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Facility Name: James A. FitzPatrick Nuclear Power Plant

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EXECUTIVE SUMMARY

James A. FitzPatrick Nuclear Power Plant
NRC Inspection Report 50-333/97-04

Operations

- On May 17, the licensee commenced a downpower to take the generator off line in order to make repairs to a 345 KV line bolted connection in the switch yard. The licensee's decision to take the unit off line to conduct repairs demonstrated a sound thought process with a solid safety focus. Operators demonstrated good control of the plant during the evolution.
- The process to control operator workarounds appeared to be functioning well and received good management attention.
- The licensee is in the process of completing licensed operator requalification examinations. On May 21, 1997, the inspector observed simulator scenarios conducted for an operating crew examination and noted that licensed operators demonstrated solid performance.
- An NRC team inspection was conducted to evaluate the effectiveness of licensee controls in identifying, resolving, and preventing issues that degrade the quality of plant operations or safety. These licensee controls include safety review committees, root-cause analysis programs, corrective action programs, self assessment programs, and other processes that provide for incorporation of operating experience feedback.

The licensee implemented an effective problem identification and corrective action program. The Plant Operation and Safety Review Committees provided an appropriate level of oversight and the well supported Quality Assurance audits were considered to be a strength. Additionally, licensee management was actively involved in the self-assessment and corrective action process.

Based on interviews, the licensee has increased their awareness of human performance issues and recently implemented some programs to reverse the past negative trends in human performance.

Maintenance

- Both the technical issue report and the maintenance rule processes appear to be working hand-in-hand to allow proper management attention to system performance issues. System engineers understood the problems of their particular systems. However, based on equipment performance, it appeared that the licensee's previous corrective actions taken to address emergency service water and primary containment isolation valve issues were not fully effective.

Executive Summary (cont'd)

- An anonymous concern about the quality of maintenance performed by a valve maintenance contractor during the 1996 outage was brought to the licensee's employee concern program through a handwritten report. The licensee's initial review, followed up with a subsequent review of valve operating history, provided an acceptable level of confidence that valve maintenance performed by the vendor was adequate and had not contributed to system performance issues. Although there were several valve maintenance performance issues identified during the outage, those issues were addressed through the licensee's corrective action program.
- The inspectors considered the strong operations background of the work week managers to be a positive attribute of the work control organization. Corrective actions associated with identified work control process weaknesses have been effectively implemented and an improved questioning attitude was noted. The weekly and special evolution critiques were a good tool for the identification and correction of problems within the work control process.

Engineering

- Overall, good management oversight of the temporary modification program was evident. The older temporary modifications appear to lack engineering support but are not safety significant. The number of temporary modifications has been consistent over the past two years and does not appear to adversely impact plant operations.
- The licensee's response and planned corrective actions to the nonconforming scram solenoid pilot valves demonstrated a good safety focus.

Plant Support

- Overall, the licensee's corrective action program for the radiological protection program was acceptable. Identification and characterization of deviations and events were also acceptable, however, weaknesses were identified in review for extent of condition and in response to repetitive problems. Also, the evaluation and documentation of each identified deviation and event for generic implications was considered to be a weakness. The elevation of identified deviations and events to a proper level of management was adequately addressed. Self-identification of problems by front-line personnel and their willingness to do so seemed to be increasing.

Executive Summary (cont'd)

Two separate incidents concerning improper entry into a radiological controlled area occurred on April 16, 1997. Also, in December, 1996, two radiation workers did not adhere to the radiation work permit, disregarded radiological posting requirements and one worker improperly used the portal monitor. These failures of radiation workers to comply with radiation protection instructions are a violation. As there have been several other cases where mistakes have been made concerning radiation protection requirements, it appears that corrective actions for previous similar licensee findings were not fully effective.

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Report Details

Summary of Plant Status

The unit began this inspection period at 100 percent power. On May 17, the unit was taken off line to effect repairs to a bolted connector on the 345 KV line. The plant was returned to 100 percent power on May 19. On May 24, the number 3 turbine control valve failed open. As the valve is normally full open, all pre-transient plant parameters remained normal. The licensee began a plant shut down to make repairs. Originally, the licensee intended to shut the valve manually, however, the valve would not operate. At 70 percent reactor power, the licensee inserted a manual reactor scram and tripped the main turbine. Shutdown cooling was entered on May 25 and the licensee implemented a short forced outage.

I. OPERATIONS

O1 Conduct of Operations¹

O1.1 General Comments

The inspectors conducted frequent reviews of ongoing plant operations. In general, operations were conducted well. Specific events and noteworthy observations are detailed in the sections below.

O1.2 345 KV Bolted Connection Repair

a. Inspection Scope

The main generator provides power through transformers which step up the voltage to 345 KV for distribution to the electrical grid. The licensee had been monitoring a 345 KV bolted connection located in the switchyard which was showing signs of degradation. Due to a rapid increase in a thermography reading, the licensee elected to take the unit off line to conduct repairs. The inspector reviewed the work package and discussed the activity with operations and engineering personnel.

b. Observations and Findings

On May 17, the licensee commenced a downpower to take the generator off line in order to make repairs to a 345 KV line bolted connection in the switch yard. The licensee performs routine predictive maintenance on the bolted connections using thermography. Inspection showed that the bolted connection was not tight, which caused increased resistance and a higher temperature. The connection was cleaned and reassembled using guidance provided by the manufacturer. Other connections on the 345 KV line were checked and were satisfactory. The cause for the connector degradation was indeterminate, but the licensee stated that it was

¹Topical headings such as O1, M8, etc., are used in accordance with the NRC standardized reactor inspection report outline. Individual reports are not expected to address all outline topics.

possibly due to less than optimum original installation which caused slow degradation over time.

The licensee had evaluated performing the repair with the unit on line. However due to the nature of and risks associated with the job, the licensee concluded that it was more prudent to take the unit off line to conduct the repair.

c. Conclusions

The licensee's decision to take the unit off line to conduct the repair demonstrated a sound thought process with a solid safety focus. Operators demonstrated good control of the plant during the evolution.

01.3 Operational Safety Verification

The inspectors observed plant operation and verified that the facility was operated safely and in accordance with procedures and regulatory requirements. Regular tours were conducted of the plant with focus on safety related structures and systems, operations, radiological controls and security. Additionally, the operability of engineered safety features, other safety related systems and on-site and off-site power sources was verified. No safety concerns were identified as a result of these tours.

The inspection activities during this report period included inspection during normal, backshift and weekend hours. Regular tours were conducted of the following plant areas:

- control room
- secondary containment building
- radiological control point
- electrical switchgear rooms
- emergency core cooling system pump rooms
- security access point
- protected area fence
- intake structure
- diesel generator rooms

Control room instruments and plant computer indications were observed for correlation between channels and for conformance with technical specification (TS) requirements. Operability of engineered safety features, other safety related systems and onsite and offsite power sources was verified. The inspectors observed various alarm conditions and confirmed that operator response was in accordance with plant operating procedures. Compliance with TS and implementation of appropriate action statements for equipment out of service was inspected. Plant radiation monitoring system indications and coolant stack traces were reviewed for unexpected changes. Logs and records were reviewed to determine if entries were accurate and identified equipment status or deficiencies. These records included operating logs, turnover sheets, system safety tags, and

temporary modifications. Control room and shift manning were compared to regulatory requirements and portions of shift turnovers were observed. The inspectors found that control room access was properly controlled and that a professional atmosphere was maintained. Daily supervisor meetings were attended to assess personnel focus on risk significant items and plant priorities.

