U.S. NUCLEAR REGULATORY COMMISSION

REGION I

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Report No.:	99-03
Licensee:	New York Power Authority
Facility:	James A. FitzPatrick Nuclear Power Plant
Location:	Post Office Box 41 Scriba, New York 13093
Dates:	March 1 to April 11, 1999
Inspectors:	R. A. Rasmussen, Senior Resident Inspector B. S. Norris, Resident Inspector
Approved by:	J. F. Rogge, Chief Projects Branch 2 Division of Reactor Projects

EXECUTIVE SUMMARY

James A. FitzPatrick Nuclear Power Plant
NRC Inspection Report 50-333/99-03
March 1 - April 11, 1999

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covered a six week period of resident inspections.

Operations

The inspectors determined that the standby liquid control system was operable and able to perform its intended safety function. The system was well maintained and the equipment history identified no negative performance trend. (Section O2.1)

The inspectors identified that a vendor recommended action had not been incorporated into the operating procedures for a condition where flow in both reactor recirculation loops could not be matched due to one of the recirculation pumps being "locked-up." The inspectors considered the schedule for incorporating the industry guidance untimely based upon ongoing planned maintenance which required "locking-up" the recirculation pump controllers. (Section O3.1)

The inspectors observed the control room operators' response to two abnormal conditions. In both cases, the operators responded promptly and properly by referencing the associated alarm response and abnormal operating procedures, and the Technical Specifications to determine operability. Command and control was appropriate and three-way operator communications were consistently used. (Section O4.1)

The inspectors identified two examples where the FitzPatrick staff failed to question the operability of systems required by the Technical Specifications. In one case, the combination of an inoperable emergency diesel generator with one division of the containment atmosphere monitor system inoperable resulted in operators entering a limiting condition for operation. In the other case, personnel did not question the status of a system that was known to be in a degraded condition. (Section O7.1)

The inspectors reviewed the root cause analysis for the January 1999 hydrogen fire and the resultant unanalyzed condition of the emergency diesel generators and considered it detailed and complete. (Section O8.2)

Maintenance

NYPA identified that five of the eleven safety relief valves (SRVs) were considered inoperable during the recent operating cycle; their response to this finding was good. However, the failure to have at least nine of the SRVs operable as required is being treated as a Non-Cited Violation in accordance with Appendix C of the Enforcement Policy. **(NCV 50-333/99-03-01)** (Section M8.1)

During the review of containment leakage test results, NYPA identified that the main steam isolation valves (MSIVs) had a history of leakage problems. They appropriately used

Maintenance Rule criteria and classified the MSIVs as Maintenance Rule category (a)(1). The maintenance rule action plan appeared adequate to address these valve leakage problems. The failure to meet the technical specification requirement for containment leakage is being treated as a Non-Cited Violation, in accordance with Appendix C of the Enforcement Policy. **(NCV 50-333/99-03-02)** (Section M8.3)

Engineering

The use of a portable fuel transfer device ("the gas buggy") to obtain fuel from the EDG day tanks for use in the diesel driven fire pumps was determined by NYPA to be a poor practice. The use of the gas buggy changed the configuration of the EDG fuel oil system, changed fire loading in safety related areas, and presented cleanliness control issues. Although operators were critical of the process and raised the issue for resolution, timely action was not taken until the NRC questioned the safety of this practice. (Section E1.2)

An independent NYPA review identified that the initial FitzPatrick response to GL 96-01 contained two weaknesses regarding the testing of logic circuits. NYPA determined the root cause to be personnel error during the initial review of logic circuit drawings. The failure to adequately perform the Technical Specification required surveillances is being treated as a Non-Cited Violation, in accordance with Appendix C of the Enforcement Policy. **(NCV 50-333/99-03-03)** (Section E8.1)

FitzPatrick's corrective action program did not provide adequate corrective action consistent with the determined root cause for use of a trailer as a third bank for the hydrogen addition system. This was identified by NYPA management during a review of DERs. Also, NRC review of the issue resulted in a Non-Cited Violation in accordance with Appendix C of the Enforcement Policy for failure to maintain configuration control of the hydrogen addition system. **(NCV 50-333/99-03-04)** (Section E8.6)

Plant Support

The inspectors noted an insufficient number of pre-staged emergency flashlights in response to planned maintenance on both the normal and emergency lighting in several different areas of the plant. The prompt response of station management to obtain additional emergency flashlights was appropriate. (Section F2.1)

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ATTACHMENTS

REPORT DETAILS

Summary of Plant Status

FitzPatrick began the inspection period at 65% power, in the process of returning to full power operation after recovering from a forced down power due to a small fire in one of the three circulating water pump electrical junction boxes. This event was discussed in NRC Inspection Report (IR) 50-333/99-01. The unit achieved 100% power on March 1, 1999.

I. OPERATIONS

O1 Conduct of Operations

O1.1 General Comments (71707)

Using NRC Inspection Procedure 71707, the resident inspectors conducted frequent reviews of ongoing plant operations. The reviews included tours of accessible and normally inaccessible areas of both units, verification of engineered safety features (ESF) system operability, verification of adequate control room and shift staffing, verification that the units were operated in conformance with Technical Specifications (TSs) and Updated Final Safety Analysis Report (UFSAR), and verification that logs and records accurately identified equipment status or deficiencies. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

O2 Operational Status of Facilities and Equipment

O2.1 Walkdown of the Standby Liquid Control System

a. Inspection Scope (71707)

The inspectors performed a review of the standby liquid control (SLC) system. The inspection included a walkdown of the system, and a review of the operating procedure, TSs, UFSAR, the system piping and instrumentation diagram (P&ID), and the maintenance history.

b. Observations and Findings

The SLC system is a backup method, independent of the control rods, to shutdown the reactor in the improbable event that an insufficient number of control rods are inserted into the core to bring and maintain the reactor shutdown. The system is manually initiated from the control room, and injects a neutron-absorber solution of sodium pentaborate. The SLC system consists of two pumps, a common boron solution tank, and associated piping and valves.

