

U.S. NUCLEAR REGULATORY COMMISSION

Region I

Report No.: 50-333/90-02  
Docket No.: 50-333  
License No.: DPR-59  
Licensee: New York Power Authority  
Post Office Box 41  
Lycoming, New York 13093  
Facility: James A. FitzPatrick Nuclear Power Plant  
Location: Scriba, New York  
Dates: March 12 through April 25, 1990  
Inspectors: W. Schmidt, Senior Resident Inspector  
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Approved by: Glenn W. Meyer, Chief 5/9/90  
Reactor Projects Section No. 1B Date

Inspection Summary:

This inspection report discusses routine and reactive inspections of plant activities during day and backshift hours including: plant operations, radiological protection, surveillance and maintenance, emergency preparedness, security, engineering and technical support, and quality assurance and safety verification. This period included deep backshift and weekend inspection conducted on March 22 and 31, 1990 and April 3, 5, 6, 7, and 22, 1990.

Results:

Two violations were identified. An Executive Summary and an Outline of Inspection follow.

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## EXECUTIVE SUMMARY

### Operations

Operator performance during the March 19 reactor scram was commendable. However, three shutdown cooling isolations occurred while starting or switching the RHR pumps. It did not appear that NYPA took adequate action to resolve the cause of these isolations based on previously identified concerns. The installation of temporary modifications (jumpers) by an operating procedure was determined to be proper. However, such jumpers were not tagged to indicate their importance, leading to another shutdown cooling isolation, while transferring RPS bus power. Initial NYPA review of the failure of an MSIV to stay closed following slow closure and deenergization of the fast close solenoid valve was not adequate.

### Radiological Protection

One violation was identified in which NYPA failed to ensure that an adequate survey was taken to determine if respiratory protection was needed. This led to minor internal contamination of two maintenance workers. This event was evaluated as being indicative of continued weaknesses in establishing consistent supervisory oversight. Despite this violation NYPA management's control of work and their efforts to get qualified personnel to replace the striking radiation protection technicians were adequate.

### Surveillance and Maintenance

NYPA continued to show a lack of sensitivity to the effects of maintenance and modification on safety systems. One violation was identified when reviewing the cause of the HPCI system flow oscillation during the March 19 reactor scram. In this case, the testing completed after control system maintenance in February 1990 and normal IST testing did not identify the change to the system response. IST check valve inspections continued to uncover numerous inoperable valves. During a maintenance run of the A EDG, the machine could not be emergency secured using the push button because a modification had been prepared improperly and did not receive adequate testing prior to operation of the EDG. The scope of snubber functional testing has been expanded to 60% because of five test failures.

### Emergency Preparedness

NYPA did not enter an Unusual Event in response to HPCI injection during the March 19 reactor scram. NYPA procedures did not consider this an entry conditions to an Unusual Event. However, HPCI injection was listed as an Unusual Event entry conditions in NUREG 0654, Revision 1. NYPA committed to review their procedures and NUREG 0654 and document the technical bases for any differences (see Inspection Report 90-14).

Security

The security department supervision continued to be responsive to inspector concerns raised during plant tours.

Engineering and Technical Support

Numerous deficiencies in the design bases and operational testing of ESW were identified. IGSCC inspections identified six welds, including a pin hole leak on a jet pump riser, that required weld overlays. Several issues were raised dealing with NYPA's responses to generic letters. In the case of GL 89-13 on ESW systems, the response did not appear to adequately address the concerns about ESW flow to safety components. The response to GL 89-04 on IST testing of check valves applied some positions that the inspector determined to be outside of the recommendations of this GL.

Safety Assessment/Quality Verification

The failure to perform adequate radiological surveys and the continued silting problems with ESW indicated that NYPA management did not take fully successful corrective actions on these instances in the past.

## OUTLINE OF INSPECTION

1. Operations (MC 71707, 93702)
  - 1.a Control room operators performed well during the March 19 reactor scram. LER 90-09 review.
  - 1.b Shutdown cooling isolations due to spurious high system pressure signals, Unresolved Item 90-02-01. LER 90-11 review.
  - 1.c Shutdown cooling isolation during RPS bus power transfer, because of a jumper falling off. Insufficient control of jumpers installed by operating procedures.
  - 1.d MSIV failure to stay closed, F-1.
  - 1.e Missed TS surveillance on drywell leakage determination, NCV 90-02-02. LER 90-08 review.
  - 1.f Plant specific simulator training review.
  - 1.g NYPA identification of a misoriented fuel bundle.
2. Radiological Protection (MC 71707)
  - 2.a Failure to perform an adequate contamination survey for work on the refuel floor, leading to internal contamination of two maintenance workers, Violation 90-02-03.
  - 2.b Review of contract radiation protection worker walkout.
3. Surveillance and Maintenance (MC 61726, 62703, 92702, 92703)
  - 3.a Inadequate post maintenance and surveillance testing on HPCI, leading to unstable flow oscillation during the March 19 reactor scram, Violation 90-02-04. LER 90-05 and 90-10 review.
  - 3.b (Open) Unresolved Item 89-10-03, Review Post Modification Testing. Failure to determine that the modification performed on the EDG start/stop circuit was not proper prior to operation of the A EDG and subsequent failure of the EDG to shutdown when the button was pushed while the machine operated in the maintenance mode.
  - 3.c Review of IST check valve results.
  - 3.d Missed SRM surveillance test during LPRM replacement, LI NCV 90-02-05.
  - 3.e (Closed) Unresolved Item 90-01-04. Inadequate surveillance testing of MSIV RPS limit switches. LER 90-07 review.
  - 3.f Outage activity review.
  - 3.g Review of snubber and LLRT results.
4. Emergency Preparedness
  - 4.a (Open) Unresolved Item 89-11-03: NYPA did not enter an Unusual Event following HPCI injection on March 19.