Specific plant issues which were followed up on included control rod drive hydraulic control unit TS issues, 345 KV line maintenance, fire protection hose station storage, uninterruptible power supply (UPS) motor generator (MG) set maintenance, a low lube oil pressure alarm on "D" emergency diesel generator (EDG) and licensed operator requalification training. These issues were managed effectively by the licensee.

O1.4 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the licensee's program used to identify and track operator workarounds and also discussed the status of workarounds with plant operator and maintenance personnel.

b. Observations and Findings

The licensee uses a quarterly surveillance test (ST) 99H, Operator Workarounds Assessment, to document the workaround, the procedures affected and the compensatory measure in place. The procedure provides a good format for identification and documentation of workarounds and the evaluation criteria for workarounds appeared to be well organized, enabling operators to assess the impact on plant operations. The licensee defines an operator workaround as any deficiency that would require compensatory operator actions in the execution of normal operating procedures, abnormal operating procedures, emergency operating procedures, or annunciator response procedures.

Equipment issues appear to be tracked well and compensatory measures appeared adequate. Additionally, the inspectors found that the list of workarounds received good management attention, in part through routine discussions at morning meetings.

c. Conclusions

The process to control operator workarounds appeared to be functioning well and received good management attention.

O2 Operational Status of Facilities and Equipment

O2.1 Engineered Safety Feature System Walkdowns

The inspectors performed a walk down of accessible portions of the following systems and performed general area tours:

- emergency diesel generator
- intake structure
- emergency service water
- residual heat removal service water
- high pressure coolant injection

Equipment operability, material condition and housekeeping conditions were good.

O5 Operator Training and Qualification

O5.1 Licensed Operator Requalification Training

a. Inspection Scope

The licensee is in the process of completing licensed operator requalification examinations. On May 21, 1997, the inspector observed simulator scenarios conducted for an operating crew examination. The inspector discussed training with instructors including simulator fidelity, training requirements and training initiatives and attended the post scenario critique.

b. Observations and Findings

During the exercises observed, the inspector noted good use of peer checking to validate decision making, good use of appropriate procedures including alarm response procedures, abnormal operating procedures, emergency operating procedures and the emergency plan and good use of three point communications by operators.

The evaluator's critique provided constructive criticism of the crews performance using specific evaluation criteria.

c. Conclusions

Licensed operators demonstrated solid performance during recent licensed operator requalification examinations which were observed.

O7 Quality Assurance in Operations

O7.1 Corrective Action Program Overview

An NRC team inspection was conducted to evaluate the effectiveness of licensee controls in identifying, resolving, and preventing issues that degrade the quality of plant operations or safety. These licensee controls include safety review committees, root-cause analysis programs, corrective action programs, self assessment programs, and other processes that provide for incorporation of operating experience feedback.

To assess the ability of the FitzPatrick management and staff to identify and correct problems at the site, the inspectors conducted structured interviews of plant personnel. The team reviewed the deficiency event report (DER) process, equipment performance trending and use of the maintenance rule, operator workarounds, activities of oversight committees including the plant operations review committee (PORC) and the safety review committee (SRC), the involvement of the Quality Assurance (QA) organization and the use of self-assessment.

Further, based on several recent operational events and radiological control problems, the inspectors specifically reviewed the identification of issues and corrective actions taken in the areas of human performance, work control and radiological controls.

O7.2 Problem Identification and Corrective Action

a. Inspection Scope

Procedures which implement the problem identification and corrective action program were reviewed and a sample of DERs were evaluated to assess program effectiveness.

b. Observations and Findings

The licensee has developed several procedures to govern the problem identification and corrective action program. These procedures included: Administrative Procedure (AP)-03.02, Deviation and Event Reporting; AP-03.03, Deviation and Event Analysis; AP-03.08, Action and Commitment Tracking System; ORG-SO-03.02, Deviation and Report Screening. The procedures address the identification, evaluation and corrective actions process for plant deficiencies. The procedures provided controls for tracking, trending, and closure. Causal screening levels varied from A (most severe) through D (least severe) and were used to screen deviations and events based both on degree of risk of recurrence and on significance. Deficiency and Event Report (DER) evaluation types, included root cause analysis, team root cause analysis, post transient review, critique, equipment failure evaluation, written response, and none (trend only). All evaluations shall, as a minimum, include extent of condition when appropriate.

The inspectors determined that the DER process was effectively used to identify and document issues at a proper level for resolution and operability/reportability reviews appeared to be acceptable. The equipment failure evaluations (EFEs) and root cause analysis enclosures to the DER procedure were well developed and provided good general formats and guidance for conducting such evaluations. EFEs and root cause analysis completed for several DERs in the last year were of good quality and effective corrective actions were identified.

Several minor program weaknesses were identified including the fact that procedures do not provide for the identification of repeat problems, although, personnel who review DERs have an informal process to identify repeat problems. Additionally, documentation did not always indicate that an extent of condition review was completed. Although the licensee stated that an extent of condition consideration is always performed, the lack of documentation of this evaluation was considered a weakness. The licensee's QA department has previously identified this concern and several other issues, and corrective actions were in process.

c. Conclusions

The licensee implemented an effective problem identification and corrective action program. DER tracking was conducted well; specific reviews specified by procedures and the associated corrective actions generally appeared good. Several areas for improvement including the identification and documentation of repeat problems and the documentation of extent of condition reviews were identified.

07.3 Plant Operations Review Committee

a. Inspection Scope

The inspectors assessed the Plant Operations Review Committee (PORC) activities and verified that selected PORC activities were performed in accordance with the TS. A PORC meeting was attended, applicable procedures and PORC meeting minutes were reviewed and six members of PORC were interviewed.

b. Observations and Findings

The inspectors reviewed Procedures AP-01.01, "Plant Operating Review Committee," Revision 7, and ORG-SO-03.03, "PORC Administration," Revision 0, and verified that TS requirements pertaining to PORC were adequately included.

The inspectors attended PORC Meeting 97-18 held April 1, 1997. The inspectors verified that the quorum requirement was met, and that the meeting was accomplished in accordance with the approved procedures. Although the meeting briefly discussed issues related to the overall safe operation of the plant, the meeting was focused on a review of open PORC action items. These were ACTS items opened during PORC meetings that PORC tracks for closure. Of the 14 PORC action items due for closure, only one item was closed, and the remaining 13 were extended. The PORC members seemed aware of the issues associated with each item. However, only one item was challenged to ensure there was no safety

concern that should prevent the extension. In general, the PORC members seemed cognizant of the issues discussed.

Based on the large percentage of PORC action items extended during the April 1, 1997, meeting, the inspectors reviewed previous PORC meeting minutes to determine the extent to which PORC action items have been extended in the past. Of the 16 PORC items closed in 1997, eight were closed on their original due date. The inspectors reviewed the items extended in detail and identified no safety concerns with the extensions. The inspectors discussed the issue of PORC action item extensions with several members of the PORC and ascertained that, routinely due dates are selected prior to the expected completion of the work to provide PORC with a working status of the item. Additionally, the PORC members expressed that other items were extended due to more significant emergent issues, which required the planned work to be delayed. Although a large percentage of PORC action item due dates have been extended, no safety concerns were identified with the extensions.

PORC recently changed the controlling procedure to include requirements to discuss the "Broad Assessment of the Safe Operation of the Plant" during each meeting. According to the PORC Chairman, this section was added to ensure the PORC was looking at the "big picture" during each meeting. The information for discussion was to be provided by the PORC members on an impromptu basis. The inspectors reviewed PORC minutes for eight meetings held after the incorporation of this new requirement. Although two of the eight meeting minutes reviewed indicated no discussion in this area, the minutes for the other six meetings indicated a wide range of discussion topics that benefited PORC. For example, PORC Meeting 97-13 discussed the impact of the recent loss of engineers from personnel resignations.

c. Conclusions

In general, the PORC members seemed cognizant of the issues discussed. Although a large percentage of PORC action item due dates have been extended, safety appeared to have been appropriately considered in the extensions. PORC's initiative to routinely discuss the broad assessment of the safe operation of the plant enhanced PORC's ability to identify potential problems.

