March 1, 2000

Mr. Robert J. Barrett
Site Executive Officer
New York Power Authority
Indian Point 3 Nuclear Power Plant
Post Office Box 215
Buchanan, NY 10511

Subject: NRC INSPECTION REPORT NO. 05000286/1999010

Dear Mr. Barrett:

On January 31, 2000, the NRC completed an inspection at your Indian Point 3 reactor facility. The enclosed report presents the results of that inspection. During the seven-week period covered by the inspection, your staff conducted activities at the Indian Point 3 reactor facility with an adequate focus on safe plant operations. However, we observed one instance where operator attentiveness was not properly maintained in the control room, and several instances where plant procedures were not effective in assuring proper plant configuration controls. In both instances, we observed that appropriate management actions were initiated to resolve these issues and we will review their effectiveness during future inspections. In addition, we noted that your plant performed successfully during the year 2000 transition with no significant incidents or operational safety consequences.

Based on the results of this inspection, the NRC determined that two Severity Level IV violations of NRC requirements occurred. These violations are being treated as Non-Cited Violations (NCVs), consistent with Section VII.B.1.a of the Enforcement Policy (November 9, 1999; 64 FR 61142). The NCVs involved a failure to implement effective configuration controls in the chemical and volume control system and a failure to enter a technical specifications limiting condition for operation for an unevaluated configuration of an emergency diesel generator ventilation system, and are described in the subject inspection report. If you contest these NCVs, or their severity level, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington D.C. 20555-0001; with copies to the Regional Administrator, Region I; and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Indian Point 3 facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and the enclosure will be placed in the NRC Public Document Room (PDR). Should you have any questions regarding this report, please contact me at 610-337-5234.

Sincerely,

/RA/

G. Scott Barber, Acting Chief
Projects Branch 2
Division of Reactor Projects

Docket No.05000286
License No. DPR-64

Enclosure: Inspection Report No. 05000286/1999010

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REGION I

Docket No.	05000286
License No.	DPR-64
Report No.	05000286/1999010
Licensee:	New York Power Authority
Facility:	Indian Point 3 Nuclear Power Plant
Location:	P.O. Box 215 Buchanan, New York 10511
Dates:	December 14, 1999 - January 31, 2000
Inspectors:	Peter Drysdale, Senior Resident Inspector Jennifer England, Resident Inspector Lois James, Resident Inspector
Approved by:	Peter Eselgroth, Chief Projects Branch 2 Division of Reactor Projects

EXECUTIVE SUMMARY

Indian Point 3 Nuclear Power Plant
NRC Inspection Report No. 05000286/1999010

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

Operations:

A control room supervisor was inattentive to his duties during a period of direct observation, and did not fulfill his obligations at the controls of an operating nuclear power plant. He also did not meet NYPA's management expectations for operator demeanor in the control room. The licensee's short term actions were adequate to correct this situation and to evaluate the extent-of-condition; however, this item is unresolved pending further NRC review **(URI 05000286/1999010-01)**. (Section O1.1)

The licensee's administrative procedures, check-off lists, and protective tagging orders were not effective in assuring adequate configuration controls, and these administrative controls were not properly implemented during system and component alignments following the last refueling outage. The failure to implement adequate configuration controls for the residual heat removal system and chemical and volume control system is a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawing." This licensee identified deficiency was entered into the corrective action system, and will be treated as a Non-Cited Violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy **(NCV 50-286/1999010-02)**. (Section O1.2)

The inspector observed that there were no plant events or significant equipment failures that occurred during the year 2000 transition. None of the minor computer anomalies with meteorological (met) tower data or main generator temperature that occurred after the transition were apparently attributable to the year 2000 transition. Both problems were quickly rectified, and did not have any operational or safety consequences. (Section O2.1)

The licensee's procedure for venting component problems cooling water (CCW) at the excess letdown heat exchanger was inadequate. This resulted in a lifted relief valve and a loss of more than 200 gallons of CCW when the licensee attempted to place the heat exchanger in service for excess letdown. (Section O2.2)

Except for the 33 Emergency Diesel Generator (EDG), the inspector assessed the general plant equipment condition to be acceptable during routine inspection tours. Inadequate work control for a post-maintenance test of the EDG room exhaust fan resulted in an unevaluated configuration of an EDG ventilation system. The impact on operability was not properly assessed when the work activity was scheduled or performed. **(NCV 05000286/1999010-03).** The inspector also observed instances of unofficial and uncontrolled information in the plant that had been used by auxiliary operators. (Section O2.3)

The offsite Safety Review Committee quarterly meeting was conducted in accordance with technical specification requirements, and the members provided good insights during discussions of plant issues related to safety. (Section O7.1)

Maintenance:

The licensee satisfactorily completed observed maintenance activities and successfully performed post-maintenance testing for operability. The inspector observed several minor human performance discrepancies associated with error reduction techniques and poor work coordination of a safety-related component under a protective tagging order. (Section M1.1)

Routine surveillance tests were conducted satisfactorily and in accordance with procedural and administrative requirements. Test instrumentation was observed to be within the required calibration periods and all test acceptance criteria for operability were met, or subsequently evaluated for acceptable performance. (Section M1.2)

Following a walkdown of the 120 VAC Instrument Buses and 125 VDC buses, the inspector concluded that the system was capable of performing its design function. The inspector also found several canceled problem identification tags inappropriately hanging on equipment in the plant. (Section M1.3)

Based on a review of documented surveillance tests, the inspector concluded that the licensee satisfactorily accomplished technical specification requirements for battery testing, and adequately demonstrated station battery operability. (Section M1.4)

The licensee's corrective actions following a failure of an electric tunnel fan to automatically start during a modification acceptance test were adequate to identify the cause of the failure as a 1992 wiring error and inadequate post-maintenance test. However, the licensee did not document this problem in a timely manner until the cause of the problem was identified. (Section M2.1)