5. Security (MC 71707)
  - 5.a Inspector plant tours.
6. Engineering and Technical Support (MC 37700, 90712, 92700, 92702, 71710)
  - 6.a Numerous ESW deficiencies, due to check valve IST failures and inadequate surveillance testing. GL 89-13 followup. Unresolved Item 90-02-06.
  - 6.b (Open) Unresolved Item 90-01-06, IST testing of check valves, GL 89-04 followup.
  - 6.c Review of the rebuild and testing of the C RHR pump
  - 6.d Review of NYPA's actions based on instrument air difficulties. GL 88-14 followup.
  - 6.e NYPA did not give adequate information on the priority of the review of a TS amendment to change the degraded grid voltage trip setpoint.
  - 6.f Review of NYPA Special Report on the inoperability of the diesel driven fire pump.
  - 6.g Review of discussions with NYPA concerning potential TS amendments to allow 24 hour period to complete a missed surveillance test and to remove the monthly pump and valve operability testing from TS.
7. Safety Assessment/Quality Verification (MC 30703)
  - 7.a Review of site and corporate commitment tracking process.
  - 7.b Review of control used when implementing a newly approved TS amendment.
8. Other Inspections and Enforcement Conferences
9. Exit Interview

Attachment A - Acronyms

## DETAILS

### 1. Operations

The unit operated at rated power until March 19 when a turbine trip on high reactor vessel water level caused a reactor scram. NYP&A restarted the unit on March 21 and maintained pressure below 150 psi to allow HPCI troubleshooting. Reactor pressure was increased to rated on March 22 and the generator synchronized to the grid on March 23 following the HPCI testing. The unit achieved rated power on March 24 and operated until the shutdown for the 1990 refueling outage, on March 31.

- a. The control room crew performed well during response to the March 19 turbine trip and scram. Reactor vessel water level increased to the main feed pump and turbine trip point because of a ground in the feed water level control system. All systems performed as designed, except HPCI which required operator action to take manual control because of oscillation in turbine speed and flow. The inspector discussed NYPA's testing of HPCI in section 3a below. NYPA documented the scram review in LER 90-09, which was reviewed by the inspector and found to be acceptable.
- b. Three shutdown cooling isolations occurred during the period as a result of spurious high system pressure isolations, while RHR pumps were started or switched. In all cases these isolations were of minor safety significance since the flow was restored quickly or the reactor vessel cavity was flooded with fuel pool cooling established. These instances indicated that NYPA's actions documented in LER 90-02 and 90-11 to prevent recurrence of this ESF actuation were not effective. The inspector considered, based on the repetitive nature of these events, that this represented an unresolved item. UNRESOLVED 90-02-01
- c. The inspector determined that NYPA did not have adequate controls over a jumper installed to prevent deenergization of PCIS logic during transfer of the A RPS bus to the alternate power supply. This resulted in a shutdown cooling outboard isolation valve closure when the A RPS bus power was switched to the alternate supply. Shutdown cooling was restored one hour after the event. This event was of minor safety significance since the plant condition at the time of the isolation was vessel flooded, gates removed, and fuel pool cooling in operation.

Inspector review determined the jumper was installed by OP-46A, 4160V and 600V normal AC power distribution as part of NYPA's corrective action from a similar shutdown cooling isolation. NYPA investigation determined the installed jumper had fallen off and was found lying on the floor outside the cabinet. The NYPA critique of this event determined that personnel performing a modification in the cabinet may have inadvertently knocked loose the jumper, due to the use of alligator clips and the cramped conditions of the electrical cabinet.

The inspector reviewed Work Activity Control Procedure (WACP) 10.1.3 which governed the control of jumpers. This procedure allowed a tag not to be installed if the jumper was installed by a specific operating procedure, surveillance test, etc. The inspector determined that use of a preapproved procedure for installation of jumpers was adequate but that the jumper should be tagged to indicate the importance if left unattended in a cabinet. NYPA was in the process of making a change to WACP 10.1.3 to ensure that if a jumper controlled by a procedure is to be left installed for more than one shift it will be tagged and logged in the jumper log. Further, NYPA corrective actions included minimizing the use of alligator clips by using spade or ring lugs if possible. This appeared adequate to the inspector.

- d. The inspector determined NYPA's initial response to failure of an MSIV to stay closed following slow closure and deenergization of the fast close solenoid was incorrect. An SS log entry on March 21 stated that the solenoid valve for 29 AOV 86A (A main steam line outboard MSIV) was retested satisfactorily. The inspector determined that the MSIVs were closed on March 20 by depressing the slow closure "test" pushbutton and allowing the MSIV to fully slow close. In order for the valve to remain closed, the control switch was then placed in the "close" position, deenergizing the fast close solenoid and the "test" pushbutton released. While the other valves remained closed when the test pushbutton was released, 29 AOV 86A reopened. At that point the SS initiated a work request to replace the dual coil solenoid valve, but did not log the failure or initiate an occurrence report. The inspector discussed this failure with the Operations Superintendent (OS) and was told that the MSIV closing method was not indicative of any problem with the normal fast closure of the MSIV. Based on this the OS determined that an occurrence report was not necessary.