07.4 Safety Review Committee (Inspector Followup Item 50-333/97004-01)

a. Inspection Scope

The inspectors assessed the Safety Review Committee (SRC) oversight activities and verified that selected SRC activities were performed in accordance with the TS. Applicable procedures and the scheduled SRC meeting minutes since January 1, 1996, were reviewed and the plant manager was interviewed regarding SRC activities.

b. Observations and Findings

The inspectors reviewed Procedures SRCP1, "Charter," Revision 12, SRCP8, "Reviews," Revision 8, and SRCP9, "Audits," Revision 10, and verified that the TS requirements pertaining to the SRC were either met or exceeded.

The inspectors reviewed the minutes for the six scheduled SRC meetings completed in 1996, and determined that the SRC provided an appropriate level of oversight on corrective actions for significant issues, as evidenced by the tracking of "significant areas of risk." During 1996, the SRC was tracking three "significant areas of risk" at Fitzpatrick, including Radiological and Environmental Services (RES) human performance, corrective action programs and engineering rigor. The areas of significant risk were discussed during each SRC meeting until the issue was closed. In addition to the "significant areas of risk," the inspectors noted that problems pertaining to human performance and engineering performance appeared repeatedly in the SRC meeting minutes.

SRC was tracking RES human performance and corrective action programs as "significant areas of risk" prior to 1996. The concern associated with RES human performance gained SRC's attention as a result of numerous deficiencies in the RES area. This "significant area of risk" was closed in November 1996, following indication of adequate corrective actions through the Fall 1996 refueling outage. The concerns associated with the corrective action program related to corrective action implementation and the assessment of whether these actions were effective. Based on progress made in DER evaluation timeliness and management's focus on the corrective action timeliness, SRC closed this "significant area of risk" for the licensee in July 1996. The updates regarding RES human performance and corrective actions programs provided to the SRC, as described in the meeting minutes, were thorough and provided adequate information for the SRC to evaluate the situations.

Engineering rigor was added as a "significant area of risk" in November 1996, based on four NRC violations described in Inspection Report (IR) 50-333/96007, with the purpose of monitoring the thoroughness and timeliness of engineering processes, evaluations and response to events. Prior to classification as a "significant area of risk," the SRC discussed engineering-related concerns on several occasions. These discussions were based on other NRC Inspection Reports and QA Audit A96-04J. This QA audit identified particular concerns with ineffective corrective actions for past engineering-related deficiencies. Therefore, based on the concerns raised by the QA audit, previous NRC inspection findings, and the untimely completion of engineering-related corrective actions described in Section 07.5 (QA), the adequacy of the corrective action program for engineering issues is considered an inspector followup item (IFI) (50-333/97004-01).

c. Conclusions

The SRC provided an appropriate level of oversight on corrective actions to significant issues during 1996, as evidenced by the tracking of "significant areas of risk." The updates provided to the SRC, as described in the meeting minutes were thorough, and provided adequate information for the SRC to evaluate the situations.

The SRC's perception of the licensee appeared to be consistent with the indications provided in DERs, audits, self-assessments and trending reports. Concerns associated with the timeliness and adequacy of the corrective actions for engineering issues is considered an inspector followup item.

07.5 Quality Assurance Activities

a. Inspection Scope

The inspectors assessed the licensee's QA Department's ability to identify problems and adverse trends in performance. Also assessed was the timeliness, quality and effectiveness of the licensee's actions taken in response to QA findings. The inspectors reviewed selected QA audits, surveillances, procedures, and QA-initiated Deviation/Event Reports (DERs) and Action/Commitment Tracking System (ACTS) items, and applicable licensee trending reports. The inspectors also interviewed licensee personnel, including QA management and QA auditors.

b. Observations and Findings

The inspectors discussed the QA function with QA management and staff. The inspectors ascertained that the QA organization was staffed with individuals having strong operations, engineering and maintenance experience. The inspectors found this experience evident in the depth of the auditor's findings.

The inspectors reviewed all, or portions, of the following QA audits and surveillances:

- Audit Report A96-11J, "Results of Actions Taken to Correct Deficiencies," dated July 17, 1996;
- Audit Report A96-20J, "JAF [James A. Fitzpatrick] Results of Actions Taken to Correct Deficiencies," dated January 27, 1997;
- Audit Report A96-09J, "Maintenance Activities Program Audit," dated June 18, 1996;
- Audit Report A96-04J, "Design Control," dated April 12, 1996; and
- Surveillance 1913, "Management Controls PORC [Plant Operations Review Committee]/SRC [Safety Review Committee] Activities," dated October 15, 1996.

The surveillance and audits were completed in accordance with the licensee's Procedures, QAP 18.2 (J), "Quality Assurance Surveillance Program," Revision 1, and QAP 18.1-J, "Quality Assurance Audit Program," Revision 4. The inspectors found issues identified in these audit and surveillance reports consistently well supported.

A review of the Quarterly Integrated Self-Assessment Trend Reports indicated that, over the last six quarters, an average of 11% of all DERs initiated for the station were initiated by QA. The inspectors reviewed a list of those DERs initiated by QA since January 1, 1996, and, based on this list, the inspectors considered the percentage and type of DERs identified by QA to be reasonable.

The inspectors reviewed the weekly Corrective Action Monitoring Program Reports issued by QA for the weeks of March 26 through April 9, 1997. The reports provided trend information regarding QA-initiated DERs issued, closed, and overdue over the last 12 months; and corrective action QA ACTS items open, overdue, and pending QA review. Additionally, the reports described, in detail, the open QA ACTS items greater than a year old, and listed all the open QA ACTS items with selected information, such as the issue date, due date, the number of times the due date had been extended, and the number of times the proposed corrective actions had been rejected by QA. The inspectors considered these reports to be a good tool to keep plant management abreast of long-standing issues.

The April 2, 1997 Corrective Action Monitoring Program Report documented that the due dates for 85 of the 151 open QA ACTS had been extended. The large percentage of corrective action ACTS items being extended had been identified in the last two QA audits of the licensee's corrective actions program. QA Audit 96-11J indicated that "extension requests appear to be the norm, rather than the exception," and QA Audit 96-20J indicated similar concerns. Although the practice of extending ACTS items appeared excessive, no negative consequences were identified from these extensions. Furthermore, as of the week of April 14, 1997, all extension requests for QA-related ACTS items greater than one year old were to be reviewed by the plant manager.

The April 2, 1997, Corrective Action Monitoring Program Report indicated that 13 of 21 QA-related ACTS items open for greater than one year were the responsibility of design engineering. Additionally, of these 13 ACTS items, two were associated with ineffective corrective actions. Further discussion regarding engineering-related corrective actions is provided in Section O7.4 of this report.

Also, during the review of the April 2, 1997, report, the inspectors noted that 11 of the 151 open QA ACTS items had the associated corrective actions rejected by QA. The corrective actions for one ACTS item were rejected three times. The inspectors discussed the rejection rate with QA management and ascertained that since the beginning of the year, 10 out of 464 (appropriately 2.16%) proposed ACTS item corrective actions reviewed by QA were rejected. The inspectors considered the rejection rate to be reasonable, and an indication of a good balance between adequate corrective actions and adequate QA acceptance reviews.

c. Conclusions

The strong industry experience of the QA auditors was evident in the depth of their findings. Audit reports findings were consistently well supported. The weekly QA Corrective Action Monitoring Program Reports were considered a good tool to keep plant management abreast of long standing issues. Although the practice of extending ACTS items appeared excessive, no negative consequences were identified from these extensions. The recently implemented plant manager review of all extension requests for QA-related ACTS items greater than one year old indicated increased management attention to long-standing issues. The QA rejection rate of reviewed proposed corrective actions appeared reasonable, and indicated a good balance between adequate corrective actions and adequate QA acceptance reviews.