The licensee's critique of the 33 Emergency Diesel Generator two-year preventive maintenance was not very self critical, and contained very little discussion about the deficiencies that were identified or areas for improvements. (Section M8.1)

Engineering:

Engineering completed an adequate analysis of the 31 charging pump failure, and pursued a good initiative to prevent similar failures by proposing a revision to the manufacturer's approved methodology for replacing internal check valves. (Section E2.1)

Plant Support

The inspector concluded that a watch chemist accurately analyzed and documented a routine primary coolant sample and analysis for boron in accordance with procedures. (Section R1.1)

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ATTACHMENTS

Report Details

SUMMARY OF PLANT STATUS

At the beginning of the inspection period on December 14, 1999, the plant was at 100 percent power. Power was reduced to 92 percent on January 21 for turbine control valve and stop valve testing, and then returned to 100 percent power on January 22. The plant remained at 100 percent power throughout the remainder of the inspection period which ended on January 31, 2000.

I. OPERATIONS

O1 Conduct of Operations

O1.1 Inattentive Operator **(URI 05000286/1999010-01)**

a. Inspection Scope (71707)

The inspector reviewed the licensee's response and follow-up actions for a control room supervisor observed to be inattentive to his duties.

b. Observations and Findings

On January 27, 2000, at 5:45 a.m. with the plant at full power, the inspector observed the control room supervisor (CRS) inattentive to his responsibilities. No unusual plant conditions were apparent at the time. The CRS remained inattentive for approximately one minute before the inspector attempted to locate the shift manager. The shift manager was not in the immediate vicinity. After a few minutes, the inspector entered the control room and observed the CRS in a conversation with a work week manager who had entered the control room before the inspector. At that time, the CRS appeared to be alert and aware of plant conditions. Two other reactor operators (ROs) were at their assigned duty stations in the control room and were fully alert to the main control panels. Both ROs normally have their backs to the CRS while at their desks or at the control panels, and were not able to continuously observe the CRS.

The inspector discussed these observations with the plant manager, the operations general manager, and the operations manager, who promptly relieved the CRS from his control room duties. After the shift turnover was complete, the inspector interviewed the two ROs, and both stated they had not seen the CRS with his eyes closed or his feet up on his desk at any time during their shift. The operations general manager directed an investigation of all control room activities for several hours prior to 5:45 a.m. The investigation included interviews with all individuals who had entered the control room to review the purpose of their activities and their observations of the CRS. The results of the investigation confirmed that the CRS was attentive to his duties for most of his shift; however the licensee was not able to confirm his full attentiveness during the period between 5:37 and 5:47 a.m.

The licensee initiated deficiency event report (DER) 00-00217 to address the incident and to further evaluate the potential extent of this condition among the other operating crews. The subject CRS was removed from licensed duties for an indefinite period and directed to develop a personal improvement plan. The operations manager placed an entry into the shift orders requiring all operators to read and understand the expectations and requirements for communications protocol and for the conduct of operations prior to working their next shift. The operations general manager held personal briefings with all reactor operators to review their license obligations and to ensure they understood management expectations for operator demeanor in the control room. The operations manager also initiated a review of this incident during periodic operator training, and reviewed it in detail at the next shift manager's meeting. The licensee initiated longer term actions to review the control room environment and to evaluate the need to change physical characteristics that may represent distractions, or that may not be fully conducive to operator attentiveness.

c. Conclusions

A control room supervisor was inattentive to his duties during a period of direct observation, and did not fulfill his obligations at the controls of an operating nuclear power plant. He also did not meet NYPA's management expectations for operator demeanor in the control room. The licensee's short term actions were adequate to correct this situation and to evaluate the extent-of-condition; however, this item is unresolved pending further NRC review **(URI 05000286/1999010-01)**.

O1.2 Mispositioned Components and Plant Configuration Controls **(NCV 05000286/1999010-02)**

a. Inspection Scope (71707, 61726)

The inspectors reviewed NYPA's actions following the inability to establish excess letdown flow. See Section 02.2 for additional details.

b. Observations and Findings

Background

On December 7, 1999, the licensee initiated a "trending DER" due to a large number of "out-of- position" events at IP3 in the first 11 months of 1999. DER 99-02716 documented 22 out-of-position components in the plant, and a subsequent update indicated that 28 events existed in total for all of 1999. This number was narrowed to 13 instances that met the licensee's definition of "mis-positioning," i.e., were not in the position required by a procedure (see NRC Inspection Report (IR) 05000286/1999009).

During preparations for preventive maintenance on the chemical and volume control system (CVCS) on January 11, 2000, the licensee was not able to establish excess letdown flow. The initial investigations suggested that the flowpath was blocked from a failed flow control valve, or that a foreign object might have entered the system. The licensee also considered that a manual valve (CH-400) in the excess letdown flowpath

may have been shut, and therefore initiated a review of the last performed independent verification of check-off list (COL-CVCS-1) of the "Chemical and Volume Control System," completed October 11, 1999, and a related protective tagging order (PTO) 99-0383. CH-400 is the excess letdown manual isolation valve at the 31 reactor coolant loop cold leg and would have prevented excess letdown flow, if closed. The inspector identified that the licensee used system alignment COLs for a 100 percent power configuration, prior to the plant achieving full power. NYPA determined that the removal of the PTO from CH-400 performed from October 12 through 13 did not require the valve to be opened, although administrative procedure AP-10.1, "Protective Tagging," recommended that during removal of the PTO, the system should be restored to the lineup for 100 percent power.

