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REGION I

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Report No. 85-22

Docket No. 50-333

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Priority --

Category C

Licensee: Power Authority of the State of New York

P.O. Box 41

Lycoming, New York 13093

Facility Name: J. A. FitzPatrick Nuclear Power Plant

Inspection At: Scriba, New York

Inspection Conducted: July 15 - August 31, 1985

Inspectors: L.T. Doerflein, Senior Resident Inspector
A.J. Luptak, Resident Inspector

Approved by:

James Linville
J.C. Linville, Chief, Reactor
Projects Section 2C

9/24/85
Date

Inspection Summary:

Inspection on July 15 - August 31, 1985 (Report No. 50-333/85-22)

Areas Inspected: Routine and reactive inspection during day and backshift hours by two resident inspectors (188 hours) of licensee event report review, operational safety verification, surveillance observations, maintenance observations, followup on plant trips, TMI Task Action Plan item followup, licensee management change, review of Plant Operating Review Committee activities, and review of periodic and special reports.

Results: No violations were identified in the areas inspected. However, we are concerned about the inadequate implementation of the post trip review procedure (discussed in paragraph 6.) and the failure to identify and promptly correct a problem with a fire door (discussed in paragraph 3.c.).

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DETAILS

1. Persons Contacted

- R. Baker, Technical Services Superintendent
- *R. Converse, Resident Manager
- W. Fernandez, Superintendent of Power
- *J. Flaherty, Assistant Instrument and Control Superintendent
- H. Keith, Instrument and Control Superintendent
- *D. Lindsey, Operations Superintendent
- *R. Lisen, Maintenance Superintendent
- E. Mulcahey, Radiological & Environmental Services Superintendent
- *R. Patch, Quality Assurance Superintendent
- *D. Simpson, Training Superintendent
- T. Teifke, Security & Safety Superintendent
- *V. Walz, Acting Technical Services Superintendent

The inspector also interviewed other licensee personnel during this inspection including shift supervisors, administrative, operations, health physics, security, instrument and control, maintenance and contractor personnel.

*Denotes those present at the exit interview.

2. Licensee Event Report (LER) Review

The inspector reviewed LER's to verify that the details of the events were clearly reported. The inspector determined that reporting requirements had been met, the report was adequate to assess the event, the cause appeared accurate and was supported by details, corrective actions appeared appropriate to correct the cause, the form was complete and generic applicability to other plants was not in question.

LER's 85-18*, 85-19*, and 85-21* were reviewed. *LER's selected for onsite followup.

LER 85-18 reported a reactor trip on high Average Power Range Monitor levels due to a failure in the reactor recirculation flow control circuit. Details of this event are discussed in paragraph 7.b. of Inspection No. 50-333/85-19.

LER 85-19 reported a reactor trip from full power due to a turbine trip on low condenser vacuum. The low vacuum was caused by the loss of a circulating water pump due to a loss of the "A" side AC electrical buses. Details of this event are discussed in paragraph 6.a. of this inspection report.

LER 85-21 reported two reactor trips from 90 percent power due to a sensed Turbine Control Valve fast closure. The trip signal was initiated by an oil pressure drop in the Electro-Hydraulic Control System during Turbine Control Valve testing. Details of this event are discussed in paragraph 6.b. of this inspection report.

3. Operational Safety Verification

a. Control Room Observations

Daily, the inspectors verified selected plant parameters and equipment availability to ensure compliance with limiting conditions for operation of the plant Technical Specifications. Selected lit annunciators were discussed with control room operators to verify that the reasons for them were understood and corrective action, if required, was being taken. The inspectors observed shift turnovers biweekly to ensure proper control room and shift manning. The inspectors directly observed the operations listed below to ensure adherence to approved procedures:

- Actions following plant trip on July 19, 1985.
- Reactor startup on August 15, 1985.
- Routine power operation.
- Issuance of RWP's and Work Request/Event/Deficiency forms.