The inspector determined that a similar MSIV problem occurred at Perry Unit 1 by review of NRC Information Notice 88-43, Solenoid Valve Problems. The cause of the Perry problem was failure of the fast close solenoid to reposition when deenergized. The inspector reviewed the solenoid valve design and identified that the cause for the reopening of 29 AOV 86A could have been the same. Based on this information and discussion with the system engineer, the inspector

determined the MSIV might not have operated as designed. The OS subsequently issued an Occurrence Report. NYPA sent the failed solenoid block valve to the vendor for testing to pinpoint the failure mechanism. The physical testing did not substantiate any conclusion. However, some foreign material was identified in the valve body and was being chemically analyzed. The inspector will review the results of the chemical analysis and NYPA's resulting corrective actions for the failed MSIV in a subsequent report. (F-1)

- e. The identification by NYPA of a missed drywell leakrate determination was of very low safety significance, based on the fact that containment sump level recorders and appropriate fill rate slope overlays were being continuously monitored by the control room operator. On March 15, control room operators failed to calculate the drywell equipment and floor drain leakage rates within the required four hour period. NYPA determined that the leakage rates were not taken due to a misunderstanding between operating personnel. An auxiliary operator identified the missed surveillance at approximately three hours past the required time. The sump was pumped and the calculation indicated that leakage was within the TS limit.

The inspector found NYPA's review of this event, as documented in LER 90-08, acceptable. The inspector and NYPA discussed the possible elimination of this requirement from TS based on the continuous sump level recorders installed in the control room. NYPA committed to review this issue for a possible TS amendment to expand the instrumentation that can be used for determining drywell leakage and to increase the surveillance frequency to be consistent with other surveillance tests of similar importance.

Failure of NYPA to conduct the once per four hour determination of the drywell leakrate was a violation of TS 4.6.D. NYPA missed this requirement several times in the past (Inspection Reports 87-26 and 88-12). This instance was considered an isolated case because of the numerous times (six per day) that these readings were taken properly during the intervening time between violations. A Notice of Violation will not be issued since you took adequate corrective actions (documented in LER 90-08) prior to the end of the inspection report period. NRC Enforcement Policy, 10 CFR Part 2, Appendix C, Section V.A allows not-citing an isolated licensee identified violation that was corrected before the end of the inspection period. Assignment of an open item number identifies this non-cited violation solely for tracking purposes. NCV 90-02-02.



- f. The inspector reviewed the use of the plant specific simulator and determined that it was a very effective learning tool. Further, although the simulator did not completely replicate the actual control room, efforts were underway to improve the replication. The inspector had two comments:
- The simulator did not effectively duplicate the actual control room condition (i.e., phase angle differences) when transferring between offsite and onsite electrical distribution lines.
  - While the simulator had been used as a tool for generating realistic emergency drill scenarios, it had not been used for conducting actual drills.
- g. NYPA's actions appeared appropriate to the prevent recurrence following an April 15 identification of a misoriented fuel bundle. The fuel bundle LYF-652A, installed on April 9 at location 41-34 was not fully seated and was rotated 180 degrees from proper orientation. NYPA reoriented this fuel bundle and planned to perform a detailed observation of the core prior to reassembly of the vessel. The inspector reviewed NYPA's critique and corrective actions.

## 2. Radiological Protection

- a. The inspector determined that a NYPA supervisor on the refuel floor allowed work to be conducted that caused an uptake of radioactive material by two maintenance workers. While this ingestion of material was of minor safety significance, it indicated that NYPA had not been able to impress to their supervisors the need for increased sensitivity to radiological work. On April 3, while reviewing the logs for the refuel floor radiation protection supervisor, the inspector noted that a facial contamination occurred. The inspector then reviewed NYPA radiological incident report (RIR) on this event and discovered that two workers had ingested small amounts of radioactive material during work on the refuel floor. The individual had been repositioning a weir gate on the reactor vessel cavity prior to vessel flood. The inspector determined that the RWP for this job did not specify the use of respirators. Further, the radiation protection supervisor covering this activity on the refuel floor did not direct that a swipe survey be performed to ensure that contamination was below NYPA's Radiological Work Permit Procedure (RIP-4) limit of 50,000 dpm/100 square centimeters. Above this limit respirators were to be used. After the contamination NYPA surveyed the area and determined that the contamination level was approximately 600,000 dpm/100 square centimeters. Failure to ensure that adequate surveys of the work area were taken is a violation of 10 CFR 20.201.
- VIOLATION 90-02-03

- b. NYPA management dealt with the contract radiation protection technicians (RPT) sickout well. These individuals, contracted to NYPA through a third party (Bartlett Nuclear), were protesting for union representation. As many as 16 of the approximately 70 contractors walked out. This left NYPA with a smaller than expected RPT work force and lead to slowing down of radiologically sensitive work, until new RPTs could be hired and trained.

