

March 26, 2002

Mr. Fred Dacimo
Vice President - Operations
Entergy Nuclear Operations, Inc.
Indian Point Nuclear Generating Units 1 & 2
295 Broadway, Suite 1
Post Office Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT 2 - NRC INSPECTION REPORT 50-247/01-14

Dear Mr. Dacimo:

On February 9, 2002, the NRC completed an inspection at the Indian Point 2 (IP2) Nuclear Power Plant. The enclosed report presents the results of that inspection. The results were discussed on February 13, 2002, with Mr. Larry Temple and members of your staff.

The inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel. The inspection also reviewed the results of the performance assessment completed by a large industry team in November 2001 and planned improvements described in your recently submitted Fundamentals of Improvement Plan (FIP). The FIP was found to contain actions intended to address the underlying problem areas identified in previous NRC inspection reports and your November 2001 Self Assessment. This will continue to be an area of NRC review through inspections and periodic meetings. In this regard, a meeting was conducted in Region I on February 27, 2002, to discuss the FIP, including your performance metrics.

Immediately following the terrorist attacks on the World Trade Center and the Pentagon, the NRC issued an advisory recommending that nuclear power plant licensees go to the highest level of security, and all promptly did so. With continued uncertainty about the possibility of additional terrorist activities, the Nation's nuclear power plants remain at the highest level of security and the NRC continues to monitor the situation. This advisory was followed by additional advisories, and although the specific actions are not releasable to the public, they generally include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with law enforcement and military authorities, and more limited access of personnel and vehicles to the sites. The NRC has conducted various audits of your response to these advisories and your ability to respond to terrorist attacks with the capabilities of the current design basis threat (DBT). On February 25, 2002, the NRC issued an Order to all nuclear power plant licensees, requiring them to take certain additional interim compensatory measures to address the generalized high-level threat environment. With the issuance of the Order, we will evaluate Entergy Nuclear Operations, Inc. compliance with these interim requirements.

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Based on the results of this inspection, three violations of NRC requirements were identified related to a minor service water pipe leak, design control errors for a temporary modification of a backup nitrogen system, and an operator tagging procedure error which resulted in the short term inoperability of an emergency diesel generator. However, because of the very low safety significance of these issues and because they have been entered into your corrective action program, the NRC is treating them as Non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these Non-cited violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Indian Point 2 Nuclear Power Plant.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm.html> (the Public Electronic Reading Room). Should you have any questions regarding this report, please contact Mr. Peter Eselgroth at 610-337-5234.

Sincerely,

/RA/

Brian E. Holian, Deputy Director
Division of Reactor Projects

Docket No.50-247
License No. DPR-26

Enclosure: Inspection Report 50-247/01-14

Attachment 1 - Supplemental Information

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L. Temple, General Manager - Operations
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H. Salmon, Jr., Director of Oversight, Entergy Nuclear Operations, Inc.
J. Fulton, Assistant General Counsel, Entergy Nuclear Operations, Inc.
W. Flynn, President, New York State Energy, Research
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Mayor, Village of Buchanan
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B. Brandenburg, Assistant General Counsel
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Mr. Fred Dacimo

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-247

License No. DPR-26

Report No. 50-247/01-14

Licensee: Entergy Nuclear Operations, Inc..

Facility: Indian Point 2 Nuclear Power Plant

Location: Buchanan, New York 10511

Dates: December 30, 2001 - February 9, 2002

Inspectors: William Raymond, Senior Resident Inspector
Peter Habighorst, Resident Inspector
Richard Rasmussen, Senior Resident Inspector
Laura Dudes, Senior Resident Inspector
Jimi Yerokun, Senior Reactor Inspector
Marc Ferdas, Reactor Inspector
Douglas Dempsey, Resident Inspector

Approved by: Peter W. Eselgroth, Chief
Projects Branch 2
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000247-01-14, on 12/30-020/9/2002, Entergy Nuclear Operations, Inc.; Indian Point 2 Nuclear Power Plant. Design Control for Mitigating Systems, Barrier Integrity, and Cross-Cutting Issues.

The report covered a 6 week period of inspection by resident and region-based inspectors. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/index.html>.

Cornerstone: Mitigating Systems

Green. The inspector identified that a temporary facility change (TFC) for the backup auxiliary feedwater system (AFW) nitrogen supply was deficient because component specifications critical to the design were not identified in the design package. This issue was considered more than minor because of the potential for an improper component substitution to impact operability of a risk significant system. However, this issue was determined to be of very low safety significance using phase one of the SDP because the modification was adequate as installed. The failure to include design specifications in the TFC was a violation of Criterion III, Design Control. This is being treated as a Non-cited violation.

Cornerstone: Barrier Integrity

Green. The licensee identified a minor leak in the service water piping while the plant was in cold shutdown for a maintenance outage. The leak was repaired prior to startup, and an extent of condition review identified no other defects in service water piping. The licensee determined that the leak most probably initiated during the shutdown period; however, for significance determination the licensee postulated that the defect existed during plant operation prior to the outage in order to conservatively estimate containment leakage during design basis events. This issue was determined to be more than minor because the defect in the service water piping created a potential leakage path from containment. However, the issue was considered to be of very low safety significance using phase two of the SDP because the service water leak did not affect the function of safety equipment, and the containment leakage potential was significantly less than that which would result in a large early release. The failure to maintain containment integrity was a violation of TS 3.6. This is being treated as a Non-cited violation.