O7.6 Self Assessment Program

a. Inspection Scope

The inspector reviewed department self-assessments, documented management observations and the performance enhancement review committee meeting minutes and interviewed personnel. Operation review group (ORG) quarterly reports for 1996 and 1997 were also reviewed.

b. Observations and Findings:

The licensee has a formal self assessment program as described in various licensee internal audit procedures. The inspectors reviewed several self assessment reports and found that these reports were self-critical and thorough.

ORG quarterly reports were considered to be an excellent resource for plant managers to trend the overall and departmental performance. The report statements were generally concise and provided specific insight into past performance problems.

c. Conclusions

Licensee management was actively involved in the self-assessment and corrective action process. The evaluation of a sampling of the departmental self-assessment findings showed consistency with previous inspection findings as well as other third party audits. ORG quarterly trend reports were considered to provide a valuable summary of plant performance.

O7.7 Human Performance

a. Inspection Scope

The inspectors reviewed a recently completed licensee human performance report and interviewed licensee personnel. The inspectors attended a Performance Enhancement Review Committee (PERC) meeting and reviewed several meeting minutes and the associated lessons learned that had been generated.

b. Observations and Findings

Due to several significant human performance errors, the licensee developed a human performance team to examine human performance and develop recommended corrective actions. The inspector reviewed the report and corrective actions recommended and considered that the report provided a good appraisal of the licensee's performance in this area. Through interviews, the inspector determined that the awareness of human performance issues has increased greatly since this effort.

The PERC is a committee which meets on a regular basis to review personnel errors in an effort to improve human performance. In reviewing the committee, the inspectors found that DERs were properly screened for PERC review if personnel

performance was possibly an issue. The inspector attended a meeting and noted that the meeting was conducted well. The PERC reviewed several issues regarding an unauthorized exit of the radiologically controlled area. In this case, the PERC focused on what corrective actions may be appropriate to prevent such an event in the future. Meeting minutes were incorporated into DER packages for tracking and trending purposes. However, there was an example where the corrective actions specified by PERC were not documented on the DER form, although through other document review, it was clear that some actions had in fact been taken.

The inspector noted that the licensee has also recently implemented several new observation programs (Worker for a Day, Coach of the Day, and Coach of the Week), in an effort to improve human performance at FitzPatrick.

c. Conclusions

Based on interviews, the licensee has increased their awareness of human performance issues and recently implemented some programs to reverse the past negative trends in human performance. The PERC program was a generally effective process to investigate human performance issues.

II. MAINTENANCE

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope

The inspectors observed all or portions of the following work activities:

- WR 97-02992 RCIC steam admission valve 13 MOV 131 repair
- WR 97-02901 Uninterruptible power supply
- WR 97-02431 345 KV bolted connection repair
- Various "C" Emergency diesel generator maintenance

b. Observations and Findings

The inspectors found the work performed under these activities to be professional and thorough. Technicians were experienced and knowledgeable of their assigned task.

M1.2 General Comments on Surveillance Activities

a. Inspection Scope

The inspectors observed selected surveillance tests to determine whether approved procedures were in use, details were adequate, test instrumentation was properly calibrated and used, technical specifications were satisfied, testing was performed by knowledgeable personnel, and test results satisfied acceptance criteria or were properly dispositioned.

The inspectors observed portions of the following surveillance activities:

- ST 20T control rod time test
- ST 24A reactor core isolation cooling pump test
- ST 20C control rod operability
- ST 8C emergency service water motor operated valve test

b. Observations and Findings

The licensee conducted the above surveillance activities appropriately and in accordance with procedural and administrative requirements. Good coordination and communication were observed during performance of the surveillance activities.

M1.3 Conclusions on Conduct of Maintenance

Overall, maintenance and surveillance activities were well conducted, with good adherence to both administrative and maintenance procedures.

M3 Maintenance Procedures and Documentation

a. Inspection Scope

The inspectors reviewed the methods used to track equipment problems and failures including the technical issues report (TIR) and maintenance rule (MR) implementation. To assess maintenance rule implementation related to the identification and tracking of system performance, the inspectors reviewed the high pressure coolant injection system, safety relief valves, emergency service water (ESW) and primary containment isolation valves (PCIV) and discussed the issues with the applicable system engineer.

b. Observations and Findings

The TIR appeared to be a good way of focusing emphasis on specific plant equipment issues. For each item listed, the report contained a problem statement, plant impact, corrective actions, and a place to note any particular problems in the resolution. For systems categorized as (a)(1) under the maintenance rule, the report also included a statement on when the system would be returned to an (a)(2) status under the maintenance rule. The inspectors noted good tracking of equipment failures and identification of systems to be placed in (a)(1) status. The recovery plans for (a)(1) systems were detailed and provided good insight into past problems and the plans for addressing performance concerns.

c. Conclusions

Both the TIR and the maintenance rule processes appear to be working hand-in-hand to allow proper management attention to system performance issues. System engineers understood the problems of their particular systems. Based on equipment performance, it appeared that the licensee's previous corrective actions taken to address ESW and PCIV issues were not fully effective.

M7 Quality Assurance in Maintenance Activities**M7.1 Valve Maintenance Performed by a Contractor****a. Inspection Scope**

An anonymous concern about the quality of maintenance performed by a valve maintenance contractor during the 1996 outage was brought to the licensee's employee concern program through a handwritten report. The individual's key point was that work, particularly documentation and use of procedures, performed by the contractor was of poor quality. Additionally, a stripped stud was left in place rather than replaced and valve bolting torque requirements were questioned. Concerns with specific valves and valve maintenance requirements were not documented. The individual also wrote to "turn over this report to the NRC."

The inspectors reviewed the licensee's investigation reports of the concern, reviewed work history for applicable valves including post work and rework and discussed the issue with the licensee. Additionally, a sample of valves were inspected.

b. Observations and Findings

The inspector determined that the contractor repaired or performed preventive maintenance on 114 valves and valve operators, primarily in the condensate demineralizer system.

The licensee conducted a review of the contractor's work as documented in a licensee memo dated January 8, 1997. The review included a sample of maintenance packages which the licensee found to be acceptable, although several administrative errors were identified and corrected. The licensee also noted that the maintenance valve engineer provide oversight of the contractor during the outage and a QA surveillance report no. 96-0005 dated December 11, 1996 also documented good performance by the contractor.

The licensee conducted an additional review of the operating history including work requests and deficiencies of all valves worked on by the valve contractor and conducted walkdowns of a sample of valves. Results of that review were documented in a licensee memorandum dated May 13, 1997. The licensee identified no adverse condition existed with valve operation based on the maintenance history review and valve walkdown and concluded that sufficient time had elapsed during which the applicable systems had been in service to provide an opportunity for problems to surface.

c. Conclusions

The licensee's initial review, followed up with a subsequent review of valve operating history, provided an acceptable level of confidence that valve maintenance performed by the vendor was adequate and had not contributed to system performance issues. Although there were several valve maintenance

performance issues identified during the outage, those issues were addressed through the licensee's corrective action program.