Using the latest revision of the SLC system P&ID, the inspectors determined that the system was properly aligned for injection in accordance with the operating procedure and the UFSAR. In addition, the tank level, temperature, and boron concentration were within the acceptable limits delineated by the TSs. The area around the pumps was

clean and well maintained. The inspectors reviewed the associated operating and emergency procedures and verified that the procedures could be implemented as written. The maintenance history revealed no negative trends or significant repeat equipment problems. Overall, the inspectors considered the status of the SLC system to be acceptable and consistent with the FitzPatrick license.

c. Conclusion

The inspectors determined that the standby liquid control system was operable and able to perform its intended safety function. The system was well maintained and the equipment history identified no negative performance trend.

O3 Operations Procedures and Documentation

O3.1 GE SIL 621 Regarding Lockup of the Reactor Recirculation Pumps

a. Inspection Scope (42700, 71707)

In March 1999, FitzPatrick "locked-up" the reactor recirculation pumps as part of a planned maintenance activity. The inspectors reviewed the NYPA operating procedure and industry information related to this evolution.

b. Observations and Findings

On March 20, 1999, while at full power and in accordance with a work package, the control room operators "locked-up" both recirculation pumps in preparation for returning the uninterruptable power supply (UPS) to service. To lock-up a recirculation pump means that it will not automatically reduce output flow ("run-back") if necessary. This is a normal practice during maintenance activities to prevent spurious run-backs; however, it does establish an abnormal plant condition and removes some automatic protection.

The inspectors reviewed the associated operating procedure (OP-27, "Recirculation System") to determine if guidance from the vendor (General Electric) had been incorporated. In October 1998, General Electric (GE) issued a Service Information Letter (SIL-621) titled "Reactor Recirculation System Operation with Locked Flow Control." The purpose of the SIL was to alert boiling water reactor (BWR) owners of a problem at a BWR facility which operated for an extended period of time with one of the recirculation pumps "locked-up." This resulted in a large flow mismatch between the two recirculation loops after a reactor run-back. A flow mismatch could result in excessive vibration of the jet-pumps and other reactor vessel components, and could cause cavitation of the jet-pumps and recirculation pumps. GE recommended that the BWR owners' incorporate into their procedures and training programs actions to be taken in the event of a recirculation flow mismatch. One of the actions was to attempt to manually match the flows; if that was not possible, then one of the pumps was to be tripped.

By November 5, 1998, the FitzPatrick Operating Experience Review Group had evaluated the SIL and determined that all of the recommendations were already

contained in OP-27, with the exception of tripping one pump if flows could not be matched. NYPA initiated an Action Commitment Tracking System item (ACTS-98-37272) to initiate a procedure change. However, the expected completion date was May 28, 1999. The inspectors questioned the timeliness of the procedure change since the March 20, 1999, maintenance activity required the recirculation pumps to be "locked-up." Station management stated that they considered the change simply an enhancement; however, the inspectors were told that the procedure would be revised in the near future, if appropriate.

c. Conclusion

The inspectors identified that a vendor recommended action had not been incorporated into the operating procedures for a condition where flow in both reactor recirculation loops could not be matched due to one of the recirculation pumps being "locked-up." The inspectors considered the schedule for incorporating the industry guidance untimely based upon ongoing planned maintenance which required "locking-up" the recirculation pump controllers.

O4 Operator Knowledge and Performance

O4.1 Operator Response to Abnormal Conditions

a. Inspection Scope (71707)

On two occasions during the period, the inspectors observed control room operator response to abnormal plant conditions. The inspectors observed the activities, reviewed the associated procedures, and discussed the issues with the respective Shift Manager (SM) and the Operations Manager.

b. Observations and Findings

On two separate occasions during the period, the inspectors were able to observe the FitzPatrick control room operators during response to abnormal plant conditions:

On February 25, during the normal beginning of shift crew brief, the overhead annunciator "SRV Leaking" alarmed. The control room reactor operator announced the alarm to the Control Room Supervisor (CRS) and reviewed the applicable annunciator response procedure (ARP). No other abnormal conditions existed, and the alarm cleared in less than a minute. The CRS stopped the crew brief, and with the SM and other control room operators, referenced the applicable abnormal operating procedure (AOP) and monitored the control panels to determine if an SRV was actually leaking. Neither the downstream tail-pipe temperature nor the acoustic monitor indicated a leaking SRV; however, the "C" SRV did have a higher temperature than the others and its acoustic monitor was noisiest. The operators also verified that the torus temperature and pressure remained constant. As a precaution, the CRS requested the instrumentation and control (I&C) department to investigate the alarm; subsequently, it

was determined to be a spurious alarm. The inspectors reviewed the ARP and AOP and determined that the actions taken by the crew were appropriate.

On March 4, while attempting to record the control rod position in the daily logs, the control room reactor operator reported that he was unable to select about two-thirds (⅔) of the control rods. At FitzPatrick, control rod position can be read from the full-core display, which the operator was initially using, and from the plant computer. The operators immediately selected the control rod position screen on the computer and confirmed that the control rod position was consistent with previously recorded positions. The crew also reviewed the associated AOP. The CRS referenced the TSs, Section 3.3.A.2, and determined the control rods were still operable. The I&C department responded to the control room and informed the CRS that they had seen this condition once before when one of the pushbuttons had failed. The failed button was replaced within 2 hours, and the system was restored to normal. The inspectors independently reviewed the AOP and TSs and concurred with the actions taken, and the decision with respect to operability.