### 3. Surveillance and Maintenance

- a. Following the reactor scram on March 19, the oscillation of the HPCI system concerned the inspector. The inspector determined that the HPCI normal quarterly IST functional test (ST-4N) was not adequate to determine stable response of the system following an initiation. NYPA used ST-4N as post-maintenance testing (PMT) to return the system to service on February 25. This PMT followed maintenance conducted on the turbine control system because of HOV-1 failing to meet its opening stroke time requirement on February 20. As a result of this maintenance NYPA changed the response of the turbine control system by removing debris from the lube oil system. ST-4N was also performed satisfactorily on March 17.

The testing performed by NYPA between March 20 and 23 indicated the following:

- Response testing, by input of flow/speed controller step changes, prior to exceeding 150 psig reactor pressure was not able to reproduce oscillation. This appeared to be due to the dampening effect of the low pressure steam.
- Inputting step changes at rated pressure with the flow controller in automatic reproduced the oscillation seen during the system initiation. NYPA was able to correct these oscillations with adjustments to the turbine speed control system.

The inspector concluded that NYPA's failure to perform adequate PMT following maintenance on February 25, by using ST-4N and the inability of ST-4N to determine that the system would not perform properly during an injection represented a violation of 10 CFR 50, Appendix B, Criterion XI, Test Control. VIOLATION 90-02-04

The inspector reviewed NYPA LERs 90-05 and 90-10, which document the reviews conducted for the February 1990 failure of HOV-1 and the March flow oscillations. Based on the updated information provided in LER 90-10 and the commitment by NYPA to perform a HPCI injection, the inspector determined that there was no additional follow up required.

- b. (Open) Unresolved Item 89-10-03: Review Post Modification Testing. The inspector identified another instance where sequencing of post modification testing (PMT) was not clearly specified. This occurred on April 12 when the A EDG was being run, by a maintenance procedure, to allow setup of the governor and perform fluid system leak checks. This procedure run was also to test a modification performed on the EDG control circuitry. During this run period a leak developed at the fuel oil filter o-ring seal. The maintenance engineer appropriately tried to trip the EDG by using the emergency stop push button, this did not secure the EDG. The engineer then tripped the machine by overspeeding it with the manual fuel rack control handle. Upon further investigation the inspector determined that the modification to the engine control circuit included the emergency stop push button. NYPA review of the event showed that the modification had been improperly prepared using a circuit diagram for a different time delay relay than the one installed.

The inspector determined that the circuit testing prior to maintenance starting the diesel was not adequate to determine that the modification would have performed its function. The inspector reviewed the engineering change notice (ECN) made to the modification to correct the wiring error. Further, circuit testing prior to EDG operation was added and appeared adequate. This resolved the inspector's concerns for this specific instance. However, it continued to appear that NYPA preferred to perform PMT by actually challenging the modification rather than by post installation circuit checks or other testing. This item remained open.

- c. The inspector reviewed the IST check valve inspection program. The inspector determined that the condition of the work packages and the conduct of the NYPA inspections were indicative of adequate preplanning. Valve deficiencies were documented in detail and reported properly with Occurrence Reports. However, there was a high instance of failed examinations due to silting of check valves in the ESW, RBCCW and SW systems.

Inspector review of the disassembled valves and system piping in the vicinity of the check valves determined that the service water piping internals were caked with silt. Upon completion of A ESW loop check valve inspections, eight valves were found inoperable (unable to open to supply cooling water) due to silt and corrosion product buildup. PORC reviewed the associated ORs on April 11 and determined these results to be reportable. This affected the ESW supply to the A and C RHR pumps and the electric bay coolers. The electric bays contain various safety related electric loads, motor control centers, and RPS power supplies. The in progress B ESW loop inspections found seven additional check valves in the ESW, SW and RBCCW systems that failed IST inspection. NYPA will include these failures in their LER.

- d. NYPA took adequate measures to address a NYPA identified violation of TS 4.10.B core monitoring requirements. Prior to making alterations to the core, the TS required a functional test and neutron response check of SRMs. NYPA identified that these tests had not been completed during LPRM removal and installation. NYPA determined that the procedure that performs these tests (ST-50) was not specified for completion on the LPRM removal and installation procedure check list. The procedure for moving fuel assemblies verified these requirements by a check list. NYPA reviewed all other core alteration procedures and incorporated the necessary prerequisites to ensure that SRM testing was incorporated. This was done prior to any subsequent implementation of these procedures.

Failure to perform the SRM testing prior to LPRM removals was a violation of TS 4.10.B. NYPA's corrective actions appeared adequate. The safety significance of this violation was minimal because the instruments involved were not required to be operable and the operation involved no reactivity changes. A Notice of Violation will not be issued because you identified this issue and took corrective actions. NRC enforcement policy, 10 CFR Part 2, Appendix C, section V.G.1, allows licensee identified violations to not be cited. Assignment of an open item number identifies this non-cited violation solely for tracking purposes. LI NCV 90-02-05

- e. (Closed) Unresolved Item 90-01-04. NYPA identified inadequate surveillance testing of MSIV limit switch RPS functions. The inspector reviewed NYPA's LER 90-07 documenting this event and found the corrective actions acceptable to close this item.
- f. The inspector reviewed preventive maintenance conducted on the EDGs (including B EDG rebuild) and 4160 volt electric switchgear and identified no deficiencies.
- g. The snubber removal and functional testing program and the local leak rate testing programs were well managed to this point by NYPA. As of the end of the report period NYPA was required to functionally test 60% of the snubbers installed on safety related systems because of 5 failures (add 10% each to the original 10 % required). There have been twenty-seven containment isolation valves that have failed their as-found leakrate test, including three of the eight MSIVs and two of the double disc gate valves that were installed during the last outage to improve containment leak rates. At this point no penetrations have been found that would have exceeded their designed leak rate.