Cross-Cutting Issues

Green. An operator error during a tagout verification rendered the 21 emergency diesel generator (EDG) inoperable. This occurred when the 23 EDG was inoperable for planned maintenance. The tagout error was considered more than minor since it could reasonably be viewed as a precursor to a station blackout event and impacted mitigating systems cornerstone. The issue was determined to be of very low safety significance using phase two of the SDP because the exposure time was of very short duration (approximately five minutes), and the error was self-revealing so that operator action could be credited for timely restoration of the safety function. The failure to properly verify the tagout was a violation of TS 6.8.1.a. This is being treated as a Non-cited violation.

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Report Details

SUMMARY OF PLANT STATUS

The plant operated at full power during the inspection period, except for brief minor power decreases for routine tests and maintenance.

1. REACTOR SAFETY (Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness)

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope (71111.04)

On January 10, 2002, the inspector performed a partial system walkdown of gas turbine (GT)-2, following a failure of GT-3, coincident with GT-1 out of service for maintenance. GT-3 was shut down during a monthly surveillance test due to a coolant leak on the starting diesel. The inspector observed the conditions on GT-3, and verified that the condition did not exist on GT-2. The inspector also reviewed the status of key GT-2 components based on check off list COL 31.2, "Gas Turbine 2," Revision 3. The inspector observed the physical condition of GT-2, reviewed the operations log of GT-2, and discussed performance issues with an operator.

On January 29, 2002, the inspector performed a partial system walkdown of the 21 and 23 auxiliary feedwater (AFW) pumps, while the 22 AFW pump was out of service to change the governor oil and complete the quarterly inservice testing. The licensee addressed packing leakoff on the 22 AFW pump. The inspector observed the conditions on the 21 and 23 AFW pumps, and verified that abnormal packing leakoff conditions did not exist. The inspector also reviewed the status of key AFW components based on check off list COL 21.3, "Auxiliary Boiler Feedwater," Revision 22. The inspector observed the physical condition of the 21 and 23 AFW pumps, reviewed the operations logs, and discussed equipment conditions with an operator and a system engineer.

On February 8, 2002, the inspector performed a partial walkdown of the 138KV system during an outage of feeder line 96951. The inspector verified the remaining normal and emergency diesel power supplies were aligned to the plant safety buses as required by Technical Specification 3.7.B.2.a. The inspector verified the operational alignments were proper using procedure SOP 27.1.1, Operation of 345KV and 138KV Components, Revision 15, and the operations planning package for tagout 96951. The inspector discussed the status of the 138 KV supplies to the station auxiliary transformer with operations and work planning personnel.

b. Issues and Findings

No significant findings were identified.

.2 Full System Walkdowns

a. Inspection Scope (71111.04S)

The inspection scope involved a system walkdown of the fuel oil system for the three emergency diesel generators. The inspector selected the fuel oil system based upon its importance to plant safety and risk. Failure of the fuel oil system is one of the top ten events associated with risk achievement worth in the probabilistic risk assessment. The Technical Specification requirements for the emergency diesel generator fuel oil system are identified in Technical Specification 3.7. The inspector walked down the fuel oil system to confirm it was appropriately aligned in accordance with the following licensee procedures and drawings:

- Check off list (COL) 27.3.1, Diesel Generators, Revision 21
- 9321-F-2030-36, "Flow Diagram Fuel Oil To Diesel Generators"

The inspector noted there were no outstanding temporary facility changes or operator workarounds on the system. The inspection verified that the licensee appropriately identified and resolved deficiencies associated with the fuel oil system, as documented in condition reports. The list of condition reports specifically evaluated by the inspector is provided in Attachment 1. The inspector also reviewed selected open issues associated with the emergency diesel generator design basis document (DBD) associated with the fuel oil system.

b. Issues and Findings

No significant findings were identified.

1R05 Fire Protection

.1 Fire Zone Tours

a. Inspection Scope (71111.05Q)

The inspector toured the areas important to plant safety and risk based upon a review of Section 4.0, "Internal Fires Analysis," and Table 4.6-2, "Summary of Core Damage Frequency Contributions from Fire Zones," in the Indian Point 2 Individual Plant Examination for External Events (IPEEE). The inspector evaluated conditions related to (1) licensee control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment and features; and (3) the fire barriers used to prevent fire damage or fire propagation. The areas reviewed were:

- Zone 15A, Valve Room 42' PAB
- Zone 13A, Valve Room 59' PAB
- Zone 22A, Valve Corridor 98' PAB
- Zone 27A, Corridor, 98' PAB
- Zone 32A, Electric Tunnel
- Zone 650, Gas Turbine No. 1

Reference material consulted by the inspector included the Fire Protection Implementation Plan, Pre-Fire Plan, and Station Administrative Orders (SAOs)-700, "Fire Protection and Prevention Policy," SAO-701, "Control of Combustibles and Transient Fire Load," SAO-703, "Fire Protection Impairment Criteria and Surveillance," and Calculation PGI-00433, "Combustible Loading Calculation."

A number of minor issues and procedural deficiencies were independently identified by the inspector that did not significantly impact the ability of the licensee to either: 1) prevent, promptly detect and suppress fires that do occur, or 2) protect structure, system, and components (SSCs) important to safety for achieving safe shutdown of the unit in case of a fire. The observations were entered into the licensee's corrective action program as Condition Reports 200200072, 200101657, 200201622, and 200200591.

b. Issues and Findings

No significant findings were identified.

1R11 Licensed Operator Requalification

.1 Observation of Simulator Training

a. Inspection Scope (71111.11)

The inspector observed licensed operator simulator training conducted on February 1, 2002, per Instructor Guide No. LP-EOP022001A to assess the adequacy of the training and licensed operator performance, and the adequacy of the licensee's