-through training from RSP - 101. In addition, a training video was developed to address RCA access controls and several additional radiation protection issues normally covered during the practical factors walk-through training. However, the procedural requirements were not revised and several individuals who in-processed between February 17, 1999, and May 17, 1999, did not receive the procedurally specified practical factors walk-through training. The failure to implement procedures recommended in Section 7.e(6) of RG 1.33, training in radiation protection, is a violation of regulatory requirements. Individuals who did not receive the training were assessed for consequences associated with the missed training and appropriate actions taken. The subject training is no longer required by the applicable procedure. The inspectors determined that this violation has very low safety significance. The walk-through training had been replaced with video training. This issue constitutes a violation of minor significance and is not subject to formal enforcement action.

c. Conclusions

Licensee actions for the quality issues reviewed were technically correct and completed in a timely manner. A non-cited violation with two examples for failure to follow procedures for conducting radiation surveys was identified.

V. Management Meetings

X1 Exit Meeting Summary

The inspection scope and findings were summarized on April 5, 2000. Proprietary information is not contained in this report. A second exit meeting with the licensee by telephone was conducted on April 11, 2000. Dissenting comments were not received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensees

M. Annacone, Assistant Plant Director, Nuclear Operations
 S. Bernhoft, Director, Nuclear Regulatory Affairs
 J. Cowan, Vice President, Nuclear Operations
 R. Davis, Director, Nuclear Operations Training
 R. Grazio, Director, Nuclear Site and Business Support
 C. Gurganus, Assistant Plant Director, Maintenance
 G. Halnon, Director, Nuclear Quality Programs

J. Holden, Vice President and Director, Site Nuclear Operations
 D. Roderick, Director, Nuclear Plant Operations
 T. Taylor, Director, Nuclear Operations Engineering

INSPECTION PROCEDURES USED

IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving and Preventing Problems
 IP 61726: Surveillance Observations
 IP 62707: Conduct of Maintenance
 IP 64704: Fire Protection Program
 IP 71707: Plant Operations
 IP 71750: Plant Support Activities
 IP 83750 Occupational Radiation Exposure
 IP 84750: Radioactive Waste Treatment, and Effluent and Environmental Monitoring
 IP 92902: Followup - Maintenance

ITEMS OPENED, CLOSED, AND DISCUSSED

Open

50-302/00-01-01 NCV Failure to Follow Radiation Protection Procedures for Radiation Surveys. (Section R7.1)

Closed

50-302/00-01-01 NCV Failure to Follow Radiation Protection Procedures for Radiation Surveys. (Section R7.1)

50-302/00-01-00 LER Surveillance Requirement Was Not Performed Within the Required Time Frame of Improved Technical Specifications. (Section M8.1)