#### 4. Emergency Preparedness

- a. (Open) Unresolved Item 89-11-03: NYPA did not enter an Unusual Event (UE) following HPCI injection to restore reactor vessel water level after the March 19 reactor scram. NUREG 0654 specifically listed this condition as one which required entry into the UE. NYPA committed during the inspection documented in Inspection Report 90-14 to compare their procedures with NUREG 0654 and to document the technical bases for any differences.

#### 5. Security

- a. The inspector toured the protected area during night hours and identified no deficiencies with the lighting under temporary trailers. However, several instances of fence lighting not functioning were noted. The inspector identified these areas to the Security Department Superintendent who stated that he would have them fixed. This was subsequently reviewed and found to be acceptable by the inspectors conducting the inspection documented in Inspection Report 90-15.

The inspector monitored the performance of guards posted to ensure that access to the drywell was not gained by unauthorized personnel and that prohibited objects were not passed across the drywell boundaries. In all but one instance the security guards were found to be attentive to their duty. In one instance a guard was observed to have his back to the entrance point that he was monitoring. This observation was brought to the attention of the security department, and increased supervisory tours and briefing of individuals were observed. These actions appeared adequate.

#### 6. Engineering and Technical Support

- a. The inspector reviewed the design bases and the operability test of ESW because of: 1) Numerous IST failures of ESW, RBCCW and service water check valves during the current outage (see Section 3.c above). 2) Previous concerns with the inoperability and testing of the ESW system following the 1988 determination that the ECCS pump room unit coolers were inoperable. Based on these issues the inspector continued to be concerned with the ability of ESW to perform its intended safety function. The ESW design provides a safety related cooling method for safety related areas and equipment. ESW consists of two independent 100% capacity loops, each with one ESW pump. In the event of loss of power or pump failure to one loop, a cross connect valve arrangement and redundant electric bay coolers allow the other loop to provide 100 percent cooling capability. Each ESW pump is required by TS to deliver 3,250 gpm, which corresponds to a measured pump shutoff head greater than or equal to 117 psi.

The inspector identified the following issues during the review of the FSAR Section 9.7, the surveillance test program, TS 3.11.D, the initial pre-operational test for the ESW system and NYPA response to Generic Letter 89-13, dated February 13, 1990 which dealt with Service Water System Problems Affecting Safety Related Equipment. GL 89-13 recommended actions be taken and completed prior to plant restart following first refueling outage beginning nine months after issuance in July 1989.

- (1) The inspector determined that trending pump total developed head (TDH) at shutoff, although allowed by TS, was not adequate to determine operability of the system. While this measurement is useful from an IST perspective it did not provide useful system information. GL 89-13, Item II addressed this surveillance concern. The NYPA response stated that ESW was tested for operability quarterly and that no further testing was planned. The inspector found this response unacceptable.

Further, the inspector found inconsistencies in the application of pump discharge pressure and total developed head (TDH) with respect to ESW pump curve 11825-229-1B. During preoperational testing the no flow pump discharge pressure fell on the pump curve at the shutoff head point. Surveillance test ST-8D, ESW Pump Flow Rate Test (IST) calculates the total developed head (TDH) which is equal to the discharge pressure and elevation head. The TDH is then verified to be greater than the shutoff head criteria of TS 3.11.D.1.b. This approach appears to have changed since initial testing and the inspector questions whether the pump curve is already based on an assumed submergence height in the intake canal.

- (2) The inspector questioned the design flow rates to safety related components. Further, the inspector questioned the appropriateness of the NYPA response in stating that they will verify that ESW can perform its intended safety function per GL 89-13, Item IV by January 31, 1992. FSAR Table 9.7-1, Equipment Supplied by the ESW system, shows that a total of 2915 gpm is required to meet all equipment needs. The table reflects two RHR pump area cooling coils receiving 60 gpm, when TS 3.11.B.1 requires four of five area cooling coils in the crescent to be operable to support operability of equipment located there. In addition, only two out of four RHR pump coolers are reflected in the table. The NYPA response states that the ESW licensing basis was established prior to issuance of GDC 44, 45, and 46. The inspector stated that the ESW had a design safety function which was required to be verified. Further, NYPA stated that the single active failure analysis relative to GDC 44 will be completed by January 31, 1992. However, FSAR Section 9.7.1.14 already states that no single active failure in either ESW loop can prevent the system from achieving its safety objective.

- (3) NYPA's reasons for not performing inspection of the ESW system piping until the 1991 outage did not appear appropriate. Based on IST check valve results and preliminary ESW piping inspections, it appeared that ESW piping had degraded considerably over time due to corrosion product and silt buildup. NYPA initially identified this problem in 1988 and it was further discussed in GL 89-13, Item I. The GL recommended surveillance and control techniques to reduce incidence of flow blockage. NYPA was performing flushing of portions of the cooling system but did not perform testing to verify the availability of design flow in a normal system configuration. Item III recommended establishing an inspection/maintenance program for service water system piping and components. NYPA's program in effect for system components appeared adequate. However, NYPA determined that a piping inspection program will not be in place until after the 1991 refuel outage.
- (4) The inspector questioned the adequacy of the TS required flow rate test in ensuring the ESW system can perform its design function. Further questioned were: the acceptance of the preoperational test results and a 1979 TS amendment that lowered the discharge pressure acceptance criteria.