In both cases, the operators responded to the unusual condition as expected, referencing the ARPs, AOPs, and the TSs. The command and control of the CRS and SM were appropriate and three-way communications were consistently used in the control room. Overall, the control room staff reacted to the events promptly and properly. The inspectors had no concerns.

c. Conclusion

The inspectors observed the control room operators' response to two abnormal conditions. In both cases, the operators responded promptly and properly by referencing the associated alarm response and abnormal operating procedures, and the TSs to determine operability. Command and control was appropriate and three-way operator communications were consistently used.

O7 Quality Assurance in Operations

O7.1 Review of Equipment Status and Operability

a. Inspection Scope (71707)

On two occasions during the inspection period, the inspectors questioned the operability of the drywell continuous atmosphere monitor (CAM) system. The inspectors reviewed the plant status, the FitzPatrick TSs, and the associated procedures, and discussed the issues with the Shift Manager and station management.

b. Observations and Findings

The CAM system samples the drywell atmosphere for gaseous, particulate, and iodine radioactivity to detect reactor coolant leakage. The system is a backup for the drywell sump leakage detection systems. The FitzPatrick TSs, Section 3.6.D.6, requires at least

one of the two CAM subsystems be operable whenever fuel is in the reactor and the coolant temperature is greater than 212°F. If both subsystems are inoperable, the reactor may continue to operate for up to 30 days if manual "grab" samples are analyzed at least once per 24 hours.

On March 23, 1999, the inspectors noted that the "B" CAM had been inoperable since March 16, for repairs and that the "A" emergency diesel generator (EDG) was removed from service (inoperable) that morning for planned maintenance. The inspectors reviewed the TSs with respect to the effect of an inoperable EDG on the emergency equipment powered by its respective emergency bus. TS Section 3.0.E states: "When a system ... is determined to be inoperable solely because its emergency power source is inoperable ... it may be considered operable ... provided: (1) its corresponding normal ... power supply is operable and (2) all of its redundant system(s) ... are operable ... Unless both conditions (1) and (2) are satisfied, the unit shall be placed in cold shutdown within the following 24 hours." The Bases for TS Section 3.0.E states: "This specification ... specifically prohibits operation when one division is inoperable because its ... emergency power source is inoperable and a ... subsystem ... in another division is inoperable for another reason." Based on the above, the inspectors questioned the Shift Manager about the status of the "A" CAM subsystem. The Shift Manager, after consulting with station management, subsequently declared the "A" CAM inoperable, entered the appropriate TS Limiting Condition for Operation (LCO) and arranged for manual grab sampling of the drywell air space. In addition, DER 99-474 was issued to determine the reasons why NYPA's staff did not identify this issue. NYPA was also reviewing whether the CAM system was required to have a backup power supply. The failure to enter the TS LCO was not a violation of NRC requirements because the LCO time requirement for obtaining a grab sample of the drywell air space was not exceeded.

On April 7, 1999, during the morning control room shift brief, the inspectors heard that the oxygen (O_2) concentration in the drywell was increasing after the "B" CAM had been put in service the day before. The inspector asked the Control Room Supervisor (CRS) if he knew the reason for the increase in O_2 and was informed that there were pinhole leaks in the "B" CAM piping. The inspectors then questioned the operability of the "B" CAM; specifically, did the in-leakage of the reactor building atmosphere affect the accuracy and calibration of the detectors. Neither the CRS nor the system engineer had questioned the operability of the system. Subsequently, the "B" CAM was declared inoperable pending an operability determination; manual grab sampling of the containment atmosphere was initiated. The operability determination concluded that the system was operable. This issue was also not a violation of NRC requirements because the LCO time requirement for obtaining a grab sample was not exceeded prior to the issue being identified.

The inspectors considered the two examples of failing to question the operability of the CAM system to be representative of a less than aggressive approach to ensuring that the systems required by the TSs were available for operation. With respect to the March event, it is significant that the planning department did not understand the relationship of the "B" CAM and the "A" EDG. Furthermore, the licensed shift supervision also failed to recognize the relationship of an inoperable emergency power source and

an already inoperable TS system. For the April event, although the "B" CAM was eventually determined to be operable, the failure to question the status of a system with known deficiencies reflected a lapse in questioning attitude.

c. Conclusion

The inspectors identified two examples where the FitzPatrick staff failed to question the operability of systems required by the Technical Specifications. In one case, the identification of an inoperable emergency diesel generator concurrent with one division of the containment atmosphere monitor system inoperable resulted in operators entering a limiting condition for operation. In the other case, personnel did not question the status of a portion of the CAM system that was known to be in a degraded condition.

O8 Miscellaneous Operations Issues

O8.1 (Closed) Licensee Event Report 50-333/99-01: Incorrect Emergency Diesel Generator Line-Up During Fire Placed Plant in Condition Outside Design Basis (90712)

The technical details associated with this Licensee Event Report (LER) were reviewed in NRC Inspection Report 50-333/99-02. The description and analysis of the event, as contained in the LER, were consistent with the inspectors' understanding of the event. Based on an in-office review, the LER is closed.

O8.2 (Closed) Licensee Event Report 50-333/99-01-01: Incorrect Emergency Diesel Generator Line-Up During Fire Placed Plant in Condition Outside Design Basis

a. Inspection Scope (92700)

The inspectors reviewed the LER Supplement, which described the root cause analysis (RCA) and corrective actions for the January 1999 Hydrogen (H_2) fire and the alignment of the emergency diesel generators into an unanalyzed condition during the fire.

b. Observations and Findings

RCA for H_2 Fire

NYPA determined that the root cause for the H_2 fire was a combination of three separate valve failures. Specifically, the event initiated when the diaphragm for the pressure control valve (PCV-216) ruptured and allowed full system pressure at the outlet of the PCV. The PCV outlet isolation valve (213) had a known packing leak; NYPA determined this to be the actual fire initiator. Hydrogen, which has a low-ignition energy, self-ignited due to friction and static generated by the release of high-pressure gas through the packing leak. The third valve failure was the downstream relief valve (RV-214), which did not initially lift and was later determined to be undersized. All of the above failures were due to an inadequate preventive maintenance program by the H_2 system vendor, and inadequate system monitoring and management oversight by the FitzPatrick staff.