During the reactor startup on August 15, 1985, a failure of the low flow control valve (used to maintain reactor vessel level during startup) resulted in a rapidly decreasing level. The inspector noted that, by prompt recognition and action, the operators restored vessel level just before reaching the low level scram setpoint.

No violations were identified.

b. Shift Logs and Operating Records

Selected shift logs and operating records were reviewed to obtain information on plant problems and operations, detect changes and trends in performance, detect possible conflicts with Technical Specifications or regulatory requirements, determine that records are being maintained and reviewed as required, and assess the effectiveness of the communications provided by the logs.

No violations were identified.

c. Plant Tours

During the inspection period, the inspectors made observations and conducted tours of the plant. During the plant tours, the inspectors conducted a visual inspection of selected piping between containment and the isolation valves for leakage or leakage paths. This included verification that manual valves were shut, capped and locked when required and that motor operated valves were not mechanically blocked. The inspectors also checked fire protection, housekeeping/cleanliness, radiation protection, and physical security conditions to ensure compliance with plant procedures and regulatory requirements.

During a plant tour on July 25, 1985, the inspector found fire door SP 255/2 (located between the electric fire pump room and cable tunnels) partially open. The door is normally maintained full open with a fusible link which opens at high temperatures to allow the door to close. The inspector noted that this link was broken and that this condition was identified on a plant Work Request form dated July 15, 1985. However, the inspector also noted that apparently the closure mechanism was unable to shut the door under existing air flow conditions. The inspector shut the door and discussed his findings with the Shift Supervisor and Fire Protection Supervisor. The inspector noted, during several subsequent tours, the door was being maintained shut; however, on August 28, 1985, the inspector again found the door partially open. The inspector discussed this with the licensee who took immediate action to repair the door.

No violations were identified.

d. Tagout Verification

The inspector verified that the following safety-related protective tagout records (PTR's) were proper by observing the positions of breakers, switches and/or valves.

- PTR 851200, 851201, and 851250 on the "A" Standby Gas Treatment System.
- PTR 851221 on "A" Emergency Service Water System and the "A" and "C" Emergency Diesel Generators.
- PTR 851315 on Control Rod Drive Hydraulic Control Unit No. 38-47.

No violations were identified.

e. Emergency System Operability

The inspectors verified operability of the following systems by ensuring that each accessible valve in the primary flow path was in the correct position, by confirming that power supplies and breakers were properly aligned for components that must activate upon an initiation signal, and by visual inspection of the major components for leakage and other conditions which might prevent fulfillment of their functional requirements.

- High Pressure Coolant Injection.
- "A" 125 Volt D.C. Power System.
- Control Room Ventilation System.
- Standby Liquid Control Sytem.

No violations were identified.

4. Surveillance Observations

The inspectors observed portions of the surveillance procedures listed below to verify that the test instrumentation was properly calibrated, approved procedures were used, the work was performed by qualified personnel, limiting conditions for operation were met, and the system was correctly restored following the testing:

- F-ST-2R, RHR Service Water Pump and MOV Operability Test, Revision 10, dated June 12, 1985, performed July 19, 1985.
- F-ST-9D, EDG Inoperative Test/Loss of 115KV Reserve Power/Loss of Station Battery, Revision 8, dated March 20, 1985, performed July 19, 1985.
- F-ISP-72, Source Range Monitor Instrument Trip Function Calibration, Revision 7, dated January 30, 1985, performed August 20, 1985.

The inspector also witnessed all aspects of the following surveillance test to verify that the surveillance procedure conformed to technical specification requirements and had been properly approved, limiting conditions for operation for removing equipment from service were met, testing was performed by qualified personnel, test results met technical specification requirements, the surveillance test documentation was reviewed, and equipment was properly restored to service following the test.

- F-ST-4B, HPCI Flow Rate/HPCI Pump Operability/HPCI Valve Operability Tests, Revision 19, dated January 3, 1985, performed July 30, 1985.

No violations were identified.