M7.2 Work Control

a. Inspection Scope

Due to recent events which had contributing causes related to the work control process, the inspectors assessed the ability of the work control department to identify and correct problems. To complete this assessment, the inspectors reviewed a sample of DERs related to work control and work planning initiated within the last nine months, and evaluated the root causes and corrective actions. The inspectors also reviewed internal critiques performed by work control staff and the actions taken to address identified concerns. Applicable procedures were reviewed and work control management, supervisors, planners and work week managers were interviewed.

b. Observations and Findings

The inspectors discussed the work control process and organization with work control management and staff. The inspectors ascertained that the work control organization was staffed with several individuals having strong operations backgrounds. For example, three of the four work week managers were either reactor operator or senior reactor operator qualified. The inspectors considered the strong operations background of the work week managers to be a positive attribute of the work control organization.

Through discussion with a work control supervisor, the inspectors ascertained that since January 1, 1997, approximately 3100 work requests have been implemented. Of those work requests, there have been five cases where DERs were written related to deficient plant impact evaluations. In addition, the inspectors reviewed a list of DERs issued since January 1, 1997. Of the 348 DERs listed, six were associated with the work control program and 19 had an apparent cause related to planning.

On September 16, 1996, during the performance of a relay calibration, two terminals were inadvertently shorted together, resulting in a main turbine trip and subsequent reactor scram. The details associated with this event were described in NRC IR 50-333/96006. The inspectors reviewed the work control-related corrective actions contained in DER 96-1060 associated with the scram. The corrective actions included changes to Procedure AP-10.03, "Work Control Planning," to provide more detailed requirements regarding the pre-job walkdown of the work site to assess the potential impact from equipment in the vicinity of the work to be accomplished. Other corrective actions identified in DER 96-1060 were to reinforce the need for technicians to protect adjacent equipment when working on energized equipment, to reinforce the need for technicians not to become complacent or over-confident in their work, and to stop work in situations when they identify a plant impact not noted within the work package. The inspectors considered these corrective actions associated with the work control process to be appropriate.

The effectiveness of the corrective actions for the September 1996 scram was assessed by reviewing subsequent DERs associated with either the work control process or that had an apparent root cause associated with work planning. Seven DERS were reviewed, four of which were written for items where one or more of the barriers in the work control process had failed, but the discrepancies were identified prior to actual implementation of work. In at least three cases, the discrepancy was identified by the technicians. The three remaining DERs, associated with discrepancies not identified until after the work was initiated, related to missed administrative requirements or poor scheduling issues with little impact on plant safety. The inspectors reviewed the proposed or completed corrective actions for these seven DERs and considered them to be appropriate. The three DERs initiated for cases where the technician stopped work when discrepancies were identified, indicated an improved questioning attitude.

The inspectors reviewed the corrective actions for DER 97-106 regarding the January 23, 1997, simultaneous removal of two traveling screens from service, which contributed to plant shutdown when a large influx of fish clogged the screen. The details associated with this event were described in NRC IR 50-333/97001. Traveling screens were normally removed from service and inspected weekly under minor maintenance controls. Minor maintenance activities required less review than those activities performed under the work request process. The apparent causes for the simultaneous removal of two traveling screen, as described in the DER, included:

- A lack of communications between work control and operations,
- poor decision on operations part to take both screens out of service simultaneously, and
- a new requirement associated with the protective tagging process.

The proposed corrective actions were reviewed and found to appropriately address the root causes. Furthermore, during the inspectors' review of DERS initiated over the last nine months, no additional problems were identified regarding the minor maintenance process.

Through discussion with various members of the work control organization, the inspectors ascertained that, although work control had not performed a formal self assessment, the organization routinely critiques the completed work week activities and special evolutions. The inspectors reviewed a random sample of four weekly critiques and the critique of the March 22, 1997, down-power. The weekly critiques provided statistical information pertaining to schedule adherence and shortcomings within the quality of the work packages and scheduling. When appropriate, the weekly critiques provided recommendations to address the identified shortcomings. The down-power critique was extensive; areas for improvement and recommendations were identified. Discussions with the work control supervisor indicated that the recommendations from the weekly and special evolution critiques were normally incorporated into the schedule preparation checklist. The inspectors verified that several previously identified recommendations were in-fact added to the checklist. The inspectors considered the weekly and special evolution critiques to be a good tool for the identification and correction of problems within the work control process.

c. Conclusions

The inspectors considered the strong operations background of the work week managers to be a positive attribute of the work control organization. The corrective actions associated with the work control process initiated as a result of the September 1996, scram were effectively implemented, and the proposed or completed corrective actions for other DERs associated with the work control process were appropriate. In addition, the three DERs initiated 6 cases where the technician stopped work when discrepancies were identified indicated an improved questioning attitude. The weekly and special evolution critiques were a good tool for the identification and correction of problems within the work control process.

M8 Miscellaneous Maintenance Issues

M8.1 (Closed) Unresolved Item 50-333/95001-01: Reactor pressure vessel (RPV) nozzle examinations. During the review of inservice inspection (ISI) data, the inspector identified a concern regarding the need for additional attention to procedural quality and adherence. The licensee completed several action commitment tracking system (ACTS) items to address the specific concerns identified in NRC inspection reports 50-333/95001 and 95-400. In NRC inspection report 50-333/96-07 dated December 13, 1996, an NRC Region I non-destructive examination (NDE) technician reviewed the licensee's ISI program and concluded that the program was well documented, controlled and implemented. The documentation supporting the examinations was accurate and readily available for review. Additionally, an ISI program checklist was provided which was an improvement over previous controls and that the licensee demonstrated good oversight of the NDE subcontractor and NDE examinations. Based on the licensee's completion of the ACTS items to address the specific concerns and a subsequent ISI program review by the NRC, the issues identified in the URI have been addressed.

M8.2 (Closed) LER 50-333/95008: High Pressure Coolant Injection (HPCI) System Trip on Overspeed Due to Procedure Deficiency. On March 26, 1995, while conducting post refuel outage testing, the HPCI turbine tripped on overspeed when a cold quick start test was attempted. The licensee determined that the system flow controller output current limit circuit adjustment was not included in the calibration procedure and therefore, not properly adjusted following replacement during the refuel outage. Corrective actions included proper adjustment of the flow controller and satisfactory retest of the HPCI turbine. The reactor core isolation cooling (RCIC) flow controller was also verified by the licensee to be properly set. The calibration procedures for the flow controllers were revised to include the requirement to adjust the current limit circuits. The inspector verified that corrective actions had been completed and reviewed subsequent quick start surveillance testing of HPCI and RCIC systems for similar problems.

M8.3 (Closed) LER 50-333/96011: Both Standby Liquid Control Subsystems Inoperable Due to Inoperable Pump Discharge Pressure Relief Valves. On October 29, 1996, while in cold condition for refueling the licensee determined that both standby liquid control (SLC) system pump discharge relief valves were found with lift setpoints below the technical specification required range of 1400 to 1490 psig. Relief valve 11SV-39A lifted at 1380

psig and 11SV-39B lifted at 1310 psig. Corrective actions included replacing one valve and adjusting the relief setpoint for the second valve. In addition, the licensee completed an equipment failure evaluation and test interval evaluation as the B side relief valve had failed during the previous test. The licensee determined the setpoint drift of the relief valves to be the result of cyclic pressure spikes from the operation of the reciprocating positive displacement SLC pumps. Additional corrective actions included increased frequency of bench testing based on setpoint drift data and evaluating the reinstallation of the hydraulic accumulators which were part of the original system design.

- M8.4 (Closed) Violation 50-333/96002-01: Foreign material exclusion (FME) controls. Requirements to maintain system cleanliness while performing maintenance on the pressure relief system were not met. The licensee programmatic corrective actions included additional training, assessment of the effectiveness of the corrective actions, review of refueling outage work packages and changes to the administrative procedure for maintaining system and component cleanliness. The inspector reviewed training records, procedural changes, licensee program assessment and audit documentation, and recent plant deficiency report history for FME issues. Licensee corrective actions appear to have been effective.