ESW Preoperational Test Procedure NM-46B required each ESW pump to deliver greater than or equal to the pump design flow of 3700 gpm at greater than or equal to 80.0 psig at the pump discharge when the system valves are lined up for automatic initiation. Preoperational test results were:

	<u>ESW A</u>	<u>ESW B</u>
Test mode (flow to EDG and test valve)	2700 gpm @ 91 psig discharge	2700 gpm @ 90 psig discharge pressure
Inject mode (one ESW pump supplying all required equipment)	3150 gpm @ 85 psig discharge pressure	3150 gpm @ 86 psig discharge pressure
No-flow	121 psig discharge pressure	121 psig discharge pressure

Initially, TS 3.11.D.1.b required an ESW pump to deliver at least 3,700 gpm against a system head corresponding to a total pump head of greater than or equal to 80 psi, as determined from the pump certification curve by measuring the pump shutoff head which shall be greater than or equal to 120 psi. As was evident to the inspector, the criteria of the preoperational test was not met since measured flow was 3150 gpm vice 3700 gpm. NYPA

took exception to the test and dispositioned these results due to the fact that ESW pump shutoff head was 121 psi meeting the TS acceptance criteria. The inspector also determined that at the time of this testing there were no installed flow meters and that the system flow was extrapolated using pump discharge pressure and the pump curve.

By reviewing the ESW pump curve (11825-229-15) the inspector determined that the no-flow readings and the preoperational test readings fell on the curve. Thus the actual maximum flow, 3150 gpm was limited by the system flow resistance. Thus the initial surveillance procedures were not demonstrating the ability to discharge 3700 gpm by measuring a no-flow discharge pressure of greater than 120 psig.

In June 1979, NYPA submitted a TS amendment requesting to change the TS acceptance criteria to deliver 3250 gpm against a system head corresponding to greater than or equal to 80 psi, as determined from the pump certification curve by measuring the pump shutoff head which shall be greater than or equal to 117 psi. This was in effect a lowering of the entire pump curve by 4 psig. The basis for this change was to allow for a 4% pump degradation due to normal wear. By inspection of the pump curve and assuming that flow was proportional to a discharge pressure square fit for the system flow characteristic curve, the inspector determined that this would result in actual ESW flow of 2900 - 3000 gpm at approximately 82 psig discharge pressure. Thus this change allowed the plant to approach or go below the design value of 2915 gpm. Further this does not account for any fouling of components or piping, which would cause a change in the system flow characteristic curve in the non conservative direction.

- (5) NYPA's commitment to complete a review to ensure the adequacy of procedures and training recommended by Item V of GL-89-13 did not appear timely, based on the recommended schedule. This review was intended to ensure that safety-related equipment cooled by service water would function as intended and that operators performed effectively. NYPA committed to complete this review by January 31, 1992.

Based on these issues NYPA established a task force to review the design, operation and testing of ESW. These issues represented an unresolved item pending review of NYPA's actions. UNRESOLVED 90-02-06

- b. (Open) Unresolved Item (90-01-06): Check valve IST program review. The inspector performed a preliminary review of a portion of NYPA's response, dated March 30, 1990, to Generic Letter 89-04 on development of an acceptable IST program and the new IST program.



- (1) Various check valve relief requests provide for alternate testing by disassembly and inspection. NYPA does not commit to a partial stroke test after reassembly prior to declaring the valves operable. This is a deviation from the guidance provided in the Generic Letter.
- (2) Position 2 of Generic Letter 89-04 discussed the inability to full stroke exercise certain check valves in BWks. An example given was HPCI torus suction check. GL 89-04 recommends performing a disassembly/inspection then a reassembly and partial valve stroke as alternate testing. Section 2.c states the position that at least one valve in each check valve group (valve of same design, manufacturer, model, size, material of construction) be inspected during each refuel outage, with all valves in the group inspected at least once every six years. Expansion of the inspection interval to greater than one valve every refuel outage should be considered in cases of extreme hardship where justified. NYPA torus suction check valve, 23 HPI-61 was the only valve in the inspection group. NYPA's associated relief request considered a valve disassembly once every six years as adequate based on performance of a once a cycle torus suction partial stroke test. It did not appear that NYPA followed GL 89-04 guidance in this relief justification.
- (3) Position 8 of GL 89-04 stated that as soon as data was recognized as being within the Required Action Range for pumps or exceeding full stroke time for valves, the associated component must be declared inoperable and TS action time must be started. NYPA evaluated this position and takes exception to it and was pursuing appeal options under 10 CFR 50.109.

These items will be tracked by the inspector pending review and resolution by NRR.

The previous issue addressed by the inspector concerning IST check valves previously in the IST program being deleted without an adequate basis is closed. The inspector verified the valves were added to the program. No further discrepancies were identified.

- c. On March 18, NYPA removed the A RHR subsystem from service to allow rebuilding of the C RHR pump. This pump had shown decreasing pump performance over the last several IST quarterly test periods. When the pump was disassembled, no damage to the internals was discovered. Retesting following reassembly showed minor improvement in the discharge pressure. The inspector reviewed NYPA's initial engineering evaluation, which pointed to a potential instrument problem. This was apparent because of the way the two pumps trended with each other during testing. The inspector will follow the resolution to this in a subsequent report, (F-2).