5. Maintenance Observations

- a. The inspector observed portions of various safety-related maintenance activities to determine that redundant components were operable, these activities did not violate the limiting conditions for operation, required administrative approvals and tagouts were obtained prior to initiating the work, approved procedures were used or the activity was within the "skills of the trade," appropriate radiological controls were properly implemented, ignition/fire prevention controls were properly implemented, and equipment was properly tested prior to returning it to service.
- b. During this inspection period, the following activities were observed:
 - WR 46/28571 on the repair of "A" Emergency Service Water Pump breaker.
 - WR 02/21193 on the installation of filters in the steam flow sensing circuit for Main Steam, High Pressure Coolant Injection, and Reactor Core Isolation Cooling.

No violations were identified.

6. Followup on Plant Trips

- a. At 2:33 p.m. on July 19, 1985, the reactor tripped from full power due to a turbine trip on low vacuum. The low vacuum was caused by the loss of the "A" Main Circulating Pump on undervoltage when the "A" side AC electrical buses (vital and non-vital) were inadvertently de-energized during a manual transfer of these loads from the reserve power supply to the normal (main generator) power supply. Apparently, the two power supplies were left in parallel for too long a time period allowing high circulating currents to trip the normal supply breaker on overcurrent at the same time the reserve breaker was manually opened. The "A" and "C" Emergency Diesel Generators automatically started and re-energized the vital bus. Operator unfamiliarity with the breaker logic resulted in some delay in re-energizing the non-vital bus. The event was further complicated by an unexpected Main Steam Isolation Valve (MSIV) closure. As a result, safety relief valves were cycled (automatically and manually) to control reactor pressure. The High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling Systems (RCIC) were manually started to assist in controlling reactor pressure and to maintain reactor vessel water level. Throughout the event, reactor vessel water level was maintained above the double low level trip setpoint. There was no radioactive release associated with this trip.

The inspector arrived in the control room within minutes after the reactor trip and observed the operator response to the event. Based on these observations the inspector determined that the operators' actions were proper and in accordance with approved procedures. The inspector also determined that, with exception of the Group I isolation, the plant responded as designed. Although the cause was not identified, the licensee believed the isolation was due to a Main Steam Line High Flow signal caused by a pressure wave in the main steam lines during the turbine trip coupled with background noise on the recently installed main steam line flow transmitters and electronic logic of the Analog Transmitter Trip System. Additional details of the problem with the unexpected Group I isolation and the corrective action are discussed in the review of the plant trips on July 26, 1985 and August 9, 1985.

During a review of the licensee's post trip evaluation data sheets, the inspector noted that the licensee had not identified that "F" Safety Relief Valve (SRV) had lifted during the event. The inspector also asked why the "F" SRV (setpoint 1140 psig) lifted while the "E" SRV (setpoint 1090 psig), which is on the same main steam line, had not lifted. The licensee stated that this was similar to an event on January 17, 1983, during which a higher setpoint SRV lifted while a lower one did not. In that case, the licensee was informed by the vendor that this was not uncommon due to variations between steam dome pressure and steam header pressure. In addition, the licensee removed and tested the suspected SRVs and found their setpoints within tolerance. However, the licensee stated a review of industry information would be conducted to identify potential problems. The licensee also committed to removing and testing the "E" SRV during the next scheduled SRV testing. The inspector will review the results of this testing during a subsequent inspection (50-333/85-22-01).

- b. At 9:17 p.m. on July 26, 1985 and again at 1:07 a.m. on August 9, 1985, the reactor tripped from 90 percent power while conducting a routine surveillance test F-ST-1L, "Main Turbine Control Valve Instrument Channel and Valve Operability Check." Both trips occurred when the test pushbutton was released after the number one Turbine Control Valve (TCV-1) had closed as expected. Releasing the test pushbutton resets the "Fast Acting Solenoid" which allows EHC oil to flow and shut the dump valve in the TCV actuator. Apparently, this oil surge can cause a large pressure drop in the electro-hydraulic control (EHC) system. A loss of this oil pressure is used to initiate a Turbine Control Valve fast closure scram. There was no Emergency Core Cooling System actuation or any radioactive release associated with either trip.