III. ENGINEERING

E1 Conduct of Engineering

E1.1 Control of Temporary Modifications

a. Inspection Scope

The inspector reviewed the temporary plant modification control program including procedures, performance indicators and implementation. Additionally, specific temporary modifications were also assessed.

b. Observations and Findings

Historically, the average number of temporary modifications has been about 34 over the past two years. The current number is 37, with the oldest two involving modifications to enhance the chemistry of the service water system which are scheduled for permanent installation. There are currently 16 non-outage temporary modifications and 21 which require an outage to address. Six of the "outage required" temporary modifications are scheduled for the next forced outage. The inspector determined that five temporary modifications were for additional plant performance monitoring, four were equipment enhancements waiting permanent installation, and 28 were the result of equipment deficiencies. Ten temporary modifications involved system leakage, seven of which are steam leak repairs on non-safety related equipment. Twenty-five of the temporary modifications to correct equipment deficiencies were on balance-of-plant components and not safety significant.

The inspector reviewed the status of the temporary modifications following the completion of last refueling outage and noted that of the six open temporary modifications, four were installed on start-up as a result of equipment deficiencies, one was of a housekeeping nature and one lacked engineering support. Modification 95-098, which lacked engineering support, could have been done during the outage but was not. The modification involved the installation of capacitors on several reactor manual control system (RMCS) relays which had contributed to some previous RMCS timing problems during the previous cycle. Although the problem has not repeated itself to date, no clear explanation was available as to why the permanent modification was not completed during the outage.

The inspector also reviewed deficiency event reports for the last year which documented problems with the temporary modification program. In general, the inspector noted that problems were of an administrative nature and were being addressed by the licensee.

c. Conclusions

Temporary modifications were being effectively managed and all temporary modifications were scheduled for removal or permanent installation. The older temporary modifications appear to lack engineering support, but are not safety significant. The number of temporary modifications has been consistent over the past two years and does not appear to adversely impact plant operations. Overall, good management oversight of the temporary modification program was evident.

E2 Engineering Support of Facilities and Equipment

E2.1 Nonconforming Scram Solenoid Pilot Valves

a. Inspection Scope

On May 5, 1997, the licensee was notified by General Electric that an investigation into observed air leakage past the core disc in the scram solenoid pilot valves (SSPV's) at another facility was caused by incorrect core disc elastomer material supplied with some valves. The NRC was notified through the Emergency Notification System in accordance with 10 CFR Part 21 of the potential safety related problem. The inspector reviewed the licensee's response to the issue and reviewed the justification for continued operation (JCO) completed by the licensee.

b. Observations and Findings

The safety function of the scram solenoid pilot valves is to ensure rapid insertion of the control rods during an automatic or manual scram. To perform this, the core disc in the SSPV has to isolate the air system from the scram valves when the SSPV is de-energized. The vendor had determined that some of the SSPVs it had provided to various licensees had nitrile (BUNA-N) vice the intended material, fluorocarbon (Viton). The concern

involved the susceptibility of the BUNA-N to harden due to thermal stresses from elevated temperatures, and subsequently lack the ability to provide a good seal. The licensee received 50 of the suspected SSPVs and determined that 24 had been installed in the plant. As each control rod drive unit contains two SSPVs, the installed group encompassed 18 control rod drive units.

The licensee determined, based on vendor information, that the drives were operable. The basis for the decision was focused on the vendor's information that the disc have a service life of three to four years. The SSPVs were shipped to the licensee in October of 1994. Corrective actions by the licensee includes replacing the suspected SSPVs by October 17, 1997 and development of augmented leakage testing as suggested by the vendor.

c. Conclusions

The licensee's response and planned corrective actions to the nonconforming SSPV demonstrated a good safety focus.

E8 Miscellaneous Engineering Issues

- E8.1 (Closed) Violation 50-333/95006-02: Fire protection program procedures not maintained. On March 19, 1995, Carbon Dioxide was inadvertently discharged into the relay room during a surveillance test. The cause was that the surveillance test was not changed to include a portion of a logic change modification. The causes for the condition were that the engineering design organization did not identify the logic change and the review of the surveillance test procedure for implementation of the modification change was inadequate. To address these causes, the licensee's engineering department developed a system to review major modifications including procedure changes and their impact on operations and maintenance and developed an adequacy review process to ensure that all changes are reflected on modification documents and affected procedures. The licensee implemented their corrective actions through a new procedure, Site Engineering Standing Order (SESO)-11, Modification Teams and Adequacy Review Process, implemented on October 2, 1995, to formalize a modification team concept. The procedure provides instructions and a framework to minimize the amount of design and personnel errors. Attachments to the procedure include system drawing markup guidance and a modification adequacy review checklist. The checklist provides a list of key modification requirements which were overlooked on past modifications, issues identified through the licensee's corrective action process and items from modification critiques. Additionally, the inspector verified that the commitments documented in the licensee's response to the Notice of Violation dated June 8, 1995 were completed.
- E8.2 (Closed) LER 50-333/96-005: Error in Safety Limit Minimum Critical Power Ratio Calculation. On April 16, 1996 General Electric (GE) informed the licensee that preliminary recalculation of the cycle specific safety limit minimum critical power ratio (SLMCPR) may be more limiting than determined by the original calculations. Subsequently the licensee was notified by GE that the cycle 12 SLMCPR in the technical specifications,

1.07, was incorrect and should be 1.08, which was a non-conservative error. The licensee reviewed the operating records for the cycle and determined that the fraction of the operating limit MCPR had at no time exceeded 0.98 and therefore there was no potential that the new SLMCPR would have been violated in the event of a limiting abnormal operating occurrence. In addition the SLMCPR for cycle 13 was verified to be correct and an Operating License amendment request for the cycle 12 SLMCPR was submitted. The inspector reviewed the Technical Specification change request and the administrative controls that were put into place at the time of the event. The corrective actions were complete and no other concerns were identified.

- E8.3 (Closed) Inspector Followup Item (IFI) 50-333/92014-01: Relay room Carbon Dioxide (CO₂) discharge test. NRC inspection report 50-333/92014 section 6.6.3 documented the performance of a discharge or an acceptable National Fire Protection Association (NFPA) code test on the relay room carbon dioxide system. The test performed identified significant problems with the relay room and control room ventilation system and the licensee developed an action plan to address the issues. NRC inspection report 50-333/92023 provided a detailed review of the licensee's action plan and concluded that the plan was acceptable for unit restart and power operation. Specifically, the proposed modification to the relay room ventilation system and the subsequent CO₂ full discharge verification testing appeared to be appropriate and that no additional or immediate safety concerns remained. The licensee installed a modification which consisted of altering the relay room ventilation system to isolate prior to a CO₂ discharge, relocating the relay room CO₂ vent path and replacing a fire door to minimize leakage into the control room. In lieu of performing a full CO₂ discharge test, an alternate test methodology was utilized. The alternate test was an enclosure integrity test and tracer gas air exchange test. In NRC inspection report 50-333/95002, the inspector witnessed the performance of a relay room CO₂ test as a followup. The purpose of the test was to collect data for a subsequent engineering analysis and confirmation of the relay room as a carbon dioxide protected enclosure. IFI 50-333/92014-01 remained open pending review of the results of the test. In NRC inspection report 50-333/95006, the completion of the relay room CO₂ system modification and subsequent testing was determined to satisfy the licensee's commitment to the NRC to return the relay room CO₂ fire suppression system to an operable status prior to startup from the 1994-95 refueling outage. However, the inspector questioned the adequacy of alternate trace gas CO₂ fire suppression system testing in meeting requirements.