- d. Generic Letter 88-14 discussed instrument air problems affecting safety related equipment. These problems included maintaining instrument air quality and ensuring safety related components supplied with instrument air will perform as expected in all design basis events. In response to Generic Letter 88-14, dated September 21, 1989, NYPA performed air system sampling to verify instrument air quality and evaluated possible system improvements to increase the reliability of the instrument air supply system. On March 21, the engineer involved with the air quality testing identified excessive carryover of desiccant from one of the compressor air dryers and stated that a particulate analysis was in progress. Based on this air system problem and the MSIV failure (see Section 1.d), the inspector questioned if there were any other problems with the air system that could affect the reliability of safety related components.

The inspector identified a previous problem with clogged CRD air filters. On March 6, a work request was initiated to inspect/clean the CRD air filters. It appeared during testing of air operated solenoid valves, scram air header pressure could not be maintained resulting in low scram air header annunciated alarms. Maintenance cleaned and inspected the air filters. Through discussions with maintenance personnel the inspector determined the filters were clogged with desiccant. This was not documented on the work request, and the mechanic informed the work control center of the condition of the filters verbally.

The inspector discussed the status of the air system with the system engineers to determine if the MSIV failure could be related. The system engineers were not aware that maintenance had found an air filter clogged with desiccant. This was also discussed with the maintenance superintendent. Based on the inspector's concern NYPA planned to reinforce the importance of documenting adverse conditions found during maintenance or troubleshooting to ensure these problems were fed back to the cognizant engineer for further evaluation.

- e. The date by which NRC approval was needed for the degraded grid voltage trip setting TS submittal was not properly reviewed by NYPA. The inspector discussed NYPA's plans to implement a modification to the emergency electrical bus second level voltage trip setpoint. NYPA submitted a proposed amendment JPTS 89-034, by letter dated January 12, 1990 to increase the trip setting to 110.6 plus or minus 1.2 volts from the present 108 plus or minus 1.5 volts. The discussion focused on the fact that approval of the proposed amendment was requested by NYPA prior to May 15, 1990 to support the outage. Approval on this date would not have supported the scheduled startup on May 18, 1990, because of the work effort involved in making the setpoint changes. Because of this conflict the NRC staff review was expedited to give NYPA the needed time.

- f. The inspector reviewed NYPA's April 2, 1990, 30 day special report on the inoperability of the diesel driven fire pump. This was the first such report made by NYPA in the recent past and was found to be well written containing all the desired information.
- g. The inspector discussed aspects of Generic Letter 87-09, Section 3.0 and 4.0 of STS on the applicability of LCO and surveillance requirements with NYPA. Specifically Problem #2 which deals with unnecessary shutdown because of inadvertently missed surveillances was discussed. The NRC staff position is that a 24 hour delay may be used to permit completion of the ST when the applicable LCO would allow less than 24 hours.

Although not specifically addressed by this GL, the inspector also discussed the possibility of NYPA deleting the monthly operability surveillance requirement for pumps and valves in safety systems. NYPA stated that they will review these situations for a potential amendment to TS.

#### 7. Safety Assessment/Quality Verification

- a. The inspector found that computerized regulatory commitment tracking systems provided adequate control over commitments. The amount of time needed for the Superintendent of Power to maintain the onsite system initially concerned the inspector. However, NYPA assured that the time was not a significant burden on the SOP's time. The inspector determined that responses required as part of commitments received proper review by plant and corporate personnel prior to submittal. The inspector specifically reviewed the commitments made by NYPA in LERs 86-01 and 86-09, and noted one deficiency.
  - LER 86-09, concerned the notification of the RES Department to take reactor coolant samples every four hours with steaming rates below 100,000 lb./hr., as required by TS 4.6.c.2. The inspector found that the startup/shutdown procedure (F-OP-65) did not incorporate this requirement during a shutdown. NYPA committed to review this situation.
- b. The inspector found that NYPA adequately controlled generation of, and once approved, the proper incorporation of TS amendments. While there had been instances of incomplete or improperly reviewed submittals previously, these appeared to be isolated cases. Amendments, generated by the corporate licensing staff, received review by onsite management and approval by the PORC and SRC prior to submittal. Once processed and approved the SOP ensured that appropriate procedure changes were made to incorporate any new requirements.

8. Other Inspections and Enforcement Conferences

- a. Inspection Report 90-13, Routine ISI and IGSCC review. April 2 through 6, 1990
- b. Inspection Report 90-14, Routine Emergency Planning review. April 9 through 13, 1990.
- c. Inspection Report 90-15, Routine security review. April 23 through 27, 1990.
- d. On March 20, an Enforcement conference was held in NRC Region I to discuss the events leading up to NYPA's determination that core thermal power had been exceeded. The enforcement action for this instance was issued by letter dated April 10 and consisted of two Severity Level IV violations.
- e. On April 9, an Enforcement Conference was held in NRC Region I to discuss the events leading to the contamination and potential over-exposure of a radiation protection technician with Sodium 24. The enforcement action was not issued at the end of the reporting period.

9. Exit Interview

At periodic intervals during the course of this inspection, meetings were held with senior facility management to discuss inspection scope and findings. In addition, at the end of the period, the inspectors met with licensee representatives and summarized the scope and findings of the inspection as they are described in this report.