The licensee attributed the trip on July 26, 1985 to operator failure to maintain the test pushbutton depressed for two seconds after TCV-1 had fully closed. This two second delay apparently allows EHC oil pressure to stabilize during the test. Based on General Electric's recommendation following a similar reactor trip on February 25, 1983, a caution was added to F-ST-1L to ensure the pushbutton is engaged for at least two seconds (discussed in Inspection Report 50-333/-83-04). The individual performing the test indicated that he failed to hold the pushbutton the full two seconds. Following a review by the Plant Operations Review Committee (PORC), the plant was started up and the generator synchronized to the grid at 3:16 a.m. on July 28, 1985. Prior to reaching 30 percent power, F-ST-1L was performed satisfactorily by observing relay actuations, since the TCV fast closure scram is bypassed at less than 30 percent power.

Following the trip on August 9, 1985, a system simulator was used on the EHC system to duplicate the sequence of events which occur during the surveillance test. After releasing the test pushbutton for TCV-1, a pressure drop from the normal 1600 psig to as low as 400 psig was observed in the EHC fluid supplying the remaining TCV actuators. The TCV fast closure scram setpoint is required by Technical Specifications to be greater than 500 psig but less than 850 psig and was found set at approximately 600 psig. Although the TCV fast closure scram relays were not actuated during these tests, the licensee believes under actual steam flow conditions the trips would have occurred. Based on G.E. recommendations, the licensee installed an orifice in each TCV actuator oil supply line to limit the pressure drop during testing. Following installation of the orifices, simulator testing indicated the pressure dropped to between 1100 and 1200 psig.

As part of the followup on the plant trip, the inspector attended the PORC meeting held on July 27, 1985. The PORC meeting was held to review the cause of the trip since the computer printout failed to indicate the cause. The PORC concluded the trip was caused by operator error and the plant could be restarted. The PORC also discussed a statement made at the critique by the Shift Supervisor that he saw a half Group I isolation signal annunciator. It was decided the individual had mistaken a different annunciator for the Group I isolation signal based on the absence of a computer alarm and the belief that no reset of the Group I signal was required. Several days later the inspector discussed the Group I isolation signal with the personnel on shift during the trip. The Assistant Shift Supervisor stated a "B" side isolation signal did occur and he reset it. This was brought to licensee management attention and the cause of the partial isolation signal was pursued.

A "B" side Group I isolation signal was also received during the trip on August 9, 1985. The licensee concluded these isolation signals were caused by a false Main Steam Line High Flow signal which resulted from a pressure wave due to the turbine trip coupled with a high background noise level on the recently installed steam line flow

transmitters and electronics of the Analog Transmitter Trip System (ATTS). The licensee determined that elimination of the high noise level should prevent the pressure wave from being sensed as a high steam flow signal. A filter network was set up by installing a capacitor at the input to the Master Trip Units for each instrument used to sense high steam line flow in the ATTS. These included Main Steam, HPCI, and RCIC. Post installation monitoring showed the high noise levels have been eliminated.

During a review of these trips, the inspector questioned operators involved and reviewed the process computer alarm printouts, the post trip logs, and the completed data sheets for procedure No. ODSO 23, "Post Trip Evaluation." Based on these reviews, the inspector determined the plant responded as designed with the exception of the half isolation signals noted above and the failure of the "A" recirculation motor generator (MG) to automatically runback to minimum speed during the trip on August 9, 1985. A relay was replaced in the M.G. control circuit prior to the unit restart on August 15, 1985. The inspector noted that, in addition to the inadequate followup of the reported half isolation signal mentioned above, the post trip review procedure completed by on shift individuals failed to mention the half isolation signal.