Corrective Actions

The licensee initiated DER 00-0073 to document the inability to establish excess letdown flow, and DER 00-0086 to document the generic configuration control discrepancies. The operations department developed an action plan to address the configuration control problems, which required an extent-of-condition review, and included walkdowns of all primary plant systems to compare actual component positions with alignments stated in the COL and PTO. The system walkdowns revealed that the following components were out of their required positions:

1. Lighting panel spare breakers; (DER 00-00122)
2. Valve JW-16-3, 33 EDG Jacket Water Pressure Indicator (PI-2203) isolation
3. Auxiliary feed water vent sample valve
4. Valve SI-1863, alternate high-head recirculation throttle (DER 00-0121)

The apparent cause of the mispositioning of the CH-400 valve was unclear restoration requirements while clearing PTO 99-0383. After the valve was found shut several weeks later, after these initial walkdowns. The tagout did not adequately specify the required position. This matter is discussed in a greater detail in the Human Performance Section.

During the walkdowns, the licensee also observed that SI-1863 was closed, and later determined that it was required to be open when the plant was at power. SI-1863 is a manual valve in the alternate recirculation flow path that was required to be available as part of an existing licensing basis requirement for post-accident mitigation and recovery. Consequently, NYPA made an oral report to the NRC in accordance with 10CFR50.72 because the alternate flow path was not available with SI-1863 closed. SI-1863 was required to be open by COL-RHR-1, and was left open when the COL was performed at the end of the outage. However, after the COL was complete, the licensee drained the refueling cavity using procedure SOP-RP-20, and that procedure left the valve closed. No subsequent actions were taken to open SI-1863 before the plant was returned to power.

Human Performance Errors

The inspector reviewed the last completed copy of COL-CVCS-1, the independent verification of COL-CVCS-1, and PTO 99-0383. This PTO closed CH-400 when it was hung on September 14. The PTO was later removed on October 13. The COL for this system was performed between October 2 and 10 and independently verified between October 8 and 11. The initial performance of the COL stated the valve was in the open position while the verification COL stated the valve was tagged in the closed position. Operations Directive OD-5 "Independent Verification" stated that unlocked valves are to be verified open by manipulating the valve in the closed direction and then returning the valve to its full open position. It appeared to the inspector that the initial verification may not have been performed properly because the PTO tag and the correct position were not consistently documented.

The inspector reviewed the COLs for other systems to evaluate the potential for other documentation problems. COL-CC-1, "Component Cooling System" (CCW) and PTOs for the CCW system were reviewed. The inspector found that several valves were documented in the COL as having PTOs on them, although the PTO documentation indicated that they were not in place at the time the COL was performed. It appeared to the inspector that the COL verification may not have been performed properly because the COL and PTO disagreed on the actual valve position, and the correct valve position was not consistently documented. The inspector also reviewed COL-AFW-2 for the auxiliary feedwater system. Unlike the COLs for the CCW and CVCS systems, each valve not in the required COL position was annotated with a comment on the procedure which would restore the system to the proper COL lineup when PTOs in place were removed.

10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," in part, requires that activities affecting quality be prescribed by appropriate procedures. NYPA identified that AP-10.1 "Protective Tagging," and COL-CVCS-1, COL-RHR-1, and SOP-RP-20 were not adequate to maintain proper configuration control of the CVCS and other systems. Operations management could not ascertain the correct configuration of the CVCS due to multiple COL and PTO conflicts. The failure to implement adequate configuration controls for the residual heat removal system and chemical and volume control system is a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawing." This deficiency was appropriately entered into the corrective action system as DERs 00-0073 and 00-0086. Therefore, this Severity Level IV Violation will be treated as a Non-Cited Violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy **(NCV 50-286/1999010-02)**. At the end of the inspection period, NYPA was performing additional corrective actions associated with this deficiency, including all secondary plant COLs from the last refueling outage.

c. Conclusions

The licensee's administrative procedures, check-off lists, and protective tagging orders were not effective in assuring adequate configuration controls, and these administrative controls were not properly implemented during system and component alignments following the last refueling outage. The failure to implement adequate configuration controls for the residual heat removal system and chemical and volume control system is a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and

Drawing." This licensee identified deficiency was entered into the corrective action system, and therefore, this Severity Level IV Violation will be treated as a Non-Cited Violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy **(NCV 50-286/1999010-02)**.

O2 Operational Status of Facilities and Equipment

O2.1 Year 2000 Transition

a. Inspection Scope (71707)

The inspector reviewed plant operations from inside the central control room (CCR) during the year 2000 transition.

b. Observations and Findings

On December 31, 1999, the inspector observed plant operations from inside the control room, and noted system status during the approach to the year 2000 transition at midnight. At 10:00 p.m. the plant was at 100% power, with all sources of off-site power and all four 480 VAC safeguards buses energized. All three emergency diesel generators were operable, and all emergency core cooling systems (ECCS) and engineered safety features (ESFs) were also operable. The licensee had not entered any significant limiting conditions for operation. One alarm condition was indicated on the main control panel annunciators for an electric heat trace circuit failure on December 29, and one alarm was indicated for a containment recirculation fan unit damper control valve that was intentionally closed. Neither of the alarm conditions caused the associated equipment to be inoperable.

As the transition into year 2000 occurred, the inspector observed no changes in system parameters or plant conditions in the control room. However, at approximately 0015, the site meteorological (Met) tower data appeared to stop updating its time display, and its wind stability display went blank. The inspector observed that the licensee had backup met tower data continuously available in the control room through the "MIDAS" system provided through Consolidated Edison at the Indian Point 2 plant. The licensee's investigation revealed that the Met tower data link had experienced several display problems in recent months, and that it was not directly affected by the date change following the year 2000 transition. In addition, the main generator stator temperature data logger in the control room correctly updated and printed temperature data at 12:00 a.m., but did not print its data at 1:00 a.m. The computer monitor showing the stator temperatures froze and did not show further updates. The licensee's preliminary investigation revealed that the stator temperature computer was subject to intermittent display freezes, and that there was no apparent direct connection to the year 2000 transition since it properly logged and recorded its data at midnight.

c. Conclusions

The inspector observed that there were no plant events or significant equipment failures that occurred during the year 2000 transition. None of the minor computer anomalies with met tower data or main generator temperature that occurred after the transition appeared to be attributable to the year 2000 transition. Both problems were quickly rectified, and did not have any operational or safety consequences.