Alternate CO₂ fire suppression system testing is discussed in NRC Information Notice (IN) 92-28, Inadequate Fire Suppression System Testing, dated April 8, 1992. The IN documents that full discharge testing of CO₂ fire suppression systems may present certain hazards at operating nuclear power plants and that some licensees have used alternative testing methods which avoid these hazards. The alternate testing is an enclosure integrity test and tracer gas air exchange test which is acceptable per NFPA standards. Data is obtained from the tests for use in an engineering analysis.

The inspector reviewed the engineering analysis and discussed the issue with the fire protection engineer. The inspector noted that the engineering analysis, using the data from alternate tracer gas testing, demonstrated that an adequate concentration of fire suppression agent for the required soak time was available.

- E8.4 (Closed) Unresolved item 50-333/95002-01: Discrepancies with containment spray system. During the performance of a containment spray header and nozzle air test, the licensee identified that one of the spray nozzles had no air flow due to an internally installed plug. A subsequent engineering review of the condition determined that this condition was acceptable and that the system was operable. However, several engineering aspects of the issue were still under review at the end of the inspection period. Specifically, the reason the nozzle was plugged had not been determined and drawing and design basis documentation did not reflect the as found condition.

The inspector reviewed design basis document (DBD)-010, Residual Heat Removal System, and verified that the design basis document was updated to reflect the actual condition concerning the number of drywell spray header nozzles. Additionally, the inspector noted that a design document open item (DDOI) had been initiated to revise applicable drawings to indicate the actual configuration. The licensee determined that there were no modifications which would have installed the plug. However, it was determined that the plug was internally installed, which was most likely from original construction.

IV. PLANT SUPPORT

R7 Quality Assurance in Radiological Protection and Chemistry (RP&C) Activities

R7.1 Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems

a. Inspection Scope

To determine the effectiveness of licensee controls in identifying, resolving and preventing problems in the radiological protection area, the inspector reviewed the licensee's corrective action program including procedures, documentation, root cause analysis performed and discussed the program with RP&C personnel. Additionally, walkdowns of the radiological controlled area (RCA) were performed.

b. Observations and Findings

The licensee's Quarterly Integrated Self-Assessment and Trend Report for the Fourth Quarter of 1996 noted that the number of DERs written in the Radiation Protection functional area during the fourth quarter of 1996 was more than three times the average number written during previous outage quarters. Of the seventy-five DERs generated, fifty-two were for personnel contaminations, and nine others were for contamination control issues. The licensee characterized this three-fold increase as an improving trend based on the increased willingness and instruction for self-identification of problems by plant personnel at the worker level rather than by management, the quality assurance organization, or external organizations. Plant

personnel at the worker level identified 87.2% of the DERs written for this period. The licensee stated that their review of outage personnel contaminations, triggered by the large documented number, was an example of escalation of characterization and evaluation type required for a DER. Their review concluded that most of the contaminations were unrelated and of low safety significance. Findings in NRC Inspection Reports 50-333/96007 and 97001 documented similar low safety significance concerning the personnel contaminations. The licensee also pointed out that a DER (97-0427) was written on April 17, 1997, which would escalate the characterization and the type of evaluation required for recurring non-adherence to radiological safety postings at RCA boundaries. However, the fact that this escalation and subsequent effective corrective action intended to prevent recurrence did not occur earlier in time was considered a weakness in this area.

The evaluation of each identified deviation and event for generic implications (extent of condition) was not apparent. Procedure AP-03.03, Deviation and Event Analysis, provided the methodology for evaluating deviations and events, identifying their causes, and recommending corrective action to prevent their recurrence. Section 8.3.3.E stated, in part, that all evaluations shall, as a minimum, include extent of condition when appropriate. A large number of inspector-reviewed DERs did not include any documented statement concerning extent of condition. Although the licensee stated that an extent of condition consideration is always performed, the lack of documentation of this evaluation and the evaluation's basis was considered a weakness.

The elevation of identified deviations and events to a proper level of management appeared to be adequately addressed. Responses to DERS required two levels of management approval before submittal to the ORG. To track action items generated to resolve DERS to completion, Procedure AP-03.08, Action and Commitment Tracking System (ACTS) was used. ACTS items associated level A and B DERS required two levels of management approval before closure. ACTS items associated with lesser level DERS required at least one level of management approval before closure.

c. Conclusions

Overall, the licensee's corrective action program for the radiological protection program was acceptable. The adequacy and timeliness of corrective actions were acceptable except that the corrective actions for non-adherence to radiological safety postings at the boundaries of radiologically-controlled areas (RCAs) was found to be inadequate. Identification and characterization of deviations and events were also acceptable, but evaluation of extent of condition and corrective actions of possibly recurrent deviations and events in appropriate situations were not evident in the documentation and therefore considered to be weaknesses. Also, the evaluation and documentation of each identified deviation and event for generic implications was considered to be a weakness. The elevation of identified deviations and events to a proper level of management was adequately addressed. Self-identification of problems by front-line personnel and their willingness to do so seemed to be increasing.

R7.2 Improper RCA Entry by Escorted Visitors (Violation 50-333/97004-02)

a. Inspection Scope

On April 16, 1997, two licensee-identified events occurred concerning improper RCA entry. The inspector reviewed the events, past performance in RCA access controls and discussed licensee corrective actions with RP&C management.

b. Observations and Findings

April 16 and 17, 1997, had been designated career days during which parent employees were allowed to bring and show their children around their workplace. On April 16, 1997, at approximately 9:45 a.m., with the plant operating at approximately 100% power, the licensee discovered that, in two separate incidents at times earlier that morning, minor visitors (two children by one parent employee and one child by another parent employee) were escorted inadvertently into a RCA (the cable tunnel) by their parent employees without authorization for RCA entry. The two parent employees were both currently trained radiation workers and qualified to be visitor escorts. The visitors were not authorized or monitored for radiation exposure as required by procedure. The access point used was posted with a yellow and magenta Caution Radioactive Material posting, which stated that the area was an RCA, that only authorized personnel were to enter, and that a TLD was required for entry. This area was not controlled with a radiation work permit (RWP). The licensee had posted the area because the condensate piping and chemical drain piping in the area were internally contaminated with small amounts of radioactive material and because this radioactive contamination resulted in low gamma dose rates external to the piping.

The dose consequences to the visitors involved in these events were calculated to be negligible. A licensee survey of general area dose rates in the cable tunnel shortly after the incident indicated that the maximum and average exposure rates were 0.3 and approximately 0.1 millirem/hour, respectively. A documented dose evaluation by the licensee for these two incidents indicated that the maximum transit time in the cable tunnel was 6 minutes, that the maximum individual dose to the unmonitored individuals was 0.03 millirem, and that the calculated individual dose is less than the minimum reportable dose of 10 millirem for the licensee's personnel TLD radiation badge. The area was scheduled to be surveyed for removable contamination on a quarterly basis due to its low potential for such contamination to exist. Quarterly surveys of this area on February 13, 1997 and on April 23, 1997 indicated that general area removable radioactive contamination was less than 1000 disintegrations per 100 square centimeters. The visitors exited the protected area through radiation portal monitors in the security access building without exceeding the alarm setpoint of the monitors. These latter facts indicated that there was no significant removable contamination in the cable tunnel area.