- c. At 2:47 a.m. on August 20, 1985, the reactor tripped from full power due to high reactor pressure. The high reactor pressure was caused by the closure of "B" inboard Main Steam Isolation Valve (MSIV) while performing F-ST-1G, "Main Steam Line High Radiation Functional Test." To shut an MSIV requires deenergization of its respective AC and DC solenoid valves to vent off the air pressure which is maintaining the MSIV open. On August 13, 1985, maintenance was performed on "B" inboard MSIV to repair air leaks which required removal of both solenoids. When reconnecting the solenoids, the AC solenoid was wired to the DC power supply and the DC solenoid to the AC power supply. This occurred because the electricians misread the description of the wiring configuration made in a log book. The QC inspector witnessing the maintenance also misread the log book. Upon return to normal, the DC solenoid remained deenergized since a DC solenoid will not function on AC power. Placing the B Main Steam Line Radiation Monitor in test (during surveillance test F-ST-1G) deenergized DC power to all the MSIV solenoids thus deenergizing the AC solenoid for the B inboard MSIV and allowing the MSIV to shut.

The inspector reviewed the process computer alarm printout, the post trip log, and the completed data sheets for procedure No. ODSO 23, "Post Trip Evaluation." Based on these observations the inspector determined the plant responded as designed with exception of both recirculation M.G.s which failed to automatically runback to minimum speed. A similar problem occurred during the August 9, 1985 trip and the licensee determined that poor communications resulted in troubleshooting the incorrect portion of the runback circuit following the previous trip. An out-of-calibration time delay relay caused the

operators to manually runback the recirculation pumps prior to the automatic action. The relay for the "A" recirculation M.G. was replaced and both relays were calibrated and placed on a schedule to ensure periodic recalibration. Based on his review, the inspector determined that the licensee's review of this trip was adequate.

The critique of the event identified several poor work practices and the failure of the post maintenance testing to adequately verify operability of the circuits. Corrective actions taken or planned from this incident include: counseling of the electricians and QC inspectors on poor work practices; development of maintenance procedures for de-terminating equipment; revising the the Work Activity Control Procedure to provide more detailed guidance on the post work testing; and a second Senior Reactor Operator review of post work testing requirements on safety related equipment. The inspector will continue to monitor the licensee's performance in these areas during future inspections.

Several inadequacies were identified in the licensee's post trip evaluations. As previously noted these include the failure to adequately follow up on a reported half isolation signal, the failure to document this isolation signal in the post trip evaluation, and poor follow up actions on SRV actuations. In addition, several minor deficiencies were noted regarding completion of procedure No. ODSO 23, "Post Trip Evaluation" indicating inadequate training of personnel completing the forms and insufficient review of the documents. The licensee informed the inspector that a team of individuals from the corporate office and site Q.A. is being formed to review the recent trips including post trip evaluations. The inspector will continue to monitor the licensee's implementation of the post trip review procedure and will review the findings of the licensee's team during a subsequent inspection (50-333/85-22-02).

7. TMI Task Action Plan Item Followup

- a. The inspector closed out the following TMI Task Action Plan (TAP) items:

I.A.1.3.2.A, Minimum Shift Crew

In letter number JPN-82-50, dated June 9, 1982, the licensee stated that the minimum shift crew manning requirement would be implemented June 1, 1983. Based on personal observations, the inspector noted that, since June 1, 1983, the licensee has maintained two senior reactor operators and two reactor operators on each shift during all modes except cold shutdown and refueling. The inspector determined that this conforms with 10 CFR 50.54m. The inspector also reviewed procedure ODSO-1, "Operating Staff Responsibilities and Authorities, "Revision 11, and verified that the licensee revised the procedure to delineate the duties and responsibilities of the second senior reactor operator on shift.