O2.2 Loss of a Few Hundred Gallons of Component Cooling Water into the Containment Sump While Placing Excess Letdown into Service

a. Inspection Scope (71707, 62707)

The inspector reviewed NYPA's actions following an inadvertent lifting of the component cooling water (CCW) relief valve AC-792 in the excess letdown heat exchanger. See Section O1.2 for additional details.

b. Observations and Findings

On January 11, 2000, the CCW relief valve on the excess letdown heat exchanger lifted during an attempt to place excess letdown into service and approximately 230 gallons of CCW were discharged into the containment sump. When the licensee initiated CCW flow to the heat exchanger, a high pressure transient caused the relief valve to lift. The inspector discussed this issue with the CCW system engineer, and reviewed the DER and procedure for venting the CCW side of the heat exchanger. System operating procedure SOP-CC-1A, "Component Cooling System Operation - Filling, Venting, and Draining," had been used to vent the CCW side of the heat exchanger at the end of the last refueling outage and prior to heating up the plant. However, the procedure did not require that CCW flow be established prior to venting. With CCW flow isolated, there was not a motive force to expel air from the CCW side of the heat exchanger, and air remained trapped within the heat exchanger after the vent valve was closed. The inadequate procedure is a minor violation of NRC requirements and is not subject to enforcement. The licensee stated that procedure SOP-CC-1A will be revised to assure that the excess letdown heat exchanger is properly vented prior to placing excess letdown flow into service.

c. Conclusions

The licensee's procedure for venting component cooling water (CCW) at the excess letdown heat exchanger was inadequate. This resulted in a lifted relief valve and a loss of more than 200 gallons of CCW when the licensee attempted to place the heat exchanger in service for excess letdown.

O2.3 Operational Safety Verification (NCV 05000286/1999010-03)

a. Inspection Scope (71707)

Throughout the inspection period, the inspector performed regular tours in the control room, electrical switchgear room, auxiliary feedwater building, emergency diesel generator building, turbine building, and the primary auxiliary building.

b. Observations and Findings

General equipment condition and housekeeping in these areas were assessed to be acceptable.

Daily Plant Turnover Observations

The inspector observed shift turnover briefings throughout the inspection period. The shift turnover briefings provided the crew with appropriate information involving equipment status, recent problems, and scheduled maintenance and surveillance activities. The shift turnover briefs were performed well and were consistent with management expectations for quality and formality.

Nuclear Plant Operator Tour Observations

On January 1 and 2 the inspector observed a nuclear plant operator (NPO) performing a portion of his plant rounds. The NPOs were found to be knowledgeable about monitored parameters and plant limits. The inspector observed two instances of uncontrolled information available to operators in the field. The toxic gas monitor had instructions about negative readings hand written on adjacent surfaces, and valve WD-RCV-014 had information on its automatic features and the location of its controls written on duct tape attached nearby. The NPO indicated that the information on reading the meter on the toxic gas monitor had been used in the past; however, the inspector did not observe the NPO using the information to perform his job on this occasion. The licensee subsequently removed the duct tape near valve WE-RCV-014, and indicated that similar conditions would be reviewed and corrected.

33 Emergency Diesel Generator (EDG)

On January 26, 2000, the inspector observed that one of the 33 EDG cell exhaust fan (319) louvers was full open while the licensee was performing maintenance on the fan and motor. The fan blades were uncoupled from the motor as part of a post-maintenance test following fan replacement, and when the motor was energized for the test, the louvers opened fully as designed. Although the licensee's work control process did not require a diesel LCO entry for the fan maintenance, the inspector was aware that engineering had previously determined that this configuration could result in inadequate cooling of the diesel cell if the second exhaust fan started during diesel operation. In that situation, the one functioning fan with two full open louvers would cause a short circuit air flow path through the non-functioning fan. This could limit cool air flow through the cell and prevent adequate cooling of the diesel and associated support equipment. The inspector immediately discussed this with the shift manager and he

directed entry into the diesel LCO since there was no basis for its operability while the louvers for the non-functioning fan were fully open. The licensee initiated DER 00-00205 to address this issue.

Administrative procedure AP-21.9, "Implementing Limiting Conditions for Operation," required that all work requests, DERs, surveillance tests, or other documents generated that affect the operability status of a primary component should be entered into the LCO tracking system and logged on an LCO tracking or continuation sheet. This Severity Level IV violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was appropriately entered into the licensee's corrective action system, and will be treated as a non-cited violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy **(NCV 05000286/1999010-03)**.

c. Conclusions

Except for the 33 Emergency Diesel Generator (EDG) during routine inspection tours, the inspector assessed the general plant equipment condition to be acceptable. Inadequate work control for a post-maintenance test of the EDG exhaust fan resulted in an unevaluated configuration of an EDG ventilation system. The impact on operability was not properly assessed when the work activity was scheduled or performed. **(NCV 05000286/1999010-03).** The inspector also observed instances of unofficial and uncontrolled information in the plant that had been used by auxiliary operators.

O7 Quality Assurance in Operations

O7.1 Offsite Safety Review Committee Quarterly Meeting

a. Inspection Scope (71707)

The inspector observed a portion of the quarterly meeting of the offsite Safety Review Committee (SRC).

b. Observations and Findings

On January 20, 2000, the inspector observed a portion of the quarterly meeting of the SRC. The formal agenda items used by the committee were consistent with the technical specifications requirements for the appropriate level of review for current issues, and other matters pertaining to plant safety. The inspector also observed that the SRC members provided good insights and independent observations to address ongoing configuration control deficiencies at IP3.

c. Conclusions

The offsite Safety Review Committee quarterly meeting was conducted in accordance with technical specification requirements, and the members provided good insights during discussions of plant issues related to safety.