The inspectors reviewed the root cause analysis and considered it detailed and exhaustive. Corrective actions included the establishment of a new industrial safety program and procedure for work on the H_2 farm (ISPP-4.7, "Gaseous Hydrogen System"). In addition, an exclusion area was established around the tank-farm. The inspectors reviewed the procedures and the associated training film, and walked down the temporary farm. The inspectors raised a concern about placement of one of the two H_2 trailers being used as a temporary source pending completion of a new tank-farm. NYPA agreed with the concern, moved the trailer, and changed the temporary modification to allow only one trailer at a time. Improvements also included a temporary control cabinet, which was installed with all connections welded or threaded (i.e., brazed connections which existed on the previous design were eliminated). Also, the vent lines from the regulator weep holes and the line from the relief valve were elevated (≈10 feet high) with plastic caps for visible indication of relief lifting or regulator diaphragm rupture. Overall, the inspectors considered the root cause analysis and corrective actions to be acceptable.

RCA for EDG Unanalyzed Condition

The RCA for the EDGs identified that the procedures for operation of the EDGs were inadequate because there was not a warning for operation with the tiebreaker open. A contributing cause was the administrative procedure which allowed procedure deviations with only Shift Manager approval. The failure to properly implement the procedures was previously determined to be a Non-Cited Violation (see NCV 50-333/99-02-01). No substantive additional corrective actions were identified related to the EDGs.

The original LER was supplemented to report the results of the root cause analysis and to update the status of the corrective actions. The inspectors considered the root cause and corrective actions to be reasonable. The description and analysis of the event, as contained in the LER, were consistent with the inspectors' understanding of the event. The LER is closed.

c. Conclusion

The inspectors reviewed the root cause analysis for the January 1999 hydrogen fire and the resultant unanalyzed condition of the emergency diesel generators and considered it detailed and complete.

O8.3 (Closed) Violation 50-333/98-02-05: Licensed Operator Requalification Training Program Procedures Regarding Duplication of Examination Materials (92901)

This Severity Level IV violation was issued in a Notice of Violation prior to the March 11, 1999, implementation of the NRC's new policy for treatment of Severity Level IV violations (Appendix C of the Enforcement Policy). Because this violation would have been treated as a Non-Cited Violation in accordance with Appendix C, it is being administratively closed in this report. The violation is in the FitzPatrick corrective action program as DER 98-903.

II. MAINTENANCE

M1 Conduct of Maintenance

M1.1 General Comments (61726, 62707)

Using NRC Inspection Procedures 61726 and 62707, the resident inspectors periodically observed various maintenance activities and surveillance tests. As part of the observations, the inspectors evaluated the activities with respect to the requirements of the Maintenance Rule, as detailed in 10CFR50.65. In general, maintenance and surveillance activities were conducted professionally, with the work requests (WRs), problem identification documents (PIDs), and necessary procedures in use at the work site, and with the appropriate focus on safety. Specific activities and noteworthy observations are detailed in the inspection report. The inspectors reviewed procedures and observed all or portions of the following maintenance/surveillance activities:

• ISP-175B1	ECCS Trip Unit Calibration
• ST-22C	ADS Logic System Functional Test
• ST-9P	Functional Test of Breakers 10514 and 10614 EDG Logic Auxiliary Stationary Contacts
• SP-3.02	Main Control Room Ventilation Monitor
• WR 99-2271	Replace Emergency Diesel Generator "B" TurboCharger Lube Oil Pump Motor
• PID 84296	Troubleshoot/Repair Failed Power Supply
• ST-24J	RCIC Flow Rate and Inservice Test
• ODSO-34	Technical Specifications LCO and Maintenance Rule Unavailability Tracking
• ISP-30-2	Off-Gas Recombiner Hydrogen Indication Instrument Channel Functional Test/Calibration
• ST-5D	Average Power Range Monitor (APRM) Calibration
• RAP-7.1.05C	Transfer of Fuel and Blade Guides in the Spent Fuel Pool
• ST-20G	Refuel Bridge and Main Fuel Grapple Daily Checks
• OP-66A	Refueling Bridge Operation
• ST-20S	Fuel Grapple Functional Test (Fuel Pool Only Movements During Power Operations)
• AP-5.06	System Internal Cleanliness and Foreign Material Exclusion
• WR 98-3917	Replace Hydraulic Control Unit (HCU) Accumulator 10-15
• PTR 99-73	Tag-out for HCU Accumulator work
• ST-1B	MSIV Fast Closure and Main Steam Line Drain Isolation Valve Test
• ST-1D	MSIVs, Main Steam Line Drain Valves, and RWR Sample Valves Logic System Functional Test
• ST-1I	Main Steam Isolation Valve Limit Switch Instrument Functional Test
• ST-1E	Main Turbine Stop Valve Limit Switch Instrument Functional Test

•	ST-18	Main Control Room Emergency Fan and Damper Operability Test
•	WR 98-02574-01	Replace Hydraulic Control Accumulator
•	WR 90-70199-08	Repair Cracks in Safety Related Masonry Walls
•	ST-2XB	RHR Service Water Quarterly Surveillance Test
•	WR 99-02349-01	Troubleshoot Circulating Water System Valve Position Indication
•	WR 99-02331-01	Troubleshoot UPS Motor Vibration
•	ISP 12-004-070	Calibrate Condensate Pump Pressure Indicator