# ATTACHMENT A

## Acronyms

ALARA	-	As Low as Reasonably Achievable
ASS	-	Assistant Shift Supervisor
CS	-	Core Spray System
CAM	-	Containment Air Monitor
ECCS	-	Emergency Core Cooling System
EDG	-	Emergency Diesel Generator
EOP	-	Emergency Operating Procedures
EP	-	Emergency Plan
EPG	-	BWR Owner's Group Emergency Procedure Guideline
ESW	-	Emergency Service Water
HELB	-	High Energy Line Break
HPCI	-	High Pressure Coolant Injection System
FFD	-	Fitness for Duty
GDC	-	General Design Criteria
IGSCC	-	Inter Granular Stress Corrosion Cracking
I&C	-	Instrumentation and Control
INPO	-	Institute Nuclear Power Operations
ISI	-	In-Service Inspection
IST	-	In-Service Testing
LER	-	Licensee Event Report
LLRT	-	Local Leak Rate Test
MOV	-	Motor Operated Valve
NRC	-	Nuclear Regulatory Commission
NYPA	-	New York Power Authority
ODSO	-	Operations Department Standing Order
OR	-	Occurrence Report
PCIS	-	Primary Containment Isolation System
PCIV	-	Primary Containment Isolation Valve
PM	-	Preventive Maintenance
PMT	-	Post Maintenance Testing
PORC	-	Plant Operations Review Committee
PTR	-	Protective Tagout Request
QA	-	Quality Assurance
QC	-	Quality Control
RBCCW	-	Reactor Building Closed Cooling Water
RCIC	-	Reactor Core Isolation Cooling System
RHR	-	Residual Heat Removal System
RP	-	Radiation Protection
RPS	-	Reactor Protection System
RWCU	-	Reactor Water Cleanup System
RWP	-	Radiation Work Permit
SALP	-	Systematic Assessment of Licensee Performance
SPDS	-	Safety Parameter Display System
SRC	-	Safety Review Committee
SRO	-	Senior Reactor Operator
SS	-	Shift Supervisor
ST	-	Surveillance Test
STA	-	Shift Technical Advisor
SW	-	Service Water
TS	-	Technical Specification
TSLCO	-	Technical Specification Limiting Condition for Operation
TSAS	-	Technical Specification Action Statement
UE	-	Unusual Event

NRC Form 766 U.S.

#039 0

U.S. NUCLEAR REGULATORY COMMISSION

Principal Inspector:  
Schmidt, Wayne, L.  
Reviewer: G. Meyer

INSPECTOR'S REPORT  
Office of Inspection and Enforcement

Inspectors: Transaction Docket #/Inspect #/Seq #

Schmidt, W. Type 05000333 90-02  
Plasse, R.

Licensee/Vendor:  
New York Power Authority  
P.O. Box 41  
Lycoming, New York 13093

\*I-Insert  
M-Modify  
D-Delete  
R-Replace

Period of Inspection:

Inspection Performed By:

From To  
3/12/90 4/25/90

- 1 - Region Office Staff
- \*2 - Resident Inspector(s)
- 3 - Performance Appr. Team
- 4 - Other

Organization Code of Region:

Regional Action:

Region Division Branch  
RI B B

- 1 - NRC Form 591
- \*2 - Regional Office Letter

MAY 09 1990

Type of Activity Conducted (\* one only):

- \*02-Safety 07-Special 12-Shipment/Export
- 03-Incident 08-Vendor 13-Import
- 04-Enforcement 09-Mat. Acct. 14-Inquiry
- 05-Mgmt. Audit 10-Plant Sec. 15-Investigation
- 06-Mgmt. Visit 11-Invent. Ver.

Inspection Findings

A B C D

- \* -Clear
- Violation
- Deviation
- Violation & Deviation

NRC Form 766A

U.S. NUCLEAR REGULATORY COMMISSION

Principal Inspector:  
Schmidt, Wayne, L.  
Reviewer: G. Meyer

INSPECTOR'S REPORT  
Office of Inspection and Enforcement

DN:50-333      IR:90-02 SEQ:N/A    MOD:71707      SEV.LVL:IV  
SUP:IV

10 CFR 20.201 requires that surveys be taken to ensure the measurement and evaluation of the concentration of radioactive material present at a job site. This ensures that adequate respiratory protective measures are taken to prevent internal contamination.

Contrary to the above, on April 3, 1990, NYPA did not perform a survey and thus did not evaluate the concentration of radioactive material present at the edge of the reactor vessel cavity. Because of this adequate respiratory protective measures were not taken to prevent internal contamination of two maintenance workers.

DN:50-333      IR:90-02 SEQ:N/A    MOD:71707      SEV.LVL:V    SUP:1

10 CFR 50, Appendix B, Criterion XI, Test Control, requires that surveillance testing ensure satisfactory in service performance of the HPCI system.

Contrary to the above, surveillance testing, performed prior to March 19 1990, did not ensure satisfactory in service performance of the HPCI system. Specifically the surveillance testing performed on February 25 and March 17, 1990 did not identify the unstable HPCI system response seen following the March 19 injection to the reactor vessel.

MODULE INFORMATION

Rec ord	Mod. No.	Direct Insp.Hrs.	Percentage Complete	Status	Module Followup
B-530703		11			
B-561726		55			
B-562703		50			
B-571707		103			
B-592700		3			
B-593702		32			
B-571710		48			
B-592703		3			
B-560710		13			
Total		318			