O8 Miscellaneous Operations Issues

O8.2 (Closed) Licensee Event Report (LER) 1998-006; "Automatic Reactor Trip Due to a High Resistance Contact on a Reactor Protection Relay While Testing an Analog Channel"

On September 29, 1998, the licensee submitted LER 1998-006, "Automatic Reactor Trip Due to a High Resistance Contact on a Reactor Protection Relay While Testing an Analog Channel," to the NRC. The LER described an automatic reactor trip on August 30, 1998, that occurred during testing of a train B channel I pressurizer level instrument. The cause of the trip was undetected high resistance in the contacts of a train B channel II relay in the reactor protection system (RPS) logic matrix for high pressurizer level which caused the channel II bistable to trip. When the channel I bistable was tripped for testing, the required two-out-of-three trip logic in the RPS was made up and the reactor automatically tripped.

Immediately following the reactor trip, the licensee performed voltage drop measurements on all pressurizer high level trip relays in all three channels of trains A & B. Three relays were discovered to have high resistance contacts and were subsequently replaced. Both logic trains were functionally tested following replacement of the relays, and the licensee determined that relay voltage tests should be incorporated into the monthly RPS surveillance tests. The licensee revised the RPS surveillance test procedures to require resistance checks and also completed a major replacement of RPS logic relays during the last refueling outage. The inspector determined that the LER was adequate to describe the causes and corrective actions related to this event. Based upon the inspector's in-plant observations of the subsequent relay replacements, RPS surveillance testing, discussions with I&C technicians, corrective actions taken, this LER is closed **(LER 1998-006)**.

O8.3 (Closed) LER 1999-003; "Automatic Reactor Trip Due to Flow Transmitter Low Flow Bistable Actuation on Reactor Coolant Loop 3 While Unisolating Another Transmitter as a Result of an Inadequate Work Package"

On April 6, 1999, the licensee submitted LER 1999-003, "Automatic Reactor Trip Due to Flow Transmitter Low Flow Bistable Actuation on Reactor Coolant Loop 3 While Unisolating Another Transmitter as a Result of an Inadequate Work Package," to the NRC. The LER described an automatic reactor trip on March 9, 1999, that occurred following installation of a temporary modification on reactor coolant system (RCS) flow transmitter FT-436 that isolated the low pressure side of the transmitter. The transmitter's low side blowdown valve had experienced seat leakage and was replaced. The temporary modification was performed to isolate the low pressure side of the transmitter while the blowdown valve was replaced. However, when the low pressure side was unisolated to place the transmitter in service, a pressure spike was propagated

through FT-436 and into its high pressure side, which is common to two other RCS flow transmitters. The pressure spike was sensed in FT-435 which made up the two-out-of-three RPS logic for low RCS flow in a single loop, and the reactor automatically tripped.

The licensee's subsequent troubleshooting revealed that the FT-435 transmitter was "overly sensitive" to small pressure perturbations because the third transmitter (FT-434) remained stable and unaffected when FT-436 was returned to service. Additional evaluation by the licensee determined that isolation and leak repairs of the RCS flow transmitters should not be performed above reactor power permissive interlock P-8, which was reset at 50% during the last refueling outage . The licensee's maintenance procedures for RPS transmitter leak repairs were also revised to preclude such repairs above the P-8 interlock. The licensee also replaced FT-435 during the last refueling outage following a satisfactory sensitivity test on the replacement transmitter. Based on in-plant reviews of the licensee's outage activities to readjust the P-8 interlock, and discussions with I&C management regarding maintenance procedure revisions, the inspector considered the licensee's corrective actions to address this event to be adequate. The LER adequately described the causes and necessary corrective actions for this event, and is therefore closed **(LER 1999-006)**.

II. MAINTENANCE

M1 Conduct of Maintenance

M1.1 Maintenance General Comments

a. Inspection Scope (62707)

The inspectors observed selected maintenance work activities and reviewed supporting work documentation. The activities were selected based on the systems, structures, or components contained within the scope of the maintenance rule and their risk significance.

b. Observations and Findings

PID 44162 - 32 SI Pump bearing cooler tubing replacement

On January 11, 2000, the inspector observed the safety injection (SI) pump heat removal system pipe replacement. During a routine system walkdown, the system engineer found a section of carbon steel piping in a SI pump bearing cooler pipe section where stainless steel was specified. The maintenance activity observed removed the carbon steel pipe and replaced it with a stainless steel pipe. This pipe traverses from the bearing to the inlet of the cooler. The inspector walked down the PTO with the maintenance mechanics and observed the pipe replacement. The new stainless steel pipe did not line up with the existing pipe. The mechanic exhibited poor work practices by bending the existing pipe and then improperly disconnected the cooler outlet in an attempt to align the pipes. The supervisor then disconnected the cooler inlet and the pipes were reconnected. The supervisor then tightened the improperly loosened cooler outlet. The inspector did not observe error reduction techniques, such as "stop, act,

think, and review" (STAR), which could have prevented the improper loosening of the cooler outlet pipe. The supervisor did not observe the mechanic loosen the pipe improperly. The pump retest was completed satisfactorily to demonstrate operability. The material compatibility issue was reviewed by an NRC engineering review team and will be documented in NRC IR 05000286/1999011.

PID 46704 - Replacement of the 33 EDG Fuel Pump and Snubber Valve

On January 27, 2000, the inspector observed the replacement of the EDG cylinder 5L fuel pump and snubber valve. The pump was replaced because high vibration readings indicated fuel pump and snubber valve degradation. The work package set up the initial conditions for the pump replacement. However, due to other maintenance also being performed on the EDG, the alignment of the EDG crankshaft changed, i.e. alternated back and forth as necessary to accomplish both activities. The mechanic realized the current EDG conditions did not support the installation of the fuel pump. The EDG alignment was then corrected to allow fuel pump installation. The initial communications during EDG alignment changes appeared to be ineffective; however, communications improved as the PM progressed.