M8 Miscellaneous Maintenance Issues

M8.1 (Closed) Inspector Follow Item 50-333/98-07-02: Review of Safety Relief Valve (SRV) Setpoint Drift Test Data Following 1998 Refueling Outage; NCV 50-333/99-03-01

a. Inspection Scope (92902)

During the review of LER 98-02, the inspectors noted that two of the eleven SRVs were inoperable. An inspector follow item was opened to review the test data for the remaining SRVs to be removed during the Fall 1998 refueling outage. The results of the tests identified that additional SRVs were also inoperable. The inspectors reviewed the test data, the associated Deviation and Event Reports (DERs), and discussed the issue with the responsible maintenance engineer.

b. Observations and Findings

On February 15, 1999, during review of the results of a laboratory test for the SRVs removed during the 13th FitzPatrick operating cycle, NYPA identified that a total of five (5) of the eleven (11) SRVs had as-found setpoints which had drifted higher than the TS allowed value. With the setpoints outside the pressure band tolerance, these SRVs were declared inoperable. The cause of the drift was the same for all the valves - corrosion between the pilot disc and seat. The corrosive bond resulted in more force being needed to raise the disc, therefore developing a higher pilot setpoint. This has been a repetitive problem for FitzPatrick and the nuclear industry. As such, the SRVs were placed in the (a)(1) category per the Maintenance Rule. Corrective actions included: (1) replacement and testing of the SRVs every refueling outage and (2) continued participation in the industry owners group to find a resolution.

The inspectors reviewed the DERs, the laboratory test results, the UFSAR, the FitzPatrick TSs, and the General Electric (GE) analysis of the potential effect of the as-found SRV setpoints on the reactor pressure vessel overpressure limits. GE determined that the as-found setpoints were bounded by the accident analysis cases; NYPA reviewed and accepted the GE analysis. The inspectors considered the prompt review of the test data and subsequent NYPA actions to be good. However, the failure to have at least nine of the eleven SRVs operable is a violation of Technical Specification 3.6.E.1. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV), consistent with Appendix C of the NRC Enforcement Policy. This violation is in the

licensee's corrective action program as DER 99-255. **(NCV 50-333/99-03-01)** Also, Inspector Follow Item 98-07-02 is closed

c. Conclusion

NYPA identified that five of the eleven safety relief valves (SRVs) were considered inoperable during the recent operating cycle; their response to this finding was good. However, the failure to have at least nine of the SRVs operable as required is being treated as a Non-Cited Violation in accordance with Appendix C of the Enforcement Policy. **(NCV 50-333/99-03-01)**

M8.2 (Closed) Licensee Event Report 50-333/99-03: Safety Relief Valve Setpoint Drift (90712)

The technical details associated with this LER were reviewed in the above paragraph. The inspectors conducted an in-office review of the LER and considered the root cause and corrective actions to be reasonable. The description and analysis of the event, as contained in the LER, were consistent with the inspectors' understanding of the event. The LER is closed.

M8.3 (Closed) Licensee Event Report 50-333/98-13: Containment Leakage Exceeds Authorized Limits; NCV 99-03-02

a. Inspection Scope (62707, 92700)

The inspectors reviewed the LER, the maintenance history of the main steam isolation valves (MSIVs), and the Maintenance Rule status of the MSIVs.

b. Observations and Findings

The LER documented the failure of containment leakage testing performed during the past refueling outage (RO-13). Due to leakage past the seats of several MSIVs, the maximum containment leakage rate was exceeded. During the outage, containment isolation valves were individually tested for leakage, and the results were totaled and compared to a Technical Specification limit. In the case of the main steam isolation valves, five of the eight valves exceeded their individual leakage rate criteria. However, because two of the valves were in the same steam line, the overall containment leakage specification was also exceeded.

The inspectors reviewed the history of the MSIVs and determined that leakage problems were also reported from the previous refueling outage (RO-12). Prior to RO-12, the MSIVs had been performing well. The table below summarizes the valves which exceeded their individual leakage criteria during the past two outages.

Valves exceeding limits in RO-12		Valves exceeding limits in RO-13	
29AOV-80A	29AOV-86A		29AOV-86A
29AOV-80B		29AOV-80B	29AOV-86B
29AOV-80D	29AOV-86D	29AOV-80D	29AOV-86D

Due to the failures in RO-13, the MSIVs were moved to (a)(1) status in the Maintenance Rule program. As such, an action plan was developed to improve the performance of these valves. The inspectors reviewed the action plan and considered the actions appropriate.

The leakage past the MSIVs was attributed to two causes: (1) seat deformation causing seat leakage, and (2) actuator/stem friction reducing the sealing force on the seat. NYPA has taken corrective actions to address each of these issues. Leakage due to seat deformation has been addressed by improved valve seat alignment within the valve. Additionally, the valve stem and disk have been lightened to reduce the force transmitted to the seat upon closing. The actuator/stem friction issue was addressed by replacing the stem bushings with a bronze alloy. This was completed on most of the valves, with the remainder scheduled for the next refueling outage. All of the valves were repaired, tested, and were within specification following the refueling outage.

Additionally, NYPA was reviewing the test methods and test sequence. Testing was previously conducted after cycling the valves after cooldown. Through industry experience, NYPA determined that most utilities avoided cycling the valves in the cold condition. Additionally, the valves were tested by pressurizing between the pair of valves for each steam line. This tested the upstream MSIV with flow in the reverse direction to normal flow. Industry experience indicates that his test method may increase the leakage rate.