Technical Specification 6.11 states that procedures for personnel radiation protection shall be prepared and adhered to for all plant operations. Procedure AP-07.00 (Rev. 0), Radiation Protection Program, in Section 6.1.5, states that radiation workers shall comply with written and oral Radiation Protection (RP)

instructions. The inspector noted that, during the last six months, there had been four similar incidents involving non-adherence to radiological safety postings at the boundaries of RCAs, including an incident on December 7, 1996, involving a non-licensed operator who improperly exited the RCA. It appears that past corrective actions concerning RCA access were not fully effective. The failure of radiation workers to comply with posted RCA access instructions resulted in minors entering a posted RCA and is a violation (VIO) (50-333/97004-02).

c. Conclusions

The two separate incidents on April 16, 1997 constituted two examples of failure to comply with written instruction (i.e., postings) since the escorted visitors had not been provided TLDs and had not been authorized for entry into a RCA. Corrective actions for previous similar licensee findings were not effective in preventing these incidents.

R8 Miscellaneous RP&C Issues (VIO 50-333/97004-02)

- R8.1 (Closed) Unresolved Item 50-333/95002-02 and EA 96-096: Improper dosimetry use by a visitor. The licensee determined that a visitor entered the RCA using dosimetry not issued to him by the site dosimetry office. Additionally, the contractor supervisor had the visitor log into and out of the RCA using a different persons name. The NRC Office of Investigations (OI) reviewed the event and a violation concerning this willful act was issued in a letter to the licensee dated May 2, 1996. The licensee's response dated May 31, 1996 documented corrective actions including changes to dosimetry control procedures to provide more stringent administrative control and the conduct of pre-outage briefings to discuss the violation and station requirements. The inspector verified that the licensee's corrective actions have been completed. Additionally, the inspector reviewed DERs and discussed the event with licensee personnel and determined that there have been no similar events.
- R8.2 (Closed) Unresolved Item 50-333/96008-03: Improper radiation worker practices by a non-licensed operator. This item documented that there were several radiological control barriers and radiation worker practices which were not adhered to by two workers which resulted in one worker becoming contaminated. These requirements which were not met included the failure to obtain a radiation control brief, not adhering to the radiation work permit, wearing inadequate anti-contamination clothing, disregarding radiological posting requirements and improper use of the portal monitor. The deficient radiation worker practices are similar to the event described in paragraph R.7.2 above in that individuals exhibited poor radiation worker practices. Accordingly, this Unresolved Item is closed based on including this issue as an example of violation 50-333/97004-02.

F8 Miscellaneous Fire Protection Issues

- F8.1 (Closed) Enforcement (EA) 50-333/95-142: Unauthorized approval of combustion control permit. On February 3, 1995, the licensee informed the NRC that results of an internal investigation of a combustible control permit (CCP) authorization identified that a fire protection supervisor/fire inspector inappropriately used the Fire

Protection System Engineer's signature on a permit. On July 27, 1995, the NRC issued a violation of NRC requirements set forth in 10 CFR 50.9. In the cover letter to the violation, the NRC recognized that significant corrective actions had been taken, including comprehensive review of all current and previously issued/closed combustion control permits to identify any further discrepancies; conduct of a formal critique of the unauthorized CCP and related events, training to reemphasize procedure compliance and procedure revisions. The licensee responded to the Notice of Violation in a letter dated August 28, 1995 and committed to completion of a Quality Assurance assessment of the fire protection program. The inspector verified that the corrective actions documented in the licensee's response had been completed and reviewed the Quality Assurance audit report A 95-15W, Annual and Biennial Fire Protection Audit. The audit identified weaknesses in the area of management attention to address human performance errors, the need to simplify the combustible control permit procedure, development of trending in fire protection and review of fire protection documents. The licensee addressed the issues identified in the QA audit.

V. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

The inspectors presented the inspections results to members of the licensee management at the conclusion of the inspection on June 10, 1997. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

The preliminary results of the team inspection were discussed with licensee management on April 18, 1997 and an exit meeting with licensee management was conducted on April 24, 1997.

X2 Review of UFSAR Commitments

A recent discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report (UFSAR) description highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the UFSAR description. While performing the inspections discussed in this report, the inspector reviewed the applicable portions of the UFSAR that related to the areas inspected. The inspector verified that the UFSAR wording was consistent with the observed plant practices, procedure and/or parameters.

X3 Pre-Decisional Enforcement Conference Summary

On May 8, 1997, a pre-decisional enforcement conference was held in the NRC Region I office, to discuss potential enforcement issues identified in Inspection Report 50-333/97-003. The issues related to a March 3, 1997 inadvertent control rod withdrawal event. Results of the enforcement conference including slides used in the presentation at the conference are included with the letter to the licensee under EA No. 97-118.

PARTIAL LIST OF PERSONS CONTACTEDLicensee

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J. Maurer, General Manager, Support
A. McKeen, Manager, Radiological and Environmental Services (RES)
E. Mulcahey, General Supervisor, Radiological Engineering
P. Policastro, Radiological Supervisor
C. Sherman, Radiological Technician
R. Steigerwald, Acting Manager, Operational Review Group
S. Wisla, General Supervisor, Health Physics

NRC

None

INSPECTION PROCEDURES USED

37551	Onsite Engineering
40500	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
62707	Maintenance Observations
61726	Surveillance Observations
71707	Plant Operations
71750	Plant Support
92902	Maintenance Followup
92903	Engineering Followup
92904	Plant Support Followup

ITEMS OPENED, CLOSED, AND DISCUSSEDOpened

50-333/97004-01	IFI	adequacy of corrective action program for engineering issues
50-333/97004-02	VIO	failure to comply with radiation control requirements, two examples

Closed

50-333/92014-01	IFI	relay room Carbon Dioxide (CO2) discharge test
50-333/95001-01	URI	reactor pressure vessel (RPV) nozzle examinations
50-333/95002-01	URI	discrepancies with containment spray system
50-333/95002-02	URI	(E 95-005) improper dosimetry use by a visitor
50-333/95006-02	VIO	fire protection program procedures not maintained
50-333/96002-01	VIO	foreign material exclusion controls and the pressure relief system
50-333/96008-03	URI	improper radiation worker practices by a non-licensed operator

50-333/95-142	ENF	Unauthorized approval of combustion control permit.
50-333/95008	LER	HPCI System Trip on Overspeed Due to Procedure Deficiency.
50-333/96-005	LER	Error in Safety Limit Minimum Critical Power Ratio Calculation.
50-333/96011	LER	Both Standby Liquid Control Subsystems Inoperable Due to Inoperable Pump Discharge Pressure Relief Valves

Discussed

None

LIST OF ACRONYMS USED

ACTS	Action and Commitment Tracking System
AP	Administrative Procedure
CCP	Combustible Control Permit
DBD	Design Basis Document
DDOI	Design Document Open Item
DER	Deviation and Event Report
EDG	Emergency Diesel Generator
EFE	Equipment Failure Evaluations
ESW	Emergency Service Water
HPCI	High Pressure Coolant Injection
IN	Information Notice
ISI	Inservice Inspection
JCO	Justification for Continued Operation
MG	Motor Generator
NDE	Non-Destructive Examination
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
OI	Office of Investigations
ORG	Operational Review Group
PCIV	Primary Containment Isolation Valves
PERC	Performance Enhancement Review Committee
PORC	Plant Operations Review Committee
QA	Quality Assurance
RCA	Radiological Controlled Area
RCIC	Reactor Core Isolation Cooling
RES	Radiological & Environmental Services
RMCS	Reactor Manual Control System
RP	Radiation Protection
RP&C	Radiological Protection and Chemistry
RPV	Reactor Pressure Vessel
RWP	Radiation Work Permit
SESO	Site Engineering Standing Order
SLC	Standby Liquid Control
SLMCPR	Safety Limit Minimum Critical Power Ratio
SRC	Safety Review Committee
ST	Surveillance Test
TIR	Technical Issues Report
TS	Technical Specification
UPS	Uninterruptible Power Supply