GNR-020-EL-C, "Emergency Diesel Generator 2-Year Inspection"

The inspector observed the lubricating oil heater inspection. This inspection took resistance readings on all of the heaters and across the heater bank. The inspector reviewed the procedure and found a discrepancy between the illustration of heater labels in the procedure and their actual arrangement on the EDG. The inspector discussed this discrepancy with the maintenance supervisor and was informed that this would be corrected.

c. Conclusions

The licensee satisfactorily completed observed maintenance activities and successfully performed post-maintenance testing for operability. The inspector observed several minor human performance discrepancies associated with error reduction techniques and poor work coordination of a safety-related component under a protective tagging order.

M1.2 Surveillance General Comments

a. Inspection Scope (61726)

The inspectors reviewed selected surveillance test activities and supporting documentation. The activities were selected based on the systems, structures, or components contained within the scope of the technical specifications and the maintenance rule.

b. Observations and Findings

The inspectors observed all or portions of the following surveillances:

3PT-Q95A, "Pressurizer Pressure Loop P-455 Functional Test"

On January 6, 2000, the inspector observed the pre-job briefing and the periodic test of the pressurizer pressure loop P-455. The pre-job briefing covered the scope of the job, expected alarms, and the changes to the controlling and alarm channels for pressurizer pressure. The briefing was satisfactorily performed in accordance with administrative procedure AP-19, "Surveillance Test Program." The inspector observed "stop-think-act - review (STAR)" techniques, peer checking, and good 2-point communications during the test. Steps 4.2.13 and 4.2.14 required a verification of two relays that could not be performed because the relay identifiers in the field did not match the test. The test was appropriately stopped and a temporary procedure change (TPC) was written to correct this discrepancy.

3PT-Q01D, "#34 Station Battery Surveillance and Charging"

On January 10, 2000, the inspector observed the preparation and the commencement of the station battery periodic surveillance and charging test. This Technical Specification surveillance test satisfactorily verified the design function capability of the station batteries. The electrical technicians practiced good 2-point communications during the transfer of data on individual cell voltage, specific gravity, and temperature, and performed the test in accordance with administrative procedure AP-19, "Surveillance Test Program."

c. Conclusions

Routine surveillance tests were conducted satisfactorily and in accordance with procedural and administrative requirements. Test instrumentation was observed to be within the required calibration periods and all test acceptance criteria for operability were met, or subsequently evaluated for acceptable performance.

M1.3 Walkdown of the 120 VAC Instrument Buses and 125 VDC Distribution System

a. Inspection Scope (61726, 71707, 37551)

The inspector performed a walkdown of the 125 Volt DC and 120 Volt AC instrument buses using check-off lists COL-EL-3 "Instrument Buses and Distribution Panels," and COL-EL-2, "Lighting and Low Voltage Distribution Systems," respectively to verify proper system alignment.

b. Observations and Findings

The 125 Volt DC electrical distribution system supplies DC power to equipment and components during normal plant operation, and provides power to equipment following a loss of AC power. The inspector verified proper system alignment and looked for

discrepancies such as unauthorized operator aids, equipment condition problems, and deficient equipment labeling.

References

The inspector verified the accuracy of the controlled breaker list for each electrical panel. However, COL-EL-3 referenced several drawings that were unrelated to the 125 VDC system. The licensee indicated that these discrepancies would be corrected with the next revision to the procedure.

Breaker Positions

COL-EL-3 required all 125 VDC breakers to be closed with the exception of alternate power supply breakers. COL-EL-2 required all 120 VAC breakers to be closed except spares. The licensee initiated DER 00-00120 to evaluate and resolve the inconsistent requirement for the position of spare breakers. The inspector noted that all breakers were in their proper positions as indicated in the COLs (or a plant procedure), except breaker 4 in DC Power Panel 33. This was a spare breaker that had problem identification tag (PID) 44195 associated with it to identify a broken breaker switch. The tag was not currently entered in the PID tracking system because the work had been canceled due to a low priority. This represented an example of PID tags left hanging on equipment after the maintenance work was completed or canceled.

Instrument Bus Alternate Feeds

The inspector observed that PIDs were present on the Motor Control Centers which contain the alternate feeds for three of the Instrument buses. These PIDs identified deficiencies with fuses in the panels that were observed in 1998 during a PM when one of two installed fuses was blown on the 34 instrument bus back up feed. The failure of this fuse made the back up power supply inoperable. The design engineer subsequently reviewed the failure and determined that all of the fuses required replacement. The fuse replacement was ongoing at the end of the report period.

Instrument Bus Filter Units

The inspector observed that PIDs and caution tags were on the instrument bus filter indicating lights. These lights provided the indication of power to the instrument bus filters, but the lights were not illuminated. The lack of this indication required the nuclear plant operator to open these panels daily to verify operation. The inspector noted that this was not an operator-work-around under the licensee's definition; however, it provided an additional burden to the nuclear plant operator to determine the status of the system.

PIDs 42453, 42454, and 42455 were attached to the indicating lights. These PIDs described a potential for a short to occur during bulb replacement. The inspector checked the computer database for these three PIDs, but only 42453 was listed. PIDs 42454 and 42455 were canceled to that PID to allow engineering to analyze the problem under a single work request. This represented another example of PID tags still installed on plant equipment after the maintenance work was completed or canceled.

Battery Chargers

The inspector observed several PIDs on the station battery chargers which described the need for preventive maintenance (PM) on the chargers. The licensee did not currently have any regular PM activities for battery chargers, but the PID tags were more than two and one half years old. The licensee indicated that battery charger PMs were being developed by the Instrumentation and Control department; however, their development has been delayed by a modification to the 35 battery charger which has taken excessive time to implement. The modification was designed to allow this battery charger to be connected to any battery, and would allow battery PMs to be performed with the plant on-line.

c. Conclusions

Following a walkdown of the 120 VAC Instrument Buses and 125 VDC buses, the inspector concluded that the system was capable of performing its design function. The inspector also found several canceled problem identification tags inappropriately hanging on equipment in the plant.