The inspectors concluded that NYPA was appropriately implementing an action plan for excessive MSIV leakage. However, the failure to meet the Technical Specification containment leakage requirement is a violation of NRC requirements. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. **(NCV 50-333/99-03-02)** This violation is in the licensee's corrective action program as DER 98-3230. LER 98-13 is closed.

c. Conclusions

During the review of containment leakage test results, NYPA identified that the main steam isolation valves (MSIVs) had a history of leakage problems. They appropriately used Maintenance Rule criteria and classified the MSIVs as Maintenance Rule category (a)(1). The maintenance rule action plan appeared adequate to address these valve leakage problems. The failure to meet the technical specification requirement for containment leakage is being treated as a Non-Cited Violation, in accordance with Appendix C of the Enforcement Policy. **(NCV 50-333/99-03-02)**

III. ENGINEERING

E1 Conduct of Engineering

E1.1 General Comments (37551)

Using NRC Inspection Procedure 37551, the inspectors frequently reviewed design and system engineering activities and the support by the engineering organizations to plant activities.

E1.2 Use of Emergency Diesel Generator Day Tanks other than Intended

a. Inspection Scope (37551, 71707)

The inspectors observed and questioned NYPA regarding the practice of using the emergency diesel generator (EDG) fuel oil day tanks as a convenient fuel supply for the diesel driven fire pumps.

b. Observations and Findings

The inspectors observed operators pumping fuel from an EDG day tank into a portable 120 gallon fuel transport vehicle known as the "gas buggy." The purpose of this evolution was to obtain fuel for the diesel fire pump day tank. This evolution was conducted in accordance with NYPA procedure OP-33, "Fire Protection."

To fill the gas buggy, operators removed a threaded pipe cap from the top of the EDG day tank and inserted a rubber hose from the gas buggy into the EDG day tank. A manual hand pump on the top of the gas buggy was used to transfer the fuel. Once the gas buggy was filled, operators manually pushed the gas buggy over the six-inch berm in the EDG cubical doorway, past the EDG switchgear, and outside to the diesel fire pump fill station. The operators stated that the movement of the gas buggy over the EDG berm was difficult due to the weight of the buggy and the small wheels. Additionally, the gas buggy had been tipped over inadvertently several times, outside of the building, while transporting it through the snow. Operators stated that the issue had been brought to their management's attention several times, but a resolution had not been reached.

The inspectors raised several concerns regarding the use of the gas buggy:

- The fill evolution removed a pipe from the top of the EDG day tank. The removal of this pipe changed the vent path for the EDG day tank and the large EDG fuel oil storage tank, from outside of the building to inside the EDG cell. There was no written safety evaluation to support this change in the EDG fuel oil system vent configuration and the EDGs were considered operable during this procedure.

- The transport of the filled gas buggy was through several safety-related areas, and was not adequately addressed in the fire safety hazards analysis. The

evolution increased the potential for a spill, particularly in the area of the EDG switchgear.

- Cleanliness concerns with the evolution of sticking the gas buggy hose into the EDG day tank. Also, concerns with the possibility of transferring fuel from the gas buggy back to the EDG day tank. Operators were interviewed, and there was no indication that fuel was ever put back into the EDG day tanks.

- When not in use, the gas buggy was stored empty in the screenwell building. However, the inspectors noted that the designated parking spot was directly on top of a floor plug which provided access to the safety pump area below. The inspectors were concerned that residual fuel could leak from the gas buggy, drip through the floor plug, and pose a fire hazzard for the safety pump room below.

The inspectors reviewed the history of the gas buggy, and found that it was added to the procedure in 1991. At that time, the procedure was reviewed by the Plant Operations Review Committee (PORC), as well as the EDG and fire protection engineers. There was not detailed documentation of any specific concerns discussed at PORC.

NYPA evaluated the inspectors' concerns and determined that the use of the gas buggy was not a good practice. The gas buggy was relocated to a different storage location and alternate arrangements were made to fill the diesel fire pump day tanks.

c. Conclusions

The use of a portable fuel transfer device ("the gas buggy") to obtain fuel from the EDG day tanks for use in the diesel driven fire pumps was determined by NYPA to be a poor practice. The use of the gas buggy changed the configuration of the EDG fuel oil system, changed fire loading in safety related areas, and presented cleanliness control issues. Although operators were critical of the process and raised the issue for resolution, timely action was not taken until the NRC questioned the safety of this practice.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) Licensee Event Report 50-333/98-15: Logic System Functional Test Inadequacies; NCV 99-03-03

a. Inspection Scope (92700)

The inspectors reviewed the LER, the TSs, and the associated procedures.

b. Observations and Findings

NRC Generic Letter (GL) 96-01, "Testing of Safety-Related Logic Circuits," required licensees to review, and modify as necessary, logic schematics against surveillance test procedures to ensure that all portions of the circuitry were adequately tested to fulfill TS

requirements. In 1998, during a review of the FitzPatrick response to GL 96-01, the Independent Safety Engineering Group (ISEG) identified two weaknesses. Specifically: (1) a postulated failure of non-safety contacts in the emergency diesel generator (EDG) force-parallel circuitry, and (2) a verification of the initial state of the time delay relay for the automatic depressurization system (ADS) circuitry.

NYPA determined the root cause to be personnel error during the initial review of the schematics. For the first deficiency, the associated surveillance test procedure, ST-9P, was revised to ensure that the safety-related contacts were properly tested. The surveillance was subsequently performed satisfactorily. For the second deficiency, the surveillance test procedure, ST-22C, was revised to include the verification and performed satisfactorily.

In addition, the inspectors verified that the changes to the procedures were made and that the surveillances were conducted satisfactorily. However, the failure to adequately perform the required surveillances is a violation of Technical Specification Surveillance Requirements (TSSRs), Sections 4.9.B.4 and 4.5.D.2, respectively. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. **(NCV 50-333/99-03-03)** This violation is in the licensee's corrective action program as DERs 98-3522 and 98-3525.