II.E.4.1.2, Dedicated Hydrogen Penetrations

In letter number JAFP-80-759, dated September 30, 1980, the licensee stated that this item would be met by modifying the Drywell Inerting, Containment Atmosphere Dilution and Purge System to provide a single failure proof design. In a letter dated July 26, 1984, NRR found the licensee's design acceptable and, based on completion of the modification, this item was closed. Portions of the modification were scheduled to be completed during the 1981 and 1985 refueling outages. Based on a review of modification packages (No. FI-80-28 and FI-81-15) and on observations during plant tours, the inspector verified that the proposed modifications were completed. The inspector also verified that applicable operating and surveillance procedures were revised to reflect the modifications and that training was provided on the changes.

II.E.4.2.7, Containment Isolation Dependability - Radiation Signal on Purge Valves

In letter number JPN-81-4, dated July 7, 1981, the licensee stated that a modification would be implemented to utilize a signal from the containment high range radiation monitors (installed in accordance with item II.F.1.3) to close the containment vent and purge valves on high drywell radiation levels. In the Safety Evaluation issued January 13, 1983, NRR found this design acceptable and considered this item closed. The inspector reviewed the modification package (No. FI-80-16) to verify that the modification was completed. The inspector also verified that applicable operating and surveillance procedures were revised to reflect the modification and that training was provided on the changes.

II.K.3.18.c, Modification of ADS Logic

In letter number JPN-83-70, dated July 25, 1983, the licensee stated that the Automatic Depressurization System (ADS) logic would be modified by eliminating the high drywell pressure permissive and adding a manual inhibit switch. In the Safety Evaluation issued June 5, 1984, NRR found this modification acceptable and considered this item closed. Based on a review of the modification package (No. FI-83-34) and on observations during plant tours, the inspector verified that this modification of the ADS logic was completed during the September 1984 maintenance outage. The inspector also verified that applicable operating and surveillance procedures were revised to reflect this modification and that training was provided on the changes.

- b. The inspector also reviewed the TMI TAP items listed below, which were previously closed out, to verify that the licensee action was acceptable to NRR, the accepted and inspected conditions agreed, operating and testing procedures were revised to reflect any modifications, instrumentation was calibrated and included on a schedule to ensure periodic recalibration, and training was provided on the

modifications. This review included identifying any maintenance problems associated with the installed equipment since the item was closed.

Items reviewed:

II.F.1.4, Containment Pressure Monitor

II.F.1.5, Containment Water Level Monitor

II.K.3.22.B, Automatic Switchover of RCIC Suction

II.K.3.24, Space Cooling for HPCI/RCIC Modifications

II.K.3.25, Effects of the Loss of Power on Pump Seals

No deficiencies were identified.

8. Licensee Management Change

On August 9, 1985, Mr. Radford J. Converse assumed the responsibilities of the Resident Manager of the facility, replacing Mr. Harold A. Glovier. The inspector reviewed Mr. Converse's resume to verify that Mr. Converse meets the educational/experience qualification guidelines of ANSI N 18.1-1971.

No inadequacies were identified.

9. Plant Operations Review Committee (PORC)

The inspector attended the PORC meeting on July 27, 1985 as noted in paragraph 6.b. to observe the conduct of the meeting. In addition, the membership, qualifications and review process were found to be in accordance with the Technical Specifications. Subsequent to the meeting the minutes were reviewed to confirm they reflected the decisions made during the meeting.

10. Review of Periodic and Special Reports

Upon receipt, the inspector reviewed periodic and special reports. The review included the following: Inclusion of information required by the NRC; test results and/or supporting information consistent with design predictions and performance specifications; planned corrective action for resolution of problems, and reportability and validity of report information. The following periodic report was reviewed:

-- July 1985 Operating Status Report, dated August 7, 1985.

11. Exit Interview

At periodic intervals during the course of this inspection, meetings were held with senior facility management to discuss inspection scope and findings. On August 29, 1985, the inspectors met with licensee representatives (denoted in paragraph 1) and summarized the scope and findings of the inspection as they are described in this report.

Based on their review of this report, the inspectors determined that this report does not contain information subject to 10 CFR 2.790 restrictions.