M1.4 Technical Specification Surveillance Tests

a. Inspection Scope (61726)

The inspector reviewed the technical specification battery surveillance test procedures, and reviewed documentation of the most recent performance of these tests.

b. Observations and Findings

Monthly Test

Technical Specification (TS) 4.6.B.1 required that the monthly checks of the voltage for each cell, temperature and specific gravity of a pilot cell, and battery voltage for each battery be measured and recorded. This requirement was satisfied by 3PT-M21 "Station Battery Surveillance" which was last performed satisfactorily within the required surveillance interval.

Quarterly Test

TS 4.6.B.2 required that every three months each battery be subjected to a 24 hour load equalizing charge and the measurements of specific gravity of each cell, the height of electrolyte of each cell, and the temperature of every fifth cell be recorded. This requirement was satisfied by tests 3PT-Q01A - D, "#31 - #34 Station Battery Surveillance and Charging," test that verified the appropriate parameters were within specifications. These tests were last performed satisfactorily in the proper interval with the exception of the 33 Station Battery (PT-Q01C). This test did not meet the specified administrative acceptance criteria because two cells did not have the required specific gravity. This did not render the battery inoperable, but the licensee determined that these cells would be monitored during the monthly surveillance tests.

Refueling Tests

TS 4.6.B.3 required that every 24 months each battery be subjected to a service test and a visual inspection of each plate. This was satisfied by the performance of procedure 3PT-R156A - D "Station Battery #31 - 34 Load-Profile Service Test." These tests were last performed satisfactorily within the proper surveillance interval. TS 4.6.B.4 required that at least every 60 months each battery be subjected to a performance discharge, or modified performance discharge, to verify that the battery capacity is at least 80 percent of the manufacturer's rating. TS 4.6.B.5 required that any battery demonstrated to have less than 90% capacity shall be subjected to an annual test discharge. This was satisfied by 3PT-172A-D, "Station Battery #31 - 34 Modified Performance Test." These tests were last performed satisfactorily and within the proper surveillance interval. However, the 31 and 32 station batteries did not initially meet 90 percent of the manufacturer's rated capacity. The manufacturer provided the licensee with updated battery discharge rates, and the licensee's calculations demonstrated adequate battery performance based on these rates.

c. Conclusions

Based on a review of documented surveillance tests, the inspector concluded that the licensee satisfactorily accomplished technical specification requirements for battery testing, and adequately demonstrated station battery operability.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Electric Tunnel Fan Modification Acceptance Test

a. Inspection Scope (62707)

The inspector reviewed NYPA's actions after the failure of the modification acceptance test for the 34 electrical tunnel fan.

b. Observations and Findings

On January 19, 2000, the licensee performed a modification acceptance test (MAT) after installing an additional high temperature thermostat that would automatically start the electrical tunnel (ET) exhaust fans. The ET fans were designed to provide cooling to the electrical tunnel and the cable spreading room following a loss of offsite power to the control building fans. The licensee's troubleshooting of the 34 ET fan revealed that it did not start automatically during the MAT because two jumpers in the control circuit for the exhaust fans had not been re-installed in 1992 following the last replacement of fan switch 1/F34 in the control room. The inspector reviewed the 1992 work request and post-maintenance test, and noted that the switch was replaced because it did not lock in the "start" or "stop" position. However, after the switch was replaced, the post-maintenance test did not test the automatic function of the fan. On January 24, 2000, the licensee initiated DER 00-0196 to document the wiring problem with the fan switch. However, this documentation occurred five days after the fan failed to automatically start, and after the jumper problem had been identified. Although the automatic start of

the ET fans were not a technical specification requirement, the DER did not represent a timely identification of a MAT failure. After the necessary jumper was replaced, the licensee successfully tested all ET fans for automatic operation.

a. Conclusions

The licensee's corrective actions following a failure of an electric tunnel fan to automatically start during a modification acceptance test were adequate to identify the cause of the failure as a 1992 wiring error and inadequate post-maintenance test. However, the licensee did not document this problem in a timely manner, or until the cause of the problem was identified.

M8 Miscellaneous Maintenance Issues

M8.1 33 Emergency Diesel Generator Preventive Maintenance Critique

a. Inspection Scope (71707, 62707, 92700)

The inspector observed the critique after the 33 emergency diesel generator (EDG) two-year preventive maintenance (PM) activities.

b. Observations and Findings

On January 28, 2000, the inspector observed the licensee's 33 EDG critique. This PM was originally scheduled to be performed on January 25, 2000; however, it was postponed due to the severe weather. The limiting condition for operation had been entered when the PM was postponed, so significant reductions in the PM performance time were necessary to reduce the total outage time for the EDG. The licensee subsequently performed the PM in 16 hours, which represented the shortest time that the PM had ever been completed. In part, that success was due to the additional maintenance resources the licensee used for the PM.

The work week manager (WWM) directed the PM critique and focused on ways to shorten the PM. The only item discussed was the time required to heat up the diesel lube oil for restoring the EDG to operability after the PM was completed. However, during the PM work, the inspector observed that the engine's alignment was not effectively communicated between two different groups working on the engine (see paragraph M1.1). The inspector also observed that electricians recording the readings on the lubricating oil heaters did not believe that readings on the individual heaters were necessary. These items were not raised during the critique for improvement, nor were improvements in work coordination discussed.

c. Conclusions

The licensee's critique of the 33 Emergency Diesel Generator two-year preventive maintenance was not very self critical, and contained very little discussion about the deficiencies that were identified or areas for improvements.