The inspectors reviewed the procedure changes and the LER and considered the root cause and corrective actions to be reasonable. The analysis of the event, as contained in the LER, was consistent with the inspectors' understanding of the event. The LER is closed.

c. Conclusion

An independent NYPA review identified that the initial FitzPatrick response to GL 96-01 contained two weaknesses regarding the testing of logic circuits. NYPA determined the root cause to be personnel error during the initial review of the logic circuit drawing. The failure to adequately perform the Technical Specification required surveillances is being treated as a Non-Cited Violation, in accordance with Appendix C of the Enforcement Policy. **(NCV 50-333/99-03-03)**

E8.2 (Closed) Licensee Event Report 50-333/98-15-01: Logic System Functional Test Inadequacies (92700)

The original LER was discussed in the above section. The LER Supplement noted a third inadequacy in the FitzPatrick surveillance testing program. Specifically, if the core spray or residual heat removal systems were surveilled at a reactor pressure less than the low pressure permissive setpoint (450 pounds per square inch gage), certain contacts were not tested. As such, the surveillances listed in TSSR 4.5 were not always accomplished as required. This violation is included in the NCV discussed in the above paragraph.

The inspectors reviewed the procedure changes and the LER and considered the root cause and corrective actions to be reasonable. The description and analysis of the event, as contained in the LER, were consistent with the inspectors' understanding of the event. The LER is closed.

E8.3 (Closed) Licensee Event Report 50-333/97-03-01: Potential Overpressurization of Containment Penetrations Due to Thermal Expansion (90712)

The original LER was reviewed in NRC Inspection Report 50-333/97-07. This Supplement provided the results of additional engineering review related to the penetration for the drywell floor drain sump to the radioactive waste system. Specifically, if the inboard isolation valve failed to close during a design basis accident scenario, the penetration could become susceptible to thermal pressurization. NYPA completed an operability evaluation and concluded that the penetration would remain operable and would continue to perform its safety function.

The inspectors performed an in-office review of the LER and considered the additional information reasonable. The description and analysis of the event, as contained in the Supplement, were consistent with the inspectors' understanding of the event. The LER is closed.

E8.4 (Closed) Violation 50-333/98-05-02: Failure to Analyze the Effects of a LOCA Plus LOOP on Containment Penetration Protection Degradation Due to Short Circuiting (92903)

This Severity Level IV violation was issued in a Notice of Violation prior to the March 11, 1999, implementation of the NRC's new policy for treatment of Severity Level IV violations (Appendix C of the Enforcement Policy). Because this violation would have been treated as a Non-Cited Violation in accordance with Appendix C, it is being administratively closed in this report. The violation is in FitzPatrick's corrective action program as DER 98-1907.

E8.5 (Closed) Inspector Follow Item 50-333/99-02-02: Review of the Root Cause Analysis for the H_2 Tank-Farm Fire on January 14, 1999 (92903)

The root cause analysis and the associated corrective actions were contained in LER 99-01-01, which NYPA submitted on March 31, 1999. The inspectors' review of the LER is contained in Section O8.2 of this inspection report. This item is closed.

E8.6 (Closed) Escalated Enforcement Item 50-333/99-02-03: Use of a Temporary Trailer as a Third-Source for the Hydrogen Addition System

a. Inspection Scope (92903)

During the follow-up inspection of the January 1999 hydrogen fire, the NRC identified that FitzPatrick had been using a delivery trailer as a third source of H_2 and that this did not conform to the description of the system as contained in the UFSAR. At that time,

the apparent violation was left as an open item pending NYPA review of the issue. The inspectors reviewed the DER and related safety evaluation.

b. Observations and Findings

On January 28, 1999, FitzPatrick initiated DER 99-165 to review the deficiency and determine corrective actions. NYPA confirmed the fact that the original modification in 1985 did not consider the use of the H_2 trailer as an additional long-term supply. The cause was revising the manner in which the H_2 system was operated without consideration of the design basis. During a review of DER 99-165, NYPA management noted that the response to the DER was incomplete in that it did not address corrective actions to prevent recurrence. A second DER (99-501) was written to: (1) evaluate the corrective actions necessary for the original deficiency, and (2) determine the reason for the first DER being approved without an adequate response. The inspectors reviewed both DERs and considered the second one to be appropriate and an example of a good management review of their process.

The original DER concluded that the use of the trailer was in fact inconsistent with the design contained in the UFSAR, although an after-the-fact safety analysis determined that the practice was acceptable. The inspectors reviewed the safety analysis and considered it adequate. Nonetheless, the failure to maintain the configuration of a system as defined in the UFSAR is a violation of 10CFR50, Appendix B, Criterion III, "Design Control." However, this Severity Level IV violation is being treated as a Non-Cited Violation (NCV), consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as DER 99-501. **(NCV 50-333/99-03-04)** Also, this Escalated Enforcement Item is closed.

c. Conclusion

FitzPatrick's corrective action program did not provide adequate corrective action consistent with the determined root cause for use of a trailer as a third bank for the hydrogen addition system. This was identified by NYPA management during a review of DERs. Also, NRC review of the issue resulted in a Non-Cited Violation in accordance with Appendix C of the Enforcement Policy for failure to maintain configuration control of the hydrogen addition system. **(NCV 50-333/99-03-04)**

IV. PLANT SUPPORT

Using NRC Inspection Procedure 71750, the resident inspectors routinely monitored the performance of activities related to the areas of radiological controls, chemistry, emergency preparedness, security, and fire protection. Minor deficiencies were discussed with the appropriate management. Significant observations are detailed below.

