U.S. NUCLEAR REGULATORY COMMISSION

REGION I

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Licensee:	New York Power Authority
Facility:	Indian Point 3 Nuclear Power Plant
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Inspectors:	D. Lew, Senior Resident Inspector T. Frye, Resident Inspector P. Habighorst, Resident Inspector E. King, Physical Security Inspector J. Laughlin, Emergency Preparedness Specialist L. Harrison, Reactor Engineer P. Quall, Reactor Inspector, Region IV
Approved by:	C. Cowgill III, Chief Projects Branch 2 Division of Reactor Projects

EXECUTIVE SUMMARY

Indian Point 3 Nuclear Power Plant
NRC Inspection Report No. 50-286/97-01

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covered a six-week period of resident inspection; in addition, it included the results of inspections by region-based inspectors in the areas of fire protection and physical security.

Operations

Good operations control of the unit start-up from the forced outage was noted, especially actions to make the reactor critical on February 17, 1997. The NRC, however, noted two examples of less than adequate configuration control. The first involved the NRC identification of an unauthorized installation of catch containers on the boric acid tank vent lines. This was a violation. The second involved a self-revealing event in which an operator erred during a routine alignment of the chemical and volume control system resulted in overpressurizing portions of the system, various body-to-bonnet valve leaks, and an unplanned monitored release. (Sections O1.1, O2.2, and O4.1)

Good procedure guidance was developed by the licensee to safely handle and store new fuel assemblies. Fuel handling activities were well performed by NYPA contractors, NYPA engineering, quality assurance, and health physics personnel. (Section O8.1)

Maintenance

Maintenance and surveillance activities were implemented well. Notable activities were the replacement of the 33 service water pump and safety injection functional testing. (Sections M1.2 and M1.8)

Engineering

Significant effort by licensee engineering personnel continued in implementing and improving the maintenance rule program. This effort included the development and implementation of corrective actions to address program weaknesses. The majority of these corrective actions were scheduled to be completed by May 1997. System engineering continued to demonstrate good program understanding and ownership. Notwithstanding, NRC questioned the maintenance rule risk evaluation for the control room ventilation fans. This was considered an open item. (Sections E2.1 and M1.3)

Engineering support to operations was generally very good, particularly the identification of design deficiencies. Examples of design deficiencies involve the single-failure vulnerability of the spare battery charger and the hydrogen monitoring system containment isolation valves. Good engineering support to operations as exemplified in the evaluation of the letdown system overpressurization, analysis of heavy loads during the 33 service water pump replacement, and evaluation of electrical equipment operability given a non-

conservative main steam line break outside the vapor containment. (Sections O4.1, M1.2, E2.2, E2.3, and E2.4)

The inspector concluded that the licensee's assessment and action plan was appropriate to address the material condition issues associated with the service water system. The plan to replace the small bore service water piping and valves were extensive. The plan to continue assessment of the service water condition coupled with a plan for continued replacement of significant portions of the system after the upcoming outage provided assurance that the system will be maintained appropriately. (Section E8.1)

Plant Support

The licensee maintained a good security program. Management support was evident by enhanced security detection equipment and effective equipment maintenance. Security training was performed in accordance with the NRC-approved training and qualification plan. Alarm station operators were knowledgeable of their duties and responsibilities. Security force members possessed the requisite knowledge to carry out their assigned duties and the training program was effective. Management controls for identifying, resolving, and preventing programmatic problems appeared to be effective. Audits were thorough and in depth and had appropriate followup. The security uninterruptable power source was installed and maintained as described in the Plan. (Sections S.1 through S.8)

Although adequate control had been established governing combustible and flammable materials within the plant, the inspectors concluded that the established processes and procedures could be improved to provide enhanced oversight and protection against fires. (Section F1.1)

Fire protection equipment conditions were good. Housekeeping was excellent and personnel interviewed were knowledgeable of station policy and procedures. Good drill performance by the fire brigade members reflected effective training. Fire protection design/engineering documents, including the design basis documents, fire protection engineering standards, pre-fire plans, and code compliance walkdown records, were comprehensive. (Sections F2.1, F4.1, F8.1 through F8.16)

NYPA's interpretation of the annual training program requirement and subsequent failure to fulfill practice sessions in fire extinguishment resulted in a violation. (Section F5.1)

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Report Details

Summary of Plant Status

The unit began the inspection period heating up from a forced outage. The reactor was brought critical on February 18, 1997, and the unit achieved full power on February 23. The plant essentially remained at full power through the remainder of the inspection period. The number of equipment problems impacting on power operations notably declined during the five weeks following this forced outage, as compared to the similar period following the last extended forced outage which ended in April 1996.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

The inspectors conducted frequent reviews of ongoing plant operations. Overall, the licensee conducted plant operations well. The inspectors observed plant operations to bring the reactor critical on February 18, 1997. The operators performed the evolution in a professional manner and minimized distractions during the evolution. The inspector observed good performance in shift turnovers, communications and procedure adherence. Significant events and noteworthy observations are discussed below.

O2 Operational Status of Facilities and Equipment

O2.1 Isolation Valve Seal Water System Review

a. Inspection Scope (71707)

The inspectors compared the as-built configuration of the isolation valve seal water (IVSW) system against design basis information contained in the final safety analysis report (FSAR) and the design basis document (DBD).

b. Observations and Findings

The inspectors walked down the accessible portions of the IVSW system and verified that the as-built configuration was consistent with the FSAR and DBD. The material condition of the system was good, with all equipment deficiencies noted previously identified by the licensee with problem identification description (PID) tags. The inspectors verified that the system was properly aligned for operation. The inspectors reviewed a temporary modification to the system and noted that it had been properly evaluated prior to installation, with the system flow diagram appropriately revised to reflect the installation.

c. Conclusions

The inspectors verified based on a system walkdown that the as-built configuration of the IVSW system was consistent with the design basis.

O2.2 Boric Acid Storage Tank Vent Lines

a. Inspection Scope (71707)

On January 2, 1997, the NRC identified that the vent lines for both the 31 and 32 boric acid storage tanks (BASTs) were covered with a catch container. The catch containers effectively restricted the available vent path for both of the tanks. The inspectors reviewed the circumstances surrounding this event.

b. Observations and Findings

The plastic catch containers which were taped to the BAST vent lines had 1/2 inch tubing to direct drainage from the containers to a floor drain. This configuration effectively decreased the BAST vent line capability from a normal 3 inch line to a 1/2 inch line. The licensee initiated deviation event report (DER) 97-0011 to evaluate this event. The licensee immediately removed the catch containers to restore the BASTs to their normal configuration. The licensee determined that the most probable cause of this event was that painters moved these containers off of the floor and taped them to the vent lines to support floor painting. Corrective actions taken included reviewing this item with the painters to heighten their awareness to this issue.

As of the end of this inspection period, New York Power Authority (NYPA) engineering was still reviewing the effect of this reduced vent capability on the operability of the BASTs and the boration capability of the chemical and volume control system. This issue is left open pending the completion of this evaluation by the licensee. **(URI 97-01-01)**

NRC review concluded that the catch containers taped to the BAST vent lines represented an unauthorized temporary modification (TM) to plant equipment. AP-13, revision 18, "Temporary Modifications," provided the requirements for the control of temporary modifications to the plant. Section 4.1.1 of AP-13 stated that a TM shall be generated to document temporary physical or functional changes to plant components which are not described in approved plant documents. Contrary to this requirement, the vent paths for both the 31 and 32 BASTs were altered by the catch containers without following the TM process. This is a violation of NRC requirements. **(VIO 97-01-02).**

c. Conclusions

The NRC identified an unauthorized installation of catch containers on the BAST vent lines. The installation of the catch containers represented an unauthorized TM to the BAST vent lines and reflected the need for heightened licensee staff awareness of the potential impact to plant configuration. This was a violation of NRC requirements.

O4 Operator Knowledge and Performance

O4.1 Mispositioned Valve Results in Overpressure Condition on Portions of Letdown System

a. Inspection Scope (71707)

On February 20, 1997, a nuclear plant operator (NPO) improperly performed a system alignment to the 33 chemical volume control system (CVCS) hold-up tank (HUT). This error caused an increased pressure condition for portions of the letdown line and resulted in leakage from various valves, and the spread of contamination in limited areas of the primary auxiliary building (PAB). The inspector evaluated the causal analysis of the event, prior operator performance, and the proposed licensee corrective actions.

b. Observations and Findings

The NPO failed to adhere to system operating procedure SOP-CVCS-1, "CVCS Holdup Tank System Operation," step 4.1 to align the CVCS HUTs. The procedure required opening valve CH-1120 (33 CVCS HUT inlet isolation) and shutting the inlet isolation valves for the 31 and 32 CVCS HUTs. The NPO failed to verify the valve alignment and mistakenly opened valve CH-1182, 33 CVCS HUT recirculation line instead of valve CH-1120. This valve alignment isolated the HUTs from the letdown line. At the time, the 32 CVCS HUT was in service and had received diverted letdown flow during the power ascension. The control room operator diverted letdown from the volume control tank (VCT) to the CVCS HUT by controlling the position of valve LCV-112. The control room supervisor (CRS) requested the NPO to shift the HUT from the 32 to 33 since the 32 CVCS HUT was at 86% level. The duration of the diversion was approximately 10 minutes with a calculated diversion of 820 gallons.

The consequence of the operator error caused an overpressure condition to portions of the letdown line. This pressure transient resulted in various valve leaks, contamination of several limited areas within the PAB, and an unplanned monitored release of radioactive gases to the main plant vent stack. Valve CH-263 is a relief valve located between the outlet of the non-regenerative heat exchanger and the VCT. The valve lifted at its setpoint of 200 pounds per square inch gauge (psig) and relieved to the VCT. The licensee identified body to bonnet leakage from valve CH-325 (resin fill valve for 31 deborating demineralizer), and valve CH-353 (resin fill valve for 32 mixed bed demineralizer). System leakage was also identified near the reactor coolant filter bypass valve cell and the service water pipe chase, but the source of the leakage was not identified.

The system leakage resulted in an unplanned monitored release of radioactive gases that was calculated by chemistry personnel to be less than 1% of the administrative limit for instantaneous release, and a total estimated release of 0.186 curies which equated to .0001% of the quarterly limit of Appendix B to the facility operating license. The inspector confirmed that no reports were required to the NRC.

The cause of the event was less than adequate valve verification during system alignment. The short-term corrective actions were to realign the CVCS HUT correctly, decontaminate the affected areas within the PAB, perform corrective maintenance on the leaking valves, counsel the NPO, have the NPO perform parallel watches with a peer NPO, lessons-learned were applied to operator requalification program, and reemphasis to shift managers (SMs) to observe NPOs performing self-checking activities. The inspector verified that the NPO was standing a parallel watch with a peer NPO, and that areas had been decontaminated by licensee personnel. The inspector also learned through discussions with the NPO, that this was his second watch after successful qualification, and that during his qualifications he had been performed or simulated alignments of the CVCS HUTs.

The system engineer performed an equipment evaluation of affected components in the CVCS system subjected to an overpressure condition. The evaluation concluded that the overall integrity of the system was not compromised. Inspector review of the engineering evaluation and walkdown of portions of the system, concluded that the evaluation appropriately compared component designs with known transient conditions.

The inspector reviewed the human performance errors over the last year to determine if similar events occurred and if previous corrective actions would have precluded this error. Sixteen (16) significant human performance errors were identified that were classified as either level A or B deviation event reports (DERs). Three of the events documented examples of operator error, failure to follow procedures, or failure to implement "self-checking" techniques. The inspector concluded that corrective actions for previous similar events were appropriate and would not have precluded this error.

This self revealing and corrected violation of Technical Specification 6.8.1, is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

c. Conclusions

A non-licensed operator failed to adhere to a system operating procedure. The consequences of the operator error involved overpressurizing portions of the letdown line, valve leakage, contamination of various areas within the PAB, and a monitored, but unplanned release of radioactive gases to the main plant vent stack. The engineering evaluation of the system was comprehensive and appropriately compared component designs with known transient conditions. The corrective actions from past licensee identified human performance events were adequate and would not have precluded this event. This violation of Technical Specification 6.8.1, is being treated as a non-cited violation consistent with Section VII.B.1 of the NRC Enforcement Policy.

O4.2 Overtime Restrictions

a. Inspection Scope (71707)

The inspector reviewed the licensee's compliance with overtime restrictions as specified in administrative procedure AP-36, "Overtime Restrictions."

b. Observations and Findings

The inspector selected a sample of security gate records to evaluate conformance to AP-36. The sample consisted of five system engineers who had systems in which significant work was performed during the forced outage in January and February of 1997. A two-to-three week period was selected for each engineer, during which the activity level for the associated systems were high.

The inspector noted that two of the five system engineers exceeded the overtime restrictions of AP-36 based on gate logs. Specifically, the restriction of a maximum of 24 hours worked in a 48 hour period was exceeded. One engineer did not meet this requirement four times in a three week period; the other engineer did not meet this requirement once in a two week period. These five 48 hour periods, in which overtime restrictions were exceeded, overlapped one another. On average, after considering lunch breaks and shift turnover time as applicable, the engineers exceeded the maximum 24 hours worked by about 33 minutes.

The inspector discussed these observations with the system engineering manager. The system engineering manager indicated that no authorization had been given to any system engineers to exceed the overtime restrictions during the forced outage. However, he indicated that one system engineer was onsite performing personal research associated with his doctoral thesis, and was not working on any activities associated with the plant or safety-related equipment. This inspector independently verified this through an interview with the system engineer. Regarding the second system engineer, the overtime restrictions of AP-36 was violated once. Contributing to this oversight was the improper interpretation by the system engineer of the term "any 48 hour period." The system engineer had consider this to mean any two consecutive calendar days.

The system engineering manager stated that it was the individual's responsibility to track the hours worked. Periodically, time sheets were reviewed by management to ensure that the requirements of AP-36 were not violated. On March 21, 1997, the licensee identified through this record review that an individual exceeded a AP-36 requirement in February. This was documented in DER 97-0573.

Following the identification by the inspector of the additional violation of AP-36, the licensee initiated DER 97-0581. As an immediate corrective action, the system engineering manager reinforced overtime requirements with his department during a tailgate meeting. Separately, the licensee was implementing corrective actions in response to previous non-compliances with AP-36 requirements. One of the actions was to revise the AP-36 procedure to clarify the applicability of AP-36 and

management's expectations. The draft revision included the clarification of the term "any 48 hour period."

c. Conclusions

The inspector concluded that the licensee had reasonable controls in place to identify violations of AP-36. Corrective actions were ongoing to enhance control of overtime. In this particular case, the interpretation of "any 48 hour period" contributed to the violation of AP-36. However, this case appeared isolated and did not reflect a programmatic problem. The failure to follow an administrative limit in AP-36 is a minor violation and is non-cited in accordance with the NRC Enforcement Policy, Section IV.

O8 Miscellaneous Operations Issues

O8.1 New Fuel Receipt And Storage

a. Inspection Scope (71707)

The inspectors reviewed and observed the procedures and controls established by the licensee to support the receipt, inspection, and storage of new fuel assemblies.

b. Observations and Findings

On February 27, 1997, the licensee received the first shipment of eight new fuel assemblies. The receipt, inspection, and dry storage of the assemblies in the new fuel racks was performed in accordance with procedure SOP-RP-6, New Fuel Removal From Shipping Containers and Inspection. NYPA reactor engineering had the overall responsibility in coordinating the handling of the new fuel, with support from quality assurance and health physics technicians. The inspectors noted that SOP-RP-6 provided thorough direction in the safe handling of the new fuel. The shipping containers and assemblies were handled well by the licensee contractors with good radiological controls maintained by the licensee.

As previously noted in NRC inspection report 50-286/96-12, the licensee's new fuel storage area did not meet the criticality monitoring criteria required by 10 CFR 70.24. On March 4, 1997, the NRC questioned the basis for the continued receipt and handling of new fuel while not in compliance with 10 CFR 70.24 and without an NRC approved exemption from the regulation.

An exemption request from the requirements of 10 CFR 70.24 had been submitted by the licensee on December 20, 1996. Prior to receiving the first new fuel shipment on February 27, 1997, the licensee had determined that a previous exemption to 10 CFR 70.24, dated November 24, 1974, had rolled over to the plant operating license. Therefore, the licensee intended the December 20, 1996 exemption request to be administrative in nature only, with a purpose only to more clearly document an existing exemption.

On March 5, 1997, the licensee suspended new fuel handling activities pending resolution of the need for criticality monitoring. On March 6, 1997, the licensee stored four additional shipping containers which had been in route from the fuel vendor, but did not unload the fuel assemblies.

On March 27, 1997, the NRC issued an exemption to the requirements of 10 CFR 70.24. The exemption required an effective means of monitoring new fuel in dry storage and appropriate procedures and personnel training to respond to an inadvertent criticality. The licensee established the required monitoring, procedures and training and recommenced new fuel handling operations on March 28, 1997.

c. Conclusions

Good procedure guidance was developed by the licensee to safely handle and store new fuel assemblies. Fuel handling activities were performed well by NYPA contractors, NYPA engineering, QA, and health physics personnel.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments (62707)

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

- WR 95-03091-31, 31 Emergency Diesel Generator Testing of Field Shutdown Auxiliary Relay
- WR 95-04363-00, 33 Service Water Pump and Motor Replacement
- WR 97-01526-00, Troubleshoot 31 Instrument Air Heatless Desiccant Dryer

The inspectors observed that the work performed under the above work requests (WR) was conducted satisfactorily and in accordance with applicable maintenance and administrative procedures.

M1.2 33 Service Water Pump Replacement

a. Inspection Scope (62707)

The inspectors observed work activities related to the replacement of the 33 service water (SWP) pump and motor. The 33 SWP was replaced due to a decreasing trend in the differential pressure across the pump.

b. Observations and Findings

The 33 SWP pump replacement was performed under WR 95-4363 and maintenance procedure PMP-O12-SWS, "Service Water Pump Removal and Installation." Nuclear safety evaluation (NSE) 96-3-271 was prepared for this work

since it involved the lifting of heavy loads in the vicinity of safety related equipment. The inspectors reviewed the NSE and concluded that it thoroughly evaluated such factors as a defined travel path for the load lift, single failure proof guidelines for the crane and rigging, and consideration for breaching security barriers during the lift. The maintenance procedure contained the appropriate requirements specified in the NSE, and provided good instructions to perform the work and contingency actions in the event of a load drop.

The load lifts for the pump/motor removal and reinstallation were controlled as special evolutions by the licensee. The inspectors observed excellent briefings by the special evolution manager, and good control and oversight of the work by maintenance supervision. Excellent coordination was also noted between maintenance and operations in conducting the lifts with no impact on plant operation and in maintaining necessary security barriers during the work.

c. Conclusions

The removal and reinstallation of the 33 SWP was well performed by the maintenance and engineering departments. The NSE and maintenance procedure developed for the activity thoroughly evaluated and controlled the heavy load lift in the vicinity of safety related equipment. Good supervision and coordination of the load lifts by maintenance personnel were also noted.

M1.3 Control Room Ventilation Fan Failures

a. Inspection Scope (62707)

The 32 control room (CR) air conditioning (A/C) unit ventilation fan failed three times during November and December 1996. The inspectors reviewed the engineering evaluations and root causes of these failures, and the effectiveness of corrective actions taken subsequent to each failure.

b. Observations and Findings

The 32 CR A/C ventilation fan failed three separate times on November 25, December 7, and December 14, 1996. Each failure was similar in that the fan pulley separated from the motor shaft. Both the 31 and 32 CR A/C unit fan pulleys had been replaced approximately two years earlier. Each failure of the fan placed the plant in a technical specification limiting condition of operation which required plant shutdown if the fan was not restored within 72 hours.

The fan pulley separated from the motor shaft for the first time on November 25, 1996. Engineering evaluation subsequent to the first failure noted that the fan pulley/shaft design was not optimal. The pulley was designed with a keyway and set screw to secure it to the shaft. However, the design of the shaft did not allow the use of a key. Therefore, the pulley was attached to the motor shaft with a single set screw only. While not an optimum design, the licensee concluded that

the fan pulley could be restored to its original design based on a history of no previous similar failures.

Corrective actions taken to restore the 32 CR A/C unit to service involved obtaining a new pulley and set screw and securing them to an undamaged portion of the fan motor shaft. The fan pulley for the 31 CR A/C unit was verified to be securely attached to the motor shaft. Long term corrective actions included developing a design change to improve the pulley/shaft design. This design change was scheduled to be implemented in five months during the next preventive maintenance outage for the unit.

The 32 CR A/C ventilation fan pulley failed for a second time on December 7, 1996. At this time, the design change had not been prepared to improve the fan pulley/shaft configuration. Corrective actions taken after the second failure included scoring the fan motor shaft to provide a better seating surface for the set screw and torquing the set screw to a vendor provided value. NYPA engineering determined that this would be an adequate repair to prevent axial movement of the pulley on the shaft and expedited the preparation of the design change. The 31 CR A/C unit fan pulley was again verified to be securely attached.

The 32 CR A/C fan failed for the third time on December 14, 1996. At this point the fan motor shaft was too badly damaged for repair. The design change was approved and implemented on December 16, 1996, and incorporated a keyway and a bushing to restrict radial and axial movement of the pulley on the shaft. The 31 CR A/C unit was again checked and the pulley was firmly attached to the shaft. As of the end of this inspection period, the design change had not yet been implemented for the 31 CR A/C unit and had been scheduled for an upcoming preventive maintenance outage. NYPA engineering concluded that this was adequate since the operability of the 31 CR A/C unit was not in question due to the fan motor shaft/pulley design.

While all three failures were dispositioned as functional failures, the licensee determined that they were not maintenance preventable functional failures under the provisions of 10 CFR 50.65. The inspectors reviewed the monitoring of the CR ventilation system under the maintenance rule and noted that the licensee had determined that this was a non-risk significant/standby system. Availability performance criteria and monitoring had been established by the licensee for the system filter booster fans only. While the NRC concluded that this was adequate performance monitoring for a non-risk significant/standby system, the NRC questioned this risk significance determination. This item is left open pending further NRC review of this determination **(URI 97-01-03)**.

c. Conclusions

The final corrective actions taken by NYPA were thorough and adequate to address the repeated failures of the 32 CR A/C fan. The interim corrective actions taken to repair the fan pulley appeared prompt and reasonable at the time, but ultimately proved to be inadequate as reflected in the repeat failures. A design change to

improve the configuration of the fan shaft/pulley for the CR A/C fans was appropriately prioritized. The fan failures were appropriately evaluated by the licensee for maintenance preventable functional failures in the maintenance rule program. Further NRC review is required regarding the risk significance of the CR ventilation system.

M1.4 31 Emergency Diesel Generator Preventative Maintenance

a. Inspection Scope (62707)

The inspection scope was evaluation and observation of scheduled maintenance on the 31 emergency diesel generator (EDG) between February 26 through March 1, 1997.

b. Observations and Findings

The scheduled preventative maintenance on the 31 EDG was approximately 38 hours in duration; the actual duration was approximately 58 hours. During this scheduled maintenance, various equipment problems were identified by the licensee and documented in various deviation event reports (DERs). The most significant equipment malfunctions were the unexpected response during removal of a temporary modification for the field shutdown auxiliary relay and the failure of the air start motors.

The temporary modification as documented in NRC report 50-286/96-01 was to document a condition in the plant where the emergency exciter field voltage shutdown switch relay contact was not connected as in design drawing 93-21-LL-31173 sheet 14. The purpose of this maintenance was to reconnect this switch relay contact and restore it in conformance with the design drawings. During retest of the installation, the licensee noted that the generator output breaker opened as expected, however the source of the breaker opening was not attributed to the exciter field voltage shutdown switch relay. An operability determination was performed by the licensee that concluded it was acceptable to reinstall the temporary modification based on the fact that the relay is not normally used or proceduralized for use, and that past EDG testing with the temporary modification installed showed acceptable results.

At the end of the inspection, the licensee was performing an equipment failure evaluation (EFE) report for the failure of the air start motors. The inspector discussed the failures and the increased unavailability of the 31 EDG as it relates to maintenance rule performance trending with the system engineer. The evaluation to determine if the air start motor failure was a maintenance program preventative failure will be completed after the EFE. The current unavailability for both the 31 and 32 EDG is approximately 3.8% which still is above the unavailability goal of less than 2.5%.

The licensee initiated a critique of the preventative maintenance for the 31 EDG to evaluate proposed corrective actions to minimize unplanned unavailability. The

inspector concluded that the critique identified appropriate causes and corrective actions to address the EDG unavailability.

c. Conclusions

The licensee initiated a critique of the preventative maintenance for the 31 EDG to evaluate proposed corrective actions to minimize unavailability. The inspector concluded that it adequately addresses reasons and corrective actions for EDG unavailability. The inspector concluded that the operability determination to reinstall the temporary modification was acceptable.

M1.5 Surveillance General Comments (61726)

The inspectors observed all or portions of the following surveillances:

- 3PT-M16, Safety Injection Pumps Functional
- 3PT-M20A, 31 & 33 Auxiliary Boiler Feed Pumps (Motor Driven) Surveillance and Inservice Testing
- 3PT-A15, Fire Protection System Valve Cycling
- 3PT-A21, Diesel Generator Overspeed Trip Test

The licensee conducted the above surveillances appropriately and in accordance with procedural and administrative requirements. As applicable, good coordination and communication with the operations department were observed during performance of the surveillance. Procedures supported the timely completion of the surveillance.

M1.6 32 Emergency Diesel Generator Overspeed Trip Test

a. Inspection Scope (61726)

The inspectors observed the performance of an overspeed trip test on the 32 EDG.

b. Observations and Findings

On March 26, 1997, an overspeed trip test was performed on the 32 EDG per procedure 3PT-A21, Diesel Generator Overspeed Trip Test. The inspectors observed good performance of the test by operations and performance department personnel. Good communications and coordination were evident and the test procedure was well written. Results of the test indicated that the 32 EDG tripped on overspeed at 910 revolutions per minute (rpm), which was below the acceptable value. The 32 EDG remained inoperable pending further evaluation by the licensee.

Initial evaluation by the licensee determined that the test results might not have been valid based on the method used for raising EDG speed and the setup of the tachometer. The licensee postulated that the EDG speed might have been raised too quickly and the actual overspeed trip setpoint not accurately captured by the tachometer. The test was performed a second time and the EDG tripped on

overspeed at approximately 1000 rpm, within the acceptance criteria. During the second test, the EDG speed was raised slower and the trip speed as read on the tachometer was confirmed by two hand held strobe lights. The overspeed test was subsequently performed a third time which confirmed an overspeed trip setpoint of approximately 1000 rpm.

The licensee reviewed the results of all three tests to determine the operability of the EDG overspeed trip function. The licensee concluded that the first overspeed test was not accurately performed and the second two tests verified the operability of the EDG. The licensee was evaluating the need for changes to the test procedure to improve the testing methodology.

c. Conclusions

The 32 EDG overspeed trip test was well performed by licensee personnel. A discrepancy with the test results was adequately evaluated by the licensee to confirm that an unsatisfactory first test was caused by the testing methodology.

M1.7 Safety Injection Pump Surveillance Testing

a. Inspection Scope (61726)

On February 26, 1997, the inspector observed licensee personnel perform a monthly safety injection pump functional test.

b. Observations and Findings

The inspector noted a good identification by the control room supervisor (CRS) that a temporary procedure change was not appropriate for the surveillance prior to the test. The deficiency was identified by a deviation event report (DER) and appropriate corrective actions were taken to remove the procedure change prior to performance of the test.

The inspector observed a comprehensive leak check of the pressurized portions of the safety injection piping by the nuclear plant operator (NPO). The leakage identified was acceptable and below the required allowable leakage.

The inspector noted that the procedure acceptance criteria was consistent with the technical specification surveillance requirement. During review of the acceptance criteria, the inspector questioned the acceptability of the low recirculation flowrate for the safety injection (SI) pumps (less than 5% of rated flow). The inspector used guidance in NRC Temporary Instruction (TI) 2515/105, "Inspection of Licensee Activities in Reference to NRC Bulletin 88-04 - Potential Safety-Related Pump Loss" to evaluate licensee past evaluations. Licensee actions in response to NRC Bulletin 88-04 for minimum recirculation flow was acceptable as long as the time on recirculation was limited to less than 30 minutes. This response had been previously incorporated into the surveillance procedure, and was verified by the inspector on February 26, 1997.

c. Conclusions

A good questioning attitude by the CRS identified that a temporary procedure change was inappropriate for the safety injection surveillance procedure. Good implementation of the surveillance procedure by a NPO was also noted. NYPA's response to NRC Bulletin 88-04 was appropriate and provided adequate justification for the SI pumps' recirculation flow rate.

III. Engineering

E1 Conduct of Engineering

E1.1 Control Building Ventilation

a. Inspection Scope (37001)

The inspectors assessed the control building ventilation system to verify that the system was maintained and operated in a manner consistent with its design and licensing basis. The assessment included a review of the design basis document (DBD), walkdown of the system configuration, and review of annunciator response and operating procedures.

b. Findings and Observations

The control building ventilation system supports the operability of the 480 volt safeguard buses, and other safety-related electrical equipment located either in the 15 foot and 33 foot elevations of the control building. The system primarily consists of fire dampers, electrical heaters, and exhaust fans. The 31 and 32 control building exhaust fans remove air from the 33 foot elevation of the control building, and the 33 and 34 exhaust fans remove air from the 15 foot elevation of the control building.

In the past, the licensee has identified design vulnerabilities with the control building ventilation system as documented in licensee event report (LER) 93-048. The LER noted that a single failure of the 15 foot control building ventilation system resulting in elevated switchgear temperatures. Corrective actions included an extent of condition review (which identified similar deficiencies with auxiliary feedwater ventilation system and the 33 foot control building ventilation system), realignment of the 33 and 34 exhaust fans to safeguards electrical buses, control room alarms for high room temperatures, and the fan control components to quality assurance (QA) Category I. The above design deficiencies were identified during the licensee's Individual Plant Examination (IPE) reviews and were recently documented to the NRC staff in a letter dated March 4, 1997, Comments on Draft NUREG-1560. The inspector confirmed that the corrective actions had been implemented by walkdown of the system, verification of control room alarm functions, and review of design drawings.

The inspectors noted that no explicit requirement existed in either the Technical Specifications or the licensee's operational specifications to control the operability of control building exhaust fans. The inspector learned that procedure SOP-V-6, "Miscellaneous Heating and Ventilation Systems," provided general instructions in the operation and configuration of the four exhaust fans. The licensee credited one of two electrical penetration exhaust fans to maintain the 33 foot control building less than designed temperature; however no controls existed to maintain open the fire door that communicates between the 33 foot control building elevation and the electrical tunnel or to precluded securing both electrical tunnel exhaust fans.

Annunciator Response Procedures (ARPs)-13, High Room Temperature Control Building Elevation 15 Foot and High Room Temperature Control Building Elevation 33 Foot, provide compensatory measures on elevated room temperatures and, if necessary, require plant shutdown if the 15 foot elevation reached 117°F and 120°F for the 33 foot elevation. Engineering calculation IP3-CALC-CBHV-00906, Calculation of IP3 Switchgear Room Temperatures in the Event of a Loss of Ventilation, determined that if compensatory measures were taken as required within ARP-13, the calculated room temperature would be maintained less than 117°F for the 15 foot elevation of the control building. The calculation also concluded that forced ventilation of the 480 volt switchgear room was necessary to preclude a reactor trip or station blackout if postulated breaker operation occurs.

The inspector learned that the four exhaust fans are each rated for 50% capacity. The rated capacity for the 33 and 34 exhaust fans according to design basis document IP3-DBD-315 are 25,000 cubic feet per minute (cfm). According to the system engineer, there was no periodic surveillance that the design air flow is developed from the 33 or 34 exhaust fan. The engineer stated that reliance on fan vibrational testing, and design controls to maintain the same horsepower and speed for replacement fans was sufficient to ensure that degradation in performance was identified, or if replaced, they were replaced with the like kind. This issue was similar to the lack of periodic flow testing for the emergency diesel generator exhaust fans. The review of acceptability for the lack of periodic flow testing will be followed up with as documented in NRC inspection report 50-286/96-12.

c. Conclusions

The control building ventilation system is needed to support the operability of the 480 volt safeguard buses, and other safety-related electrical equipment located either in the 15 foot and 33 foot elevation of the control building. The inspector confirmed that past corrective actions had been implemented by walkdown of the system, verification of control room alarms function, and review of design drawings. The lack of periodic flow testing was similar to the lack of periodic flow testing for the emergency diesel generator exhaust fans. The review of acceptability for the lack of periodic flow testing will be followed up via URI 96-12-03.

E2 Engineering Support of Facilities and Equipment

E2.1 Maintenance Rule Followup

a. Inspection Scope (92902)

An inspection of the Maintenance Rule implementation at Indian Point 3 (IP3) during December 1996 noted several program weaknesses for which corrective actions were in progress. The inspectors reviewed the status of these corrective actions to assess licensee efforts to continue to improve the program.

b. Observations and Findings

The NRC maintenance rule inspection, as documented in inspection report 50-286/96-80, noted several program weaknesses. These included 1) the identification and documentation of maintenance rule system boundaries, 2) the documentation of the basis of functional failures for historic deficiencies, 3) the frequency of data collection and review for system performance monitoring, and 4) system performance criteria consistent with probabilistic risk analysis assumptions.

On March 6, 1997, the inspectors reviewed the status of corrective actions for these findings with the IP3 maintenance rule coordinator. At this time, the licensee was still in the process of revising and developing the program documents to establish the improved processes. The inspector concluded that the program changes which will be covered by these procedures should adequately address many of the previously identified weaknesses. The inspector further noted that significant effort in developing these procedure revisions had continued since the NRC maintenance rule inspection.

The inspector noted that approximately 75% of the maintenance rule systems had system boundaries developed. Further, the historic DER review to document maintenance preventable functional failure (MPFF) determinations had been completed for a similar number of systems. This DER review resulted in changes to previous MPFF determinations, which the licensee appropriately reviewed for changes in the a(1) and a(2) system classifications. The licensee had revised a(1) system action plans to incorporate additional MPFFs which resulted from these reviews and documented necessary corrective actions. An analysis of the maintenance rule performance criteria against the PRA was completed by the licensee on February 25, 1997, with changes recommended for some systems.

The licensee currently plans to implement all new and revised program procedures and to revise the maintenance rule system basis documents as necessary prior to the start of the upcoming refueling outage in May 1997.

c. Conclusions

The inspectors noted that significant effort by licensee engineering personnel continued in implementing and improving the maintenance rule program. Significant effort to develop and implement appropriate corrective actions to address program weaknesses continued since the NRC inspection in December 1996. The majority of these corrective actions were scheduled to be completed by May 1997. System engineering continued to demonstrate good program understanding and ownership.

E2.2 Single Failure Vulnerability in 125 Volt DC System

a. Inspection Scope (37551)

On March 13 1997, the licensee identified that use of the 35 battery charger to supply direct current (DC) loads created the possibility that a single-failure could render an unaffected diesel generator inoperable during design basis conditions. The inspection scope evaluated the licensee's performance in response to this identified design vulnerability affecting the 125 volt DC system.

b. Observations and Findings

On March 13 1997, NYPA determined that past operation of the backup DC battery charger (35 Battery Charger) had the potential of placing the plant outside its design basis. If a single failure occurred on the 33 EDG or associated power scheme while the backup battery charger was used in lieu of a normal charger for the battery supporting one of the other two EDGs, then after its battery depletion (greater than 2 hours), its EDG would not continue to support safety bus loads unless restoration of the normal charger or offsite power occurred. The inspector confirmed by review of the schematic for the exciter voltage regulator (drawing 5904310750 ALCO) that the self-excited field would short circuit when a DC relay (K1) changes state due to reduction in battery voltage.

On March 12, 1997, licensee personnel assigned to the Improved Technical Specification Program raised questions on the basis of 2 hour duty cycle for the station batteries and the controls of the battery chargers. The licensee confirmed that a design vulnerability existed with the use of the spare battery charger and reported this issue to the NRC on March 13, 1997. The inspector verified that the licensee had promptly removed the 35 battery charger from use with protective tagging order (PTO) 97-638.

The current design appears to be inconsistent with FSAR section 8.2. Specifically, the FSAR documents that the DC system is designed such that a single random failure will not result in the loss of redundant DC power and/or distribution panels due to a common mode electrical failure. The item is considered unresolved **(URI 97-01-04)** pending NRC review of the documented design basis of the battery chargers, and the adequacy of past nuclear safety evaluations. The inspector learned that the spare battery charger was installed in the facility in 1985 under modification MOD-03-063EL, "Battery Charger 31, 32, Replacement and Installation

of Battery Charger 35." The nuclear safety evaluation (NSE) that was approved for the modification concluded that no unreviewed safety question existed and that the modification did not increase the probability of occurrence or consequence of an accident or malfunction of structures, systems, or components important to safety previously evaluated in the FSAR.

On March 19, 1997, the licensee developed action plan (IDEE-APL-97-006) to address corrective actions in response to this single failure vulnerability. The action plan was reviewed by the inspector and concluded to be comprehensive. It consisted of fifteen individual items with scheduled completion between March 28 through December, 1997. Each of the proposed items had action commitment tracking system (ACTS) items assigned. Short-term actions involve the development of contingencies to allow use of the spare battery charger 35 as a replacement for chargers 31, 32, 33, and 34, and identify past use of battery charger 35 and its impact on operability of the DC system. Other proposed actions include evaluation of the seismic classification of the chargers, evaluate the similar Indian Point Unit 2 design, determine the DC equipment necessary to be powered 2 hours after a design basis event, prepare a 10 CFR 50.59 evaluation of the battery chargers to define their design basis and revise applicable procedures and the FSAR descriptions.

The inspector concluded that the licensee's procedure SOP-EL-3, "Battery Charger and 125 Volt DC System Operations," allowed the use of the spare battery charger for any of the four remaining chargers. Licensee review concluded that procedural actions allowing the use of the spare charger has existed since revision 10 to SOP-EL-3 in June 1989. During the inspection period, the licensee prepared DER 97-0628 to document that previous revisions to SOP-EL-3 could not be located in their nuclear records vaults.

The inspector reviewed the procedural controls that exist to reenergize the battery chargers following off-normal events or events requiring use of the emergency operating procedures (EOPs). None of the procedures direct the operators to restore the spare battery charger if used to supply another safeguards bus. Off-normal operating procedure (ONOP)-EL-4, "Loss of Offsite Power," requires opening the non-safety grade motor control centers (MCCs) to reset all breakers prior to loading it on a safety-related bus. When loaded, certain critical loads, including the battery chargers, are loaded back on the MCCs. Numerous EOPs reference procedure SOP-EL-15, "Operation of Non-Safeguards Equipment During Use of EOPs." One of the objectives of SOP-EL-15 is to establish the loading of non-safeguards equipment onto the 480 volt buses. Step 4.1.1.2 provides alignment of the MCCs on any bus being supplied by its associated EDG. In addition to the procedure review above, the inspector noted that the 31, 32, 33, and 34 battery chargers alarm in the control room based on a variety of malfunctions; however the spare charger has no remote alarm capability.

At the end of inspection period, the licensee initiated reviews of historical times when the spare battery charger was supplying other DC distribution panels. Inspector review of the data thus far indicated that the spare charger was routinely

used to supply other safeguard DC buses either to support surveillance testing, or preventative and corrective maintenance. Operator log entries indicated that, at least since December 1996, the spare charger had been aligned to another safeguards bus. Additionally, the inspector learned that on March 13, 1997, that operations personnel had aligned the 35 battery charger to the 32 DC distribution panel for approximately 14.5 hours to support preventative maintenance on the 32 battery charger. The maintenance was performed to calibrate the voltmeter and ammeter.

No specific technical specification requirement existed that acknowledged the spare battery charger or the plant design of four battery chargers and batteries. Technical specification (TS) 3.7.A.7 requires that three batteries and three chargers and the DC distribution systems be operable above a cold shutdown condition. Further TS 3.7.B.4 allows one battery to be inoperable for 2 hours provided that the other batteries and the three battery chargers remain operable with one battery charger carrying the DC load of the failed battery supply system.

c. Conclusions

A good identification of the design deficiency was noted in that the use of the 35 battery charger was not consistent with FSAR section 8.2. Specifically, the FSAR documents that the DC system is designed such that a single random failure will not result in the loss of redundant DC power and/or distribution panels due to a common mode electrical failure. The item is considered unresolved **(URI 97-01-04)** pending NRC review of the documented design basis of the battery chargers. No specific TS requirement exists that acknowledges the spare battery charger or the plant design of four battery chargers and batteries.

E2.3 Single Failure Vulnerability for Hydrogen Monitoring System

a. Inspection Scope (37551)

On January 23, 1997, during a review of containment isolation provisions in response to NRC Generic Letter 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions," a system engineer identified a single failure vulnerability with the containment isolation valves for the hydrogen monitoring system. The inspectors reviewed the licensee reportability evaluation, corrective actions, past surveillance testing results and duration, and apparent cause for this design deficiency.

b. Findings and Observations

A single-failure vulnerability existed since each of the series containment isolation valves received their power from the same engineered safety system (ESS) logic train. The safety consequence of this issue was lack of single failure protection when the hydrogen monitoring containment isolation valves were open during periodic technical specification surveillances. The containment isolation valves are one inch solenoid operated valves.

The hydrogen monitoring system is utilized during post loss-of-coolant accident (LOCA) conditions to measure hydrogen accumulation within the vapor containment. The technical specification (TS) basis stated hydrogen concentrations are expected to approach 3% by volume approximately 10 days after a LOCA.

The containment isolation valves for the hydrogen monitoring system had periodically been open when containment integrity was required for monthly functional testing, and quarterly valve stroke time testing. The licensee had previously entered into the TS action statement for the weld channel & containment penetration pressurization system (WCCPPS) during these surveillances, however had not entered into the requirement for containment integrity. According to the system engineer, procedures 3PT-M68A and 3PT-M68B, "Hydrogen Monitor System Functional Test HCMC-A and HCMC-B," take approximately seven hours to perform during which the containment isolation valves are open. This duration exceeds the one hour action to restore containment integrity as required of TS 3.6.A.3. However, a procedure precaution step in 3PT-M68A and 3PT-M68B states should a containment isolation occur, immediately purge the system with nitrogen and place the monitor system in standby.

The apparent cause for this issue was a personnel error during the development of TS amendment 102 which determined that the valves should be "automatic" containment isolation valves vs. "non-automatic" isolation valves. The TS amendment request was to reflect plant changes as modified in plant modification 80-3-053. The licensee modified the facility (modification 80-3-053) in the early 1980's in response to NUREG 0737 item II.F.1.6 to change the isolation valves from local manual containment isolation valves, to remotely operated solenoid valves.

The licensee reported this design deficiency to the NRC on January 23, 1997, as a condition that potentially could place the plant outside its design basis, and a followup to the event was documented in LER 97-002-00 dated February 21, 1997. Inspector review of the reports concluded that they accurately described the event and were initiated in a timely manner.

Licensee corrective actions verified by the inspector included caution tagging the hydrogen monitoring containment isolation valves, procedural revisions to 3PT-M68A & M68B to restructure the functional testing for performance within the one hour action statement of TS 3.6.A.3, performance of a failure modes and effects analysis (FMEA) and preparation of a 10 CFR 50.59 evaluation. The FMEA concluded that no credible failure mode exists (e.g. electrical hot short) other than having the valves open during a surveillance test. The licensee committed to submittal of a proposed TS revision to include the hydrogen monitoring system sample lines, and updating the FSAR.

This licensee identified and corrected violation of technical specification 3.6.A.3 , is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

c. Conclusions

The inspectors noted good identification of an old design problem by the licensee. This licensee identified violation of technical specification 3.6.A.3 , is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

E2.4 Environmental Qualification of Equipment Outside Containment

a. Inspection Scope (37551)

On February 20, 1997, a licensee contractor identified that the most limiting break size for mass energy release into the auxiliary feedwater building was non-conservative. The inspectors evaluated the quality of the licensee's operability evaluation for qualified electrical equipment important to safety outside containment.

b. Findings and Observations

Upon discovery of the non-conservative analysis, the licensee documented the deficiency per deviation event report (DER) 97-0371. An operability evaluation was completed within 24 hours of problem identification. Affected components included solenoid valves, power and control cables by various manufacturers, limit switches, terminal blocks, and transducers used in the main steam and feedwater systems. The operability evaluation compared the peak qualified temperatures vs. expected peak room temperatures and applied a thermal lag analysis to the component surface temperature. The thermal lag analysis added a penalty from the revised mass energy release to verify qualification of the affected components. The licensee bounded the revised mass energy release affects based on another reactor auxiliary building profile. Site specific analysis were in progress at the end of the period. NRC regional specialists review and discussion with the licensee concluded that the operability evaluation was acceptable.

c. Conclusions

The licensee demonstrated a good identification of this non-conservative analysis, and NRC review concluded that the operability evaluation was acceptable.

E7 Quality Assurance in Engineering Activities

E7.1 Design/Licensing Basis Discrepancies

a. Inspection Scope (37551)

The inspectors assessed the effectiveness of NYPA's ability to identify design and licensing basis discrepancies. This assessment involved the review of deviation event reports (DERs) associated with design and licensing basis discrepancies from October 1, 1996 through March 14, 1997.

b. Observations and Findings

The inspectors reviewed the DER data base for entries pertaining to the final safety analysis report (FSAR), design basis, or design basis documents (DBDs). After screening the entries to eliminate those which did not apply, the inspectors noted about 51 DERs associated with the design or licensing basis issues. About 64% of these issues were identified by the licensee's engineering groups. An additional 23% were identified by either operations, maintenance or support services departments. The quality assurance organization and operations review group identified about 4% and the NRC identified about 9%.

Slightly over 50% of the DERs were associated with conflicts between design, procedures or calculations with final safety analysis report. Of the 51 DERs, two DERs resulted in operability or reportability issues. The licensee identified both these operability or reportability issues.

c. Conclusions

Based on the number of issues being raised through the DER system, the licensee was actively and appropriately identifying design and licensing basis issues. The percentage of issues being identified by the engineering groups was consistent with a well functioning organization.

E7.2 Final Safety Analysis Report Validation

a. Inspection Scope (37551)

The inspectors verified selected Final Safety Analysis Report (FSAR) descriptions on the residual heat removal system controlled through various procedures.

b. Observations and Findings

The inspector compared the failure mode of various residual heat removal (RHR) containment isolation valves between the FSAR description and the plant drawings. For containment penetrations No. 4 and No. 5, the inspector noted agreement in the valve failure mode.

The surveillance testing controls for the containment sump suction motor operated valves were consistent with procedure 3PT-CS-35, "Containment Sump RHR Suction Isolation Valve Functional Test." Specifically, only one valve at a time was cycled, and independent verification of post-test valve positions was required.

The FSAR Table 6.2-6 states that the RHR heat exchangers are designed for 200 thermal cycles between 85 to 350°F. Licensee procedure 3PT-M51, "Plant Operation Information," was maintained current with the total number of thermal cycles on the RHR heat exchangers as of February 1997 recorded at 45. The allowable procedural limit was consistent with FSAR Table 6.2-6.

c. Conclusions

A review of selected FSAR descriptions for the RHR system found that they were controlled consistent with licensee procedures or drawings.

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) Inspector Follow Item 50-286/96008-04

a. Inspection Scope (92903)

The inspector reviewed NYPA's service water system assessment and planned corrective actions. The review included a walkdown of the safety-related portions of the system.

b. Findings and Observations

NRC inspection report 50-286/96-08 documented an inspector follow item concerning NYPA's long term action plan to address the material condition of the service water system. NRC inspection report 50-286/96-10 requested the licensee to provide their assessments and planned corrective actions to address the service water issues on the public docket. On January 10, 1997, NYPA submitted their service water assessment and improvement plan.

NYPA determined that the occurrence of service water leaks increased over the last few years. The causes for the leaks affected small bore piping and valves more than larger diameter piping. Failure mechanisms in the service water system included galvanic corrosion, general pitting in stainless steel pipes and valves, crevice corrosion in gaps between two sections of welded cement lined carbon steel pipe, general corrosion wastage in carbon steel valve bodies and erosion in carbon steel pipes in highly turbulent areas.

Because small bore piping and valves were more affected, the licensee intended to focus on the replacement of these components during the upcoming refueling outage (RO9). About 2,000 feet of small bore piping and 100 valves are planned for replacement or installation. Some of the valves which are planned for installation provide isolation to allow continued component replacement during the operating cycle. Also during RO9, additional pipe weld inspections are planned. These include examinations on about ten percent of the large bore welds inside containment, and 25 welds outside containment. Additionally, the interior of 400 feet of underground 24-inch piping was planned for inspection. Replacement of large bore piping will be contingent on the results of the non-destructive examination. In additional to the material improvements in the service water system, NYPA's action plan also specified continued or improved corrosion and bio-fouling monitoring, heat exchanger testing, and procedural and design basis updates.

During the system walkdown, the inspector noted that the material problems of the service water system of the service water system were well identified by the licensee. The deficiencies were identified by problem identification description tags, and entered into the work control system. A sample of ten PIDs indicated that the work requests were coded for RO9.

c. Conclusions

The inspector concluded that the licensee's assessment and action plan was appropriate to address the material condition issues associated with the service water system. The plans to replace the small bore service water piping and valves were extensive. The plans to continue assessment of the service water condition coupled with a plans for continued replacement of significant portions of the system after the upcoming outage provided assurance that the system will be maintained appropriately. This inspector follow item is closed.

E8.2 (Closed) LER 50-286/97-02, Containment Isolation Valves for the Hydrogen Monitoring System

This event was reviewed and documented in section E2.3 this report.

IV. Plant Support

S1 Conduct of Security and Safeguards Activities

a. Inspection Scope (81700)

Determine whether the security program, as implemented, met the licensee's commitments in the NRC-approved security plan (the Plan) and NRC regulatory requirements. The security program was inspected during the period of February 18-21, 1997. Areas inspected included: effectiveness of management control; management support and audits; protected area detection equipment; alarm stations and communication; testing, maintenance and compensatory measures; and training and qualification.

b. Observations and Findings

Management support was evident by the purchase and installation of 104 new closed circuit television monitors in the alarm stations, the replacement of existing intrusion detection aids at the vehicle gates, and approved funding for the procurement of new x-ray equipment to enhance personnel processing. Audits were thorough and in depth, and findings and recommendations were promptly considered and implemented, where possible.

Alarm station operators were knowledgeable of their duties and responsibilities, and the assessment aids had excellent picture quality. Security training was being performed in accordance with the NRC-approved training and qualification (T&Q) plan and management controls for identifying, resolving, and preventing

programmatic problems appeared to be effective as demonstrated by a reduction in security-related events. Protected area (PA) detection equipment satisfied the Plan and maintenance of equipment was being performed in a timely manner as evidenced by minimal compensatory posting associated with non-functioning equipment.

c. Conclusions

The inspector determined that the licensee was conducting its security and safeguards activities in a manner that protected public health and safety and that the program, as implemented, met the licensee's commitments and NRC requirements.

S2 Status of Security Facilities and Equipment

S2.1 Protected Area Detection Aids

a. Inspection Scope (81700)

Conduct a physical inspection of the PA intrusion detection systems (IDSs) to verify that the systems were functional, effective, and met licensee commitments.

b. Observations, Findings and Conclusion

On February 19, 1997, the inspector observed the testing of the IDSs and determined they were functional and effective, and were installed and maintained as described in the Plan.

S2.2 Alarm Stations and Communications

a. Inspection Scope (81700)

Determine whether the Central Alarm Station (CAS) and Secondary Alarm Station (SAS) are: (1) equipped with appropriate alarm, surveillance and communication capability, (2) continuously manned by operators, and (3) use independent and diverse systems so that no single act can remove the capability of detecting a threat and calling for assistance, or otherwise responding to the threat, as required by NRC regulations.

b. Observations and Findings

Observations of CAS and SAS operations verified that the alarm stations were equipped with the appropriate alarm, surveillance, and communication capabilities. Interviews with CAS and SAS operators found them knowledgeable of their duties and responsibilities. The inspector also verified through observations and interviews that the CAS and SAS operators were not required to engage in activities that would interfere with the assessment and response functions, and that the licensee had exercised communication methods with the local law enforcement agencies as

committed to in the Plan. Additionally, the inspector evaluated the effectiveness of the assessment aids, by observing on closed circuit television (CCTV) the walkdown of the protected area. The inspector determined that the assessment aids in both alarm stations had excellent picture quality.

c. Conclusions

The alarm stations and communications met the licensee's Plan commitments and NRC requirements.

S2.3 Testing, Maintenance and Compensatory Measures

a. Inspection Scope (81700)

Determine whether programs were implemented that will ensure the reliability of security related equipment, including proper installation, testing and maintenance to replace defective or marginally effective equipment. Additionally, determine that when security related equipment fails, the compensatory measures put in place are comparable to the effectiveness of the security system that existed prior to the failure.

b. Observations and Findings

The inspector reviewed maintenance records for security-related equipment and found that documentation was on file to demonstrate that the licensee was maintaining systems and equipment as committed to in the Plan. A priority status was being assigned to each work request and repairs were normally being completed in a timely manner for all work necessitating compensatory measures. However, the inspector noted 15 "requests for engineering" dating from May 1993 to the present. The requests involved the replacement of door alarms on several doors which would eliminate the need for compensatory posting during outages, the installation of permanent lighting to eliminate temporary lighting presently in place, and modifications to several IDSs which would reduce the nuisance alarm rates. The items that requested engineering support did not normally require compensatory measures to occur. However, program effectiveness would be enhanced when they are completed.

c. Conclusions

Documentation on file confirmed that security equipment was being maintained as required. Repair work was timely and the use of compensatory measures was found to be appropriate and minimal. The inspector was informed by security management that several of the engineering requests were being addressed.

S5 Security and Safeguards Staff Training and Qualification

a. Inspection Scope (81700)

Determine whether members of the security organization are trained and qualified to perform each assigned security-related job task or duty in accordance with the T&Q Plan.

b. Observations and Findings

The inspector randomly selected and reviewed T&Q records for 18 security force members (SFMs). Physical and firearms requalification records were inspected for armed SFMs and security supervisors. The inspector found that the training had been conducted in accordance with the T&Q Plan and was properly documented.

The inspector noted that eight supervisors with the rank of coordinator or sergeant were responsible for annually requalifying subordinates on 12 of 20 required critical tasks. The inspector questioned how consistency in the requalification process was being assured since supervisors were not required to participate in a requalification refresher training program. Historically, though not required by the T&Q plan, supervisory personnel with the rank of coordinator or sergeant received annual requalification training, but the licensee discontinued that practice in 1995. The inspector discussed this with security management, particularly with respect to ensuring consistency in the evaluation of critical task testing. Additionally, the inspector interviewed a number of SFMs to determine if they possessed the requisite knowledge and ability to carry out their assigned duties.

c. Conclusions

The inspector determined that training had been conducted in accordance with the T&Q Plan. Based on responses to the inspector's questions, the combined training provided by the security training staff and security supervisory staff was found to be effective. The licensee evaluated the inspector's training consistency concern, and agreed that annual supervisor refresher requalification training would be prudent and implemented actions to address the concern. Those actions included immediate requalification training on all critical tasks for the coordinators and sergeants. That action was scheduled for completion during the week of February 24, 1997. Additionally, as an enhancement, the licensee stated that it intends to submit a T&Q plan change by April 30, 1997, to reflect that change.

S6 Security Organization and Administration

a. Inspection Scope (81700)

Conduct a review of the level of management support for the licensee's physical security program.

b. Observations and Findings

The inspector reviewed various program enhancements made since the last program inspection, which was conducted in April 1996. These enhancements included the installation of 104 new CCTV monitors in the alarm stations, the replacement of existing intrusion detection aids at the vehicle gates, and approved funding for the procurement of new x-ray equipment to enhance personnel processing. The inspector reviewed the Security Manager's position in the organizational structure and reporting chain. The Security Manager reports to the General Manager Plant Support, who reports directly to the Site Executive Officer. Additionally, the inspector noted that the fitness-for-duty and access authorization programs, being safeguards related, report directly to the Security Manager.

c. Conclusions

Management support for the physical security program was determined to be effective.

S7 Quality Assurance in Security and Safeguards Activities

S7.1 Effectiveness of Management Controls

a. Inspection Scope (81700)

Determine if the licensee has controls for identifying, resolving and preventing programmatic problems.

b. Observations and Findings

The inspector reviewed the licensee controls for identifying, resolving, and preventing security program problems. These controls included the implementation of a departmental self-assessment program and the performance of the NRC-required annual quality assurance (QA) audits. The licensee also utilizes industry data, such as violations of regulatory requirements identified by the NRC at other facilities, as criteria for self-assessment, as well as 21 established modules that were developed as part of the departmental self-assessment program.

c. Conclusions

A review of 32 self-assessments conducted between July 1 - December 31, 1996, and applicable documentation, indicated that performance errors were being

minimized and that controls were effectively implemented, in a timely manner, to resolve potential weaknesses.

S7.2 Audits

a. Inspection Scope (81700)

Review the licensee's QA report of the NRC-required security program audit to determine if the licensee's commitments as contained in the Plan were being satisfied.

b. Observations and Findings

The inspector reviewed the 1996 QA audit of the security program, conducted February 20 - March 8, 1996, (Audit No. 96-03-I). The audit was found to have been conducted in accordance with the Plan. To enhance the effectiveness of the audit, the audit team included two independent security specialists. The audit report identified two deficiencies and eight recommendations. One deficiency involved security department directives not being furnished to the document control department; the second deficiency involved minor inconsistencies in the area of unarmed self-defense training. The recommendations were not indicative of programmatic weaknesses but, if corrected, would enhance program effectiveness. The audit results had been disseminated to the appropriate levels of management. The inspector determined, based on discussions with security management and a review of the responses to the deficiencies and recommendations, that the corrective actions were effective.

c. Conclusions

The review concluded that the audit was comprehensive in scope and depth, that the findings were appropriately distributed and addressed and that the audit program was being properly administered.

S8 Miscellaneous Security Items

S8.1 Review of Final Safety Analysis Report (FSAR) (81700)

A recent discovery of a licensee operating its facility in a manner contrary to the FSAR description highlighted the need for a special focused review that compares plant practices, procedures, and parameters to the FSAR description. Since the FSAR does not specifically include security program requirements, the inspectors compared licensee activities to the NRC-approved physical security plan, which is the applicable document. While performing the inspection discussed in this report, the inspector reviewed Section 7.3 of the Plan, Revision 15, dated April 26, 1996, titled, "Uninterruptable Power Source." The inspector determined, based on discussions with security supervision and engineering, reviews of electrical diagrams, and by conducting a systems walkdown, that the security uninterruptable power source was installed and maintained as described in the Plan.

F1 Control of Fire Protection Activities

F1.1 Fire Risk Evolutions

a. Inspection Scope (64704)

The inspectors reviewed the established administrative processes for controlling and evaluating fire hazards including the interaction of combustible and flammable materials and ignition sources. This review was conducted to verify that adequate guidance and proper authorization requirements existed for identifying and limiting fire risk.

b. Observations and Findings

The inspectors found that the process for controlling ignition sources included the use of a permit system for minimizing the risk of fire hazards associated with welding and grinding. No permit system existed for the use and storage of combustible materials, however, the inspectors noted that administrative controls were established through procedures and periodic housekeeping inspections to limit the amount of combustibles that plant areas may be exposed to.

The inspectors found fireloading to be appropriately maintained within the fire hazards analysis (FHA) design, however, the inspectors credited the tenaciousness of the fire protection staff for the good combustible control. Daily plant tours and collective evaluations of all fire risk evolutions being performed in safety-related areas of the plant were not procedurally required by NYPA. Authorization for hotwork was granted by work group supervisors per established administrative procedures. As such, the fire protection department was not involved in hotwork activities and only received copies of the permits, many times after the work has been completed. The inspectors observed that no person was collectively evaluating all hotwork activities performed throughout the plant. In addition, the inspectors noted that the current permit system only required the fire protection supervisor's signature authorizing hotwork for the electric tunnels or cable spreading rooms and not other vital plant areas.

c. Conclusions

The inspectors concluded that adequate control had been established governing the use and storage of combustible and flammable materials within the plant. The inspectors credited the diligence of the fire protection staff rather than the established procedures for the effectiveness of the control demonstrated throughout the plant. The inspectors concluded that the established processes and procedures governing hotwork and combustible materials could be improved to provide enhanced oversight and protection against fires.

F2 Status of Fire Protection Facilities and Equipment

F2.1 Facility Tour

a. Inspection Scope (64704)

The inspectors toured accessible vital and non-vital areas of the site and inspected the fire protection water suppression systems, fire pumps, piping and distribution systems, post indicator valves, contents of indoor fire protection storage cabinets and outdoor hose houses, emergency lighting patterns for access and egress routes for selected safety-related plant equipment areas, and the condition of fire brigade equipment.

b. Observations and Findings

The inspectors verified by observation that the tank gauges registered full on fire equipment and fire extinguishers registered fully charged. No deterioration on fire hoses was identified and hose couplings appropriately depicted the dates of required hydrostatic tests. The inspectors observed that fire doors latched properly and were not propped open prohibiting closure. Fire brigade members' protective clothing and gear were found in good condition and were adequately organized in the turn-out room and fire brigade cabinets. Access to gear was not restricted.

The inspectors determined that the housekeeping conditions in plant areas containing safety-related equipment or components was excellent. Distribution loop valves for the fire suppression system were aligned properly. No examples were noted involving the improper control of combustibles, improper storage of radioactive materials, or improper control of hazardous chemicals.

Based on interviews with personnel, both within and outside the fire department, the inspectors concluded that licensee personnel were knowledgeable of station policy and procedures for reporting fires, firewatch duties, and proper response to fires. Additionally, the inspectors noted that communications had been established between the fire protection supervisor and other plant counterparts within Region I.

c. Conclusions

The inspectors concluded that fire protection equipment conditions were good. Housekeeping was excellent and personnel interviewed were knowledgeable of station policy and procedures. Based on this tour, the inspectors concluded that fire systems were capable of providing protection against fires.

F4 Fire Protection Staff Knowledge and Performance

F4.1 Fire Brigade Drills

a. Inspection Scope (64704)

The inspectors observed an unannounced fire brigade drill to evaluate the brigade's effectiveness and understanding of fire attack strategies. The drill was conducted to demonstrate the following:

- an understanding of the fire attack strategy;
- the ability to assess the fire properly;
- an awareness of vital equipment in the area;
- effective communication with other fire brigade members;
- an awareness of additional hazards in the fire area; and
- search and rescue techniques.

b. Observations and Findings

The inspectors observed a fire drill on February 12, 1997. The drill scenario involved a failure of the main turbine auxiliary oil pump causing lube oil to spray out of the top of the reservoir. The oil sprayed on the adjacent main turbine vapor extractor motor, became ignited, dripped, and pooled down onto the lower plant elevation.

The inspectors determined based on drill observations and post drill discussions with responding brigade members, that the performance of the drill participants was good. This determination was based on the following:

- use of an appropriate suppressant type on the fire;
- command and control by the fire brigade leader evident by his actions after the initial assessment of the fire scene and the delegation of assignments to fire brigade members;
- teamwork displayed by fire brigade members (i.e. fire hoses were properly stretched, positioned, and manned to cover the fire on both elevations, ventilation was properly established, and all fire brigade members carried equipment to the scene); and
- communications among brigade members.

The inspectors found the quality of the critique following the drill effective for providing constructive feedback to the brigade regarding individual performance. Comments made by the drill critiquer/evaluator were positive, reinforced the actions of the brigade members, and supported the decisions made by the fire brigade leader. Additionally, the critiquer provided guidance on the establishment of communications in the event the plant paging system was inoperative.

c. Conclusion

The inspectors determined that the training program provided for fire brigade members was effective for preparing them to combat fires. The observed good performance of the fire brigade members during the drill further supported the effectiveness of the training.

F5 Fire Protection Staff Training and Qualification

F5.1 Fire Brigade

a. Inspection Scope (64704)

The inspectors reviewed the program requirements, medical approvals, and training provided for fire brigade members. Completed training records of selected personnel were reviewed to verify their qualification for duty.

b. Observations and Findings

The inspectors determined by review of training records and discussions with licensee personnel that several fire brigade members did not receive the annual practice sessions on the proper methods of fighting various types of fires within the required time period. Specifically, 39 of the 119 fire brigade members listed on the 1996 fire brigade record roster did not complete hands-on practice training at the Rockland County Training Center within a one year period, as specified in NYPA's Fire Protection Safety Evaluation Report, Supplement 1, dated May 2, 1980 and amended license (No. DPR-64) condition 2.H. Five fire brigade members had exceeded the training requirement by five months. This failure to fulfill the annual training requirement constituted a violation of NRC requirements as presented in the attached Notice. **(VIO 97-01-05)**

In addition, the inspectors verified that 20 fire brigade members selected for review had successfully completed the required training courses, drills, and respirator training and passed their annual medical physicals.

c. Conclusion

The inspectors concluded that the licensee's interpretation of the annual training program requirement for fire brigade members to participate in practice sessions in actual fire extinguishment failed to fulfill the training requirement presented in the NRC supplemental fire protection safety evaluation report, dated May 2, 1980. This

failure to fulfill the requirement resulted in a violation. With this exception, the inspectors concluded that adequate measures had been implemented for maintaining the qualification of fire brigade members.

F7 Quality Assurance in Fire Protection Activities

F7.1 Audits and Surveillances

The inspector reviewed the three most recent audits completed to satisfy the technical specification requirements and surveillances to evaluate the effectiveness of fire protection measures, equipment, program implementation, and problem identification and resolution.

The inspectors concluded that QA audits were comprehensive and appropriately verified selected fire program attributes for compliance with program requirements.

F8 Miscellaneous Fire Protection Issues

F8.1 (Closed) Plant Improvement Plan (PIP) Item 177, Task 1, Appendix R/Safe Shutdown Analysis Update

a. Inspection Scope (64704)

This item involved updating the licensee's 1984 Appendix R/Safe shutdown analysis to 1993 standards and resolving any discrepancies identified.

The inspector reviewed licensee document IP3-ANAL-FP-01503, Appendix R Sections III.G and III.L Safe Shutdown Analysis Report, Revision 1, to verify that it had been updated.

The licensee identified 58 discrepancies with the 1984 analysis. The inspector reviewed corrective actions for three discrepancies selected from the licensee's list. The inspector reviewed corrective actions for the following three items.

- Inadequate Separation of Service Water Pump Strainer Power Feeds
- Alternate Shutdown System Designed for Dead Bus Transfer
- Associated Circuits by Common Enclosure

b. Observations and Findings

The inspector observed that the licensee had updated the Appendix R Safe Shutdown Analysis and completed the update in 1994. The inspector did not review the analysis for detailed compliance with NRC regulations and guidance. The inspector verified through discussions with licensee personnel and through review of the licensee's Fire Protection Engineering Standards, as discussed in

section F8.6 of this report, that the licensee had established a program to maintain the analysis when future plant modifications are to be made.

The inspector reviewed the licensee's corrective actions or analysis for the three issues identified above. The licensee's corrective actions and analysis appeared adequate to address each issue. The inspector verified, by visual observation, that emergency lights were installed to accomplish local manual actions to support operation of the service water strainers.

c. Conclusion

Licensee actions were appropriate to address the discrepancies identified. This item is closed.

F8.2 (Closed) Plant Improvement Plan (PIP) Item 177, Task 3, Review Suppression Effects on Equipment Throughout the Plant

a. Inspection Scope (64704)

This issue involved the need for the licensee to conduct an evaluation of the effects of inadvertent actuation of a fire suppression system anywhere in the plant and its affect on plant operation and equipment.

The inspector reviewed the licensee's analysis regarding plant suppression effects on equipment throughout the plant, Suppression Effects Analysis, Revision 0. The inspectors reviewed licensee actions for the discrepancies identified as documented in section F8.12 of this report.

b. Observations and Findings

The inspectors observed that the licensee completed a detailed analysis of each fire area and evaluated each area for the effects of an actuation of the fire suppression system installed in that area. In fire areas where problems were identified, the licensee took prompt corrective action to resolve and to document the issue.

c. Conclusion

The licensee's fire protection engineering staff did an excellent job in evaluating the effects of a fire suppression system actuation. This item is closed.

F8.3 (Closed) Plant Improvement Plan (PIP) Item 177, Task 4, New Suppression Systems for the Administration Building, Turbine Building 5 ft. level, and Transformer Water Curtain

a. Inspection Scope (64704)

This issue concerned installing additional sprinkler systems in the Administration Building, Turbine Building, and Transformer Area.

The inspector reviewed with licensee personnel the basis for installing the additional suppression systems. The inspector reviewed NRC guidance given in Branch Technical Position 9.5-1 and in the licensee's fire protection license condition regarding the areas where additional suppression was desired.

b. Observations and Findings

Licensee personnel stated that the additional suppression was required by their insurer for loss control purposes and not to meet NRC requirements or guidance.

The inspector observed that the specific modifications identified in this issue were not needed to comply with NRC guidance or requirements.

c. Conclusion

Based on the inspector's review, the NRC has no additional questions on this matter. This item is closed.

F8.4 (Closed) Plant Improvement Plan (PIP) Item 177, Task 5, Design Basis for Fire Protection System

a. Inspection Scope (64704)

This issue concerned creating a design basis document for fire protection to manage and document information used as the design bases for fire protection systems.

The inspector reviewed the licensee's Fire Protection Design Basis Document, DBD-321, Revision 0. The inspector reviewed in detail the sections for fixed fire suppression systems and for the fire detection and alarm section.

b. Observations and Findings

The inspector observed, in each section, that the licensee included a detailed description of each system and subsystem. In the description, the licensee included calculations, NFPA codes of record for each subsystem, design basis requirements, flow diagrams, specifications, and any modifications.

c. Conclusion

The inspector concluded that the licensee did an excellent job in creating a design basis document for the fire protection systems. This item is closed.

F8.5 (Closed) Plant Improvement Plan (PIP) Item 177, Task 6, Scan Pre-Fire Plans Into CAD, Revise Plans, and Put Plans Into a Document Which Can Be Readily Revised By Plant Staff

a. Inspection Scope (64704)

This issue concerned updating the licensee's pre-fire plans and converting the plans into a document that could be easily maintained and revised as required.

The inspector reviewed the following licensee documents.

- Pre-fire plans
- Fire Protection Engineering Standard FPES-05, Pre-Fire Plans, Revision 0
- FP-03, Pre-Fire Strategies, Revision 4

b. Observations and Findings

The inspector observed that the licensee's pre-fire plans were, at the time of the inspection, in a binder that was easy to revise. The pre-fire plan drawings were in color and computer-aided design (CAD) generated. The plan contained all information typically observed in a pre-fire plan. The inspector noted that FPES-05 provided direction for the preparation and content of the pre-fire plans. The inspector observed that FP-03 provided licensee staff with a method to make revisions to the pre-fire plans.

c. Conclusion

The inspector concluded that the licensee did an excellent job in preparing the pre-fire plans and in providing an administrative means of controlling the document. This item is closed.

F8.6 (Closed) Plant Improvement Plan (PIP) Item 177, Task 7, Fire Protection Engineering Standard Development

a. Inspection Scope(64704)

This issue concerned the development of a set of engineering standards for fire protection.

The inspectors reviewed the licensee's Fire Protection Engineering Standards (FPESs). The inspector reviewed, in detail, the following standards.

- FPES-04B, Fire Protection/Appendix R Compliance Procedure, Revision 1
- FPES-05, Revision 0, Pre-Fire Plans.

b. Observations and Findings

The inspectors observed that the standards provided a very detailed method of controlling licensee fire protection engineering practices. FPES-04B provided licensee engineers with guidance to ensure that the licensee's fire protection program is kept current when plant modifications are made and provided a very detailed and complete checklist of issues for an engineer to review during the modification process. This review would ensure that proper fire protection and Appendix R issues are considered when developing a plant modification. FPES-05 provided a detailed method of controlling the content of the pre-fire plans.

c. Conclusion

The licensee did an excellent job in preparing the Fire Protection Engineering Standards. This item is closed.

F8.7 (Closed) Plant Improvement Plan (PIP) Item 177, Task 8, Change CO2 and Water Suppression for Turbine Generator

a. Inspection Scope (64704)

This issue concerned the licensee's decision to modify the suppression systems for the main turbine generator such that, with the exception of the generator excitor, the primary fire suppression system was a water system with the CO2 system as the manual backup system.

The inspectors reviewed minor modification package (MM) 91-03-172 FP-FRW, Main Turbine Generator Fire Protection System Upgrade Deluge Valve FP-227, CO2 Control Cabinet #2, Revision 1, dated March 14, 1994. The inspectors conducted a visual inspection of the modification.

b. Observations and Findings

The inspectors observed that the portions of the modification design observed were installed in accordance with the modification design. Based on the sample reviewed the drawings were changed and modification tested in accordance with approved plant procedures.

c. Conclusion

The licensee completed this item. This issue is closed.

F8.8 (Closed) Plant Improvement Plan (PIP) Item 177, Task 9, Document Compliance With Requirements of BTP 9.5-1, Appendix A

a. Inspection Scope (64704)

This issue involved establishing a document to document the licensee's method of compliance with each section of NRC Branch Technical Position APCSB 9.5.1, Appendix A, "Guidelines For Fire Protection For Nuclear Power Plants Docketed Prior to July 1, 1976."

The inspectors reviewed licensee report IP3-RPT-FP-02211, Revision 0, dated February 9, 1997 to verify that the document listed the licensee's method of compliance with the NRC guidance. The inspector did not conduct a detailed verification that each method of compliance was acceptable to the NRC.

b. Observations and Findings

The inspectors observed that the licensee's report listed in tabular form the licensee's method of compliance with the applicable, corresponding paragraph of the NRC Branch Technical Position.

c. Conclusion

The licensee did a good detailed job in documenting their method of conforming to the Branch Technical Position. This item is closed.

F8.9 (Open) Plant Improvement Plan (PIP) Item 177, Task 10, Revise Hydraulic Calculations

a. Inspection Scope (64704)

This issue involved updating the licensee's hydraulic calculations for fire protection systems to reflect the as-built plant conditions.

The inspectors reviewed, with licensee personnel the status of the following licensee calculations.

- IP3-CALC-FP-01981, Hydraulic Calculations for Standpipes
- IP3-CALC-FP-01982, Hydraulic Calculations for Fire Suppression Systems
- IP3-CALC-FP-01983, Hydraulic Calculations for Foam Systems

b. Observations and Findings

At the time of this inspection, these calculations were with a licensee consultant having final comments from the licensee incorporated. The calculations had received initial review by the licensee.

c. Conclusion

This item remains open as does NRC open item **(IFI 93-24-02)**, pending completion of the calculations by the licensee's consultant and verification by the NRC that the calculations are satisfactory and complete.

F8.10 (Closed) Plant Improvement Plan (PIP) Item 177, Task 11, Perform NFPA Code Compliance Walkdowns

a. Inspection Scope (64704)

This item concerned the licensee completing an inspection of fire protection systems to ensure that the systems were installed in accordance with code requirements.

The inspector reviewed licensee reports IP3-RPT-FP-01165, Revision 3, "NFPA Code Conformance Project Summary of Open Items and IP3-RPT-FP-01163, Revision 0, NFPA Code Conformance Project." The inspectors reviewed in detail the following two sections of IP3-RPT-FP-01163.

- NFPA 10, 1990, Standard for Portable Fire Extinguishers
- NFPA 12, 1977, Carbon Dioxide Extinguishing Systems

b. Observations and Findings

The inspectors observed that the reports listed in detail all items identified in the walkdown of the fire protection systems. For each item, the report identified each item and each item had an Action Commitment Tracking System (ACTS) number assigned to that item. The ACTS number allowed the licensee to identify and track to completion each individual discrepancy. The inspectors did not note any open items that would render a fire protection system inoperable.

c. Conclusions

The licensee did a good job in completing the walkdown, identifying the discrepancies, and tracking the discrepancies in a corrective action system. This item is closed.

F8.11 (Closed) Plant Improvement Plan (PIP) Item 177, Task 12, Inspect, Repair, and Document Fire Barrier Penetration Seals to Create a Seal Database

a. Inspection Scope (64704)

This issue concerned conducting a visual inspection of every NRC required fire barrier, documenting the location of all fire barrier penetration seals, and updating inspection requirements.

The inspector reviewed completed licensee inspections of the fire barriers, selected licensee drawings, and interviewed licensee personnel responsible for conducting the inspections to verify completion of this item. The following licensee documents were reviewed.

- 3PT-R100, Fire Barrier Penetration Seal Inspection Operational Specifications Appendix "R" and Appendix "A" Barriers, Revision 3
- Drawing 9321-F-40018, Revision 1, Sheet 4, Fire Barrier Penetration Walls Location Sitemap Plans
- Drawing 9321-M-40953, Revision 2, Sheet 24, Fire Barrier Penetrations Upper Electrical Penetration Area
- Design Control Manual, DCM-17, Revision 0, Fire Barrier Penetration Data Management

b. Observations and Findings

The inspector observed that the licensee had conducted a detailed inspection of all fire barriers. The inspection and inspection criteria were very detailed. All identified discrepancies were properly documented and tracked.

The inspector observed that licensee drawings were updated with individual barrier penetrations identified.

The inspector noted that DCM-17 provided requirements and guidance for future maintenance of the fire barrier penetration seal program.

c. Conclusion

The licensee did an excellent job in conducting the seal verification program and in ensuring that the program would be maintained. This item is closed.

F8.12 (Closed) LER 50-286/95-006-01 Failure to Analyze Loss of Ventilation Systems in Appendix R Analysis

a. Inspection Scope

This Licensee Event Report (LER) identified that, on March 20, 1995, during the licensee's Appendix R reanalysis, 58 issues were identified that were weaknesses in their fire protection programs. The licensee then made a four hour report to the NRC concerning these issues. The licensee made the report out of concern that, in aggregate, the issues might represent a reportable condition but that no individual issue was reportable. Subsequently, the licensee determined that one issue was reportable. The issue that the licensee determined reportable concerned the failure of the 1984 Appendix R Analysis to consider the effects of spurious operation of

the CO2 and ventilation systems in the cable spreading room, switchgear room, and the emergency diesel generator cells.

Corrective actions, identified by the licensee, included revising the Pre-Fire Plans, procedure ONOP-FP-1,"Plant Fires," updating the Appendix R analysis and Fire Hazards Analysis, and completing a Fire Protection Design Basis Document.

The inspectors reviewed ONOP-FP-1, Revision 8 and Revision 11. As discussed in other sections of this report, the inspectors reviewed the licensee's updated Fire Hazards Analysis (F8.15), Appendix R Analysis (F8.1), and Fire Protection Design Basis Document (F8.4). As discussed in Section F8.2 of this report, the inspectors reviewed the licensee's analysis of spurious actuation of suppression systems throughout the plant.

b. Observations and Findings

The NRC review of the 58 issues identified by the licensee is discussed in Section F8.1 of this report.

The inspector observed that Revision 8 to ONOP-FP-1 changed the procedure to compensate for ventilation loss that could have been caused by spurious actuation of the ventilation system.

c. Conclusions

The inspector concluded, based on the sample reviewed, that licensee corrective actions discussed in other sections of this report and revision 8 of ONOP-FP-1 were acceptable. This item is closed.

F8.13 (Open) Unresolved Item No. 50-286/93-24-03 Fire Barrier Penetration Seal Acceptance Criteria

a. Inspection Scope

This unresolved item involved a concern about the Indian Point 3 cable ignition temperature of electrical cables passing through penetration seals. The inspector discussed with the NRC program office and with the licensee the current status of the issue. The inspector reviewed licensee letter IPN-96-130, dated December 23, 1996, to the NRC, Response to Request for Additional Information.

b. Observations and Findings

NRC Region I transferred the technical resolution of this issue to NRR for review and evaluation of the technical issues. By letter, dated September 19, 1996, NRR requested that the licensee provide additional information concerning the fire seals. The licensee responded to the NRR questions by letter, dated December 23, 1996. At the time of this inspection, NRR had not completed the review of the additional information provided by the licensee.

c. Conclusion

This item remains open pending completion of the NRR review of the licensee's information.

F8.14 (Closed) Violation No. 50-286/95-15-02 Emergency Light Deficiencies

Corrective actions taken by the licensee to resolve several emergency lighting issues were weak. The weaknesses included the failure by the licensee to properly document, evaluate, and promptly correct deficiencies.

With respect to the above violation, the inspectors determined that the corrective actions described in the licensee's December 29, 1995, letter submitted in response to the NRC's Notice of Violations, were reasonable, complete, and appeared to be effective. The corrective actions included the reorganization of responsibilities and reporting relationships associated with the fire protection program, revisions to applicable maintenance procedures to insure emergency battery lighting is tested on a continuous rotating schedule and maintenance procedure revisions to include instructions for on-the-spot repairs for certain emergency battery lighting deficiencies. This item is closed.

F8.15 (Closed) Plant Improvement Plant (PIP) Item 177, Task 2, Fire Hazard Analysis

a. Inspection Scope

This issue concerned the licensee updating the fire hazards analysis (FHA) report into a living product and document that reflects current plant configuration.

b. Observations and Findings

The inspectors determined by a review of fire protection engineering standard (FPES) 02, Revision 2, dated June 19, 1995, "Conduct of Fire Hazard Analysis," FPES 03, Revision 1, dated June 19, 1995, "Evaluation of Combustible Loading," and FPES 04B, Revision 1, dated May 15, 1995, "Fire Protection/Appendix R Compliance Procedure" that the FHA appropriately reflected current plant configuration including combustible loading and fire protection features throughout the plant.

c. Conclusion

The licensee did a good job in completing the FHA. This item is closed.

F8.16 Documents Reviewed

A list of fire protection documents reviewed is included in this inspection report as Appendix F.

F8.17 Review of UFSAR Commitments

Following the discovery of a licensee operating their facility in a manner contrary to the UFSAR description, the NRC has highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the UFSAR descriptions. While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. This included portions of section 9.6.2 pertaining to the fire protection program. The inspectors verified that the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters with the exception of the Notice of Violation regarding annual practice sessions for fire brigade members, as discussed in section F5.1.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of the licensee management at the conclusion of the inspection on April 3, 1997. The licensee acknowledged the findings presented.

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

PARTIAL LIST OF PERSONS CONTACTED

Licensee
J. Knubel, Chief Nuclear Officer
H. Salmon, Vice President, Nuclear Operations
R. Barrett, Site Executive Officer, Indian Point 3 (IP3)
J. Comiotes, General Manager, Operations
N. Heuberger, General Manager, Maintenance
M. Pearson, Operations Manager
J. DeRoy, Director, IP3 Engineering
D. Quinn, General Manager Support Services

NRC
G. Wunder, Project Manager
J. Williams, Senior Reactor Engineer

INSPECTION PROCEDURES USED

IP 37001:	10 CFR 50.59 Safety Evaluation Program
IP 37551:	Onsite Engineering
IP 40500:	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observation
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities
IP 92901:	Followup - Plant Operations
IP 92903:	Followup - Engineering
IP 93702:	Prompt Response to Events at Operating Power Reactors
IP 81700:	Physical Security Program for Power Reactors
IP 64704	Fire Protection Program

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

URI 97-01-01	Operability evaluation for on the boric acid storage tanks
VIO 97-01-02	Unauthorized temporary modification to the boric acid storage tank vent
URI 97-01-03	Basis of risk determination for control room ventilation fans
URI 97-01-04	Documented design basis for the station battery chargers
VIO 97-01-05	Failure to Fulfill Annual Fire Brigade Training Requirement

Closed

LER 97-002-00	Containment Isolation Valves for the Hydrogen Monitoring System
IFI 96-08-04	Development of the Service Water Action Plan
LER 95-06-01	Failure to Analyze Loss of Ventilation System in Appendix R Analysis
VIO 95-15-02	Emergency Light Deficiencies

Updated

URI 96-12-03	Verification of flow testing for Control Building Exhaust Fans
IFI 93-24-02	PIP Item 177
URI 93-24-03	Fire Barrier Penetration Seal Acceptance Criteria

LIST OF ACRONYMS USED

A/C	Air Conditioning
ACTS	Action Commitment Tracking System
ARP	Annunciator Response Procedure
BAST	Boric Acid Storage Tank
CAD	Computer-Aided Design
CAS	Central Alarm System
CCTV	Closed Circuit Television
CR	Control Room
CRS	Control Room Supervisor
CVCS	Chemical Volume and Control System
DBD	Design Basis Document
DC	Direct Current
DER	Deviation Event Report
EDG	Emergency Diesel Generator
EFE	Equipment Failure Evaluation
EOP	Emergency Operating Procedure
ESS	Engineered Safety System
FMEA	Failure Modes & Effects Analysis
FPES	Fire Protection Engineering Standards
FSAR	Final Safety Analysis Report
HUT	Hold Up Tank
I&C	Instrument & Controls
IDS	Intrusion Detection Systems
IP3	Indian Point 3
IPE	Individual Plant Examination
IVWS	Isolation Valve Seal Water System
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MCC	Motor Control Center
MM	Minor Modification Package
MPFF	Maintenance Preventable Functional Failure
NPO	Nuclear Plant Operator
NRC	Nuclear Regulatory Commission
NSE	Nuclear Safety Evaluation
NYPA	New York Power Authority
ONOP	Off Normal Operating Procedure
PA	Protected Area
PAB	Primary Auxiliary Building
PID	Problem Identification Description
PIP	Plant Improvement Plan
the Plan	NRC-approved Physical Security Plan
psig	pounds per square inch gauge
PTO	Protective Tagout
QA	Quality Assurance
rpm	revolutions per minute

RHR	Residual Heat Removal
SI	Safety Injection
SM	Shift Manager
SWP	Service Water Pump
TS	Technical Specification
TI	Temporary Instruction
URI	Unresolved Item
VCT	Volume Control Tank
SAS	Secondary Alarm System
SFM	Security Force Members
T&Q	Training and Qualification
TM	Temporary Modification
WCCPPS	Weld Channel and Containment Penetration Pressurization System
WR	Work Request

Attachment A

Fire Protection Documents Reviewed

IP3-ANAL-FP-01503, Appendix R Sections III.G and III.L Safe Shutdown Analysis Report, Revision 1

Suppression Effects Analysis, Revision 0

Fire Protection Design Basis Document, DBD-321, Revision 0

Pre-Fire Plans

Fire Protection Engineering Standard FPES-05, Pre-Fire Plans, Revision 0

FP-03, Pre-Fire Strategies, Revision 4

FPES-04B, Fire Protection/Appendix R Compliance Procedure (IP3), Revision 1

Minor Modification Package MM 91-03-172 FP-FRW, Main Turbine Generator Fire Protection System Upgrade Deluge Valve FP 227, CO2 Control Cabinet #2, Revision 1, Dated March 14, 1994

IP3-RPT-FP-02211, Revision 0, dated February 9, 1997

IP3-RPT-FP-01165, Revision 3, NFPA Code Conformance Project Summary of Open Items

IP3-RPT-FP-01163, Revision 0, NFPA Code Conformance Project

3PT-R100, Fire Barrier Penetration Seal Inspection Operational Specifications Appendix "R" and Appendix "A" Barriers, Revision 3

Drawing 9321-F-40018, Revision 1, Sheet 4, Fire Barrier Penetration Walls Location Sitemap Plans

Drawing 9321-M-40953, Revision 2, Sheet 24, Fire Barrier Penetrations Upper Electrical Penetration Area

Design Control Manual, DCM-17, Revision 0, Fire Barrier Penetration Data Management

ONOP-FP-1, Plant Fires, Revision 8 and Revision 11

Licensee letter IPN-96-130, dated December 23, 1996, to the NRC, Response to Request for Additional Information.

QA Audits
No. 94-15 Fire Protection (Biennial)
No. A95-20W Annual Fire Protection Audit
No. A96-06W Annual & Biennial Fire Protection Audit

Fire Protection Documents Reviewed

AP-27.3, Rev. 14	IP3 Site Fire Protection FP-1
3PT-R47, Rev. 8	Fire Hose Station Surveillance
3PT-R096, Rev. 4	T.S.C. Fire Deluge Valves and Alarms
3PT-W06, Rev. 6	Hose House Inspection
3PT-SA18, Rev.8	Fire Hydrant Inspection
3PT-3Y4, Rev. 4	Fire Hose Stations' Flow Verification
3PT-3Y5, Rev. 4	Hydrostatic Testing Of Interior Fire Hose Stations
3PT-A13, Rev. 14	Electrical Tunnel Heat Detector and Water Sprinkler System Operability Test
3PT-A14, Rev. 10	Diesel Generator Sprinkler System
FP-8, Rev. 9	Control of Ignition Sources
FP-9, Rev. 6	Control of Combustibles
FP-6, Rev. 8	Fire Brigade Membership Qualifications
FP-22, Rev. 5	Fire Watch
FP-12, Rev. 6	Cutting and Welding
3PT-R98B, Rev. 5	Appendix R Diesel Generator Halon Functional