III. ENGINEERING

E2 Engineering Support of Facilities and Equipment

E2.1 31 Charging Pump Failure

a. Inspection Scope (38703)

The inspector reviewed the licensee's analysis and corrective actions for a failure of the 31 charging pump.

b. Observations and Findings

The 31 charging pump displayed erratic operation on December 15, 1999, that resulted in decreased pump flow, and caused a reactor coolant pump seal injection filter high differential pressure alarm to actuate in the control room. The pump was subsequently removed from service and tagged out for troubleshooting. The licensee initiated DER 99-02780 to investigate the event and assigned the system engineer an action to complete an equipment failure diagnosis. Following disassembly of the pump, the investigation revealed that internal discharge check valve #5 had failed and split after losing its interference fit in the pump cylinder block. Further detailed investigation revealed that the contact area between the valve and the block had been significantly reduced as a result of high impact forces that unseated the valve. A taper gage measurement revealed cylinder block contact in an approximate 50° equivalent arc out of a total of 360° possible.

The licensee attributed the reduced contact area to normal mechanical wear in the cylinder block experienced when the check valve was replaced during the normal preventive maintenance (PM) interval. The licensee used a replacement technique that retracted the old valve by mechanical means, and then partially inserted the replacement valve after it was cooled with liquid nitrogen. The replacement valve was then fully seated by pounding with brass bars and listening for full seat contact ("thunking method"). All of the inlet and outlet check valves in the 31 pump were last replaced in August 1998 using this method. The thunking method was developed by the pump manufacturer (Union Pumps), who also provided onsite training for NYPA maintenance personnel. The 31 pump had approximately 1500 hours of run time when the failure occurred. A similar failure on the 31 pump also occurred in 1995; however, the licensee considered the current failure to be isolated since the manufacturer's valve replacement techniques were used, and the normal PM frequency was maintained on the pump.

The licensee considered that the thunking method for check valve replacement resulted in unnecessary wear in the pump cylinder block, and developed a maintenance procedure that would utilize liquid nitrogen during all phases of check valve removal and installation to minimize mechanical wear. The pump manufacturer had previously endorsed that method, but revised it due to industry failures after the wrong technique was used to install the valves at cryogenic temperatures. The licensee had presented

the revised procedure to the pump manufacturer for review; however, their concurrence had not been obtained at the end of the current inspection period.

c. Conclusions

Engineering completed an adequate analysis of the 31 charging pump failure, and pursued a good initiative to prevent similar failures by proposing a revision to the manufacturer's approved methodology for replacing internal check valves.

IV. PLANT SUPPORT

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Primary Coolant Chemistry Sample

a. Inspection Scope (71750)

The inspector observed a chemist drawing a primary sample and analyzing it for boron concentration, activity, and lithium to verify proper procedure adherence.

b. Observations and Findings

On January 19, 2000, the inspector observed a chemistry technician obtain a reactor coolant sample in accordance with system operating procedure SOP-SS-1. The inspector also observed the analysis for boron in accordance with RE-CA-081 "Determination of Boron in Aqueous Solution Using the Mettler DL25 Titrator." The inspector reviewed these procedures and determined that the chemist accurately analyzed and documented the sample.

c. Conclusions

The inspector concluded that a watch chemist accurately analyzed and documented a routine primary coolant sample and analysis for boron in accordance with procedures.

X1 Exit Meeting Summary

The resident inspectors presented inspection findings and results to NYPA management on February 10, 2000. The licensee acknowledged the findings presented, and did not identify any materials examined during the inspection that were considered proprietary.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

E. Armondo	Operations Manager
R. Barrett	Site Executive Officer
F. Dacimo	Plant Manager
J. Comiotes	General Manager-Operations
J. DeRoy	Director, IP-3 Engineering
R. Deschamps	HP Manager
S. Prussman	Acting Manager, Licensing
D. Mayer	General Manager-Support Services
R. Barroni	I&C Manager
K. Peters	Licensing Manager
J. Perrotta	Quality Assurance Manager
P. Rubin	Assistant Operations Manager
J. Russell	General Manager-Maintenance
A. Vitali	Maintenance Manager

INSPECTION PROCEDURES USED

IP 37551:	On-site Engineering
IP 40500	Corrective Action Program
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observation
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities
IP 92700:	Event Reports
IP 92901:	Followup - Operations
IP 92902:	Followup - Maintenance
IP 92903:	Followup - Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

URI 05000286/1999010-01	Inattentive control room supervisor.
NCV 05000286/1999010-02	Inadequate administrative procedure, check-off lists, and protective tagging not effective for assuring adequate configuration controls.
NCV 05000286/1999010-03	Inadequate work control for a post-maintenance test of EDG exhaust fan resulted in EDG inoperability.

Closed

LER 05000286/1998-06	Automatic Reactor Trip Due to a High Resistance Contact on a Reactor Protection Relay While Testing an Analog Channel
LER 05000286/1999-03	Automatic Reactor Trip Due to Flow Transmitter Low Flow Bistable Actuation on Reactor Coolant Loop 3 While Unisolating Another Transmitter as a Result of an Inadequate Work Package

LIST OF ACRONYMS USED

AFW	Auxiliary Feedwater System
AP	Administrative Procedure
CCR	Central control room
CCW	Component Cooling Water System
CFR	Code of Federal Regulations
COL	Check Off List
CRS	Control Room Supervisor
CVCS	Chemical and Volume Control System
DER	deficiency/event report
EDG	emergency diesel generator
ET	electric tunnel
FT	flow transmitter
I&C	instrumentation and controls
IP3	Indian Point Nuclear Power Plant Unit 3
IR	Inspection Report
LCO	limiting condition for operations
LER	Licensee Event Report
NCV	Non-cited Violation
NPO	Nuclear Plant Operator
NRC	Nuclear Regulatory Commission
NYPA	New York Power Authority
PDR	Public Document Room
PID	Problem identification/discrepancy
PM	preventive maintenance
PTO	Protective Tagging Order
QA	Quality Assurance
RCS	reactor coolant system
RHR	residual heat removal
RO	refueling outage
RP&C	Radiological Protection and Chemistry
RPS	reactor protection system
SI	safety injection
SRC	Safety Review Committee
STAR	stop, think, act, review
TS	technical specifications
URI	unresolved item

VAC	volts - alternating current
VDC	volts - direct current