F2 Status of Fire Protection Facilities and Equipment

F2.1 Emergency Lighting

a. Inspection Scope (71750)

Due to planned maintenance, emergency lighting was unavailable in several areas. The inspectors questioned whether there were sufficient hand-held battery powered lights to compensate for the numerous areas affected.

b. Observations and Findings

In February 1999, during a review of the Limiting Condition for Operations (LCO) notebook in the control room, the inspectors noted that normal and emergency lighting were unavailable in four separate areas. At FitzPatrick, the pre-planned compensatory measures for the loss of emergency lighting relied on the supply of hand-held battery powered flashlights stored in the control room. The normal supply of four emergency flashlights was considered sufficient for emergency personnel and fire fighting personnel in any single area. However, with four areas known to be without emergency lighting, the inspectors questioned the Operations Manager as to the apparent insufficient number of flashlights.

The Operations Manager concurred with the inspectors' observation and ordered additional emergency flashlights to be staged in the control room, and possibly elsewhere in the plant to support emergency personnel. The inspectors considered the prompt response to the issue to be appropriate.

c. Conclusion

The inspectors noted an insufficient number of pre-staged emergency flashlights in response to planned maintenance on both the normal and emergency lighting in several different areas of the plant. The prompt response of station management to obtain additional emergency flashlights was appropriate.

V. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

At periodic intervals, and at the conclusion of the inspection period, meetings were held with senior station management to discuss the scope and findings of this inspection. The final exit meeting occurred on April 16, 1999. During this meeting, the resident inspectors' findings were presented. NYPA did not dispute any of the inspectors' findings or conclusions. Based on the NRC Region I review of this report, and discussions with NYPA representatives, it was determined that this report does not contain safeguards or proprietary information.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

P. Brozenich	Operations Manager
M. Colomb	Site Executive Officer
R. Converse	General Manager Maintenance
D. Lindsey	Plant Manager
R. Locy	Training Manager
A. McKeen	Radiological & Environmental Department Manager
D. Ruddy	Director, Design Engineering
R. Steigerwald	Licensing Manager
T. Teifke	Security Manager
A. Zaremba	General Manager Support Services

INSPECTION PROCEDURES USED

IP 37551	Onsite Engineering
IP 42700	Plant Procedures
IP 61726	Surveillance Observations
IP 62707	Maintenance Observations
IP 71707	Plant Operations
IP 71750	Plant Support
IP 90712	In-Office Review of Written Reports of Non-Routine Events at Power Reactor Facilities
IP 92700	Onsite Follow-Up of Written Reports of Non-Routine Events at Power Reactor Facilities
IP 92901	Follow-Up - Plant Operations
IP 92902	Follow-Up - Maintenance
IP 92903	Follow-Up - Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NCV 50-333/99-03-01	Failure to Have at Least Nine Safety Relief Valves Operable, as Required by Technical Specifications
NCV 50-333/99-03-02	Failure to Meet Technical Specification Containment Leakage Requirements
NCV 50-333/99-03-03	Failure to Perform Technical Specification Surveillances in Accordance with Generic Letter 96-01

Attachment 1

NCV	50-333/99-03-04	Use of a Trailer as a Third-source for the Hydrogen Addition System, Contrary to the UFSAR Design

Closed

NCV	50-333/99-03-01	Failure to Have at Least Nine Safety Relief Valves Operable, as Required by Technical Specifications
NCV	50-333/99-03-02	Failure to Meet Technical Specification Containment Leakage Requirements
NCV	50-333/99-03-03	Failure to Perform Technical Specification Surveillances in Accordance with Generic Letter 96-01
NCV	50-333/99-03-04	Use of a Trailer as a Third-source for the Hydrogen Addition System, Contrary to the UFSAR Design
VIO	50-333/98-02-05	Licensed Operator Requalification Training Program Procedures Regarding Duplication of Examination Materials
VIO	50-333/98-05-02	Failure to Analyze the Effects of a LOCA Plus LOOP on Containment Penetration Protection Degradation Due to Short Circuiting
IFI	50-333/98-07-02	Review of Safety Relief Valve Setpoint Drift Test Data Following 1998 Refueling Outage
IFI	50-333/99-02-02	Review of the Root Cause Analysis for the H_2 Tank-Farm Fire on January 14, 1999
EEI	50-333/99-02-03	Use of a Temporary Trailer as a Third-Source for the Hydrogen Addition System
LER	50-333/97-03-01	Potential Overpressurization of Containment Penetrations Due to Thermal Expansion
LER	50-333/98-13	Containment Leakage Exceeds Authorized Limits
LER	50-333/98-15	Logic System Functional Test Inadequacies
LER	50-333/98-15-01	Logic System Functional Test Inadequacies

Attachment 1

LIST OF ACRONYMS USED

ACTS	Action Commitment Tracking System
ADS	Automatic Depressurization System
AOP	Abnormal Operating Procedure
ARP	Annunciator Response Procedure
BWR	Boiling Water Reactor
CAM	Continuous Atmosphere Monitor
CRS	Control Room Supervisor
DER	Deficiency and Event Report
EDG	Emergency Diesel Generator
ESF	Engineered Safety Features
GE	General Electric
GL	Generic Letter
H_2	Hydrogen
I&C	Instrumentation and Control
ISEG	Independent Safety Engineering Group
ISPP	Industrial Safety Program and Procedure
LCO	Limiting Conditions for Operation
LER	Licensee Event Report
LOOP	Loss of Offsite Power
MSIV	Main Steam Isolation Valve
NCV	Non Cited Violation
NRC	Nuclear Regulatory Commission
NYPA	New York Power Authority
OP	Operating Procedure
PCV	Pressure Control Valve
PID	Problem Identification Report
P&ID	Piping and Instrumentation Diagram
PORC	Plant Operations Review Committee
RO	Refueling Outage
RV	Relief Valve
SLC	Standby Liquid Control
SM	Shift Manager
SRV	Safety Relief Valve
ST	Surveillance Test
TS	Technical Specifications
TSSR	Technical Specification Surveillance Requirement
UPS	Uninterruptable Power Supply
USFAR	Updated Final Safety Analysis Report
WO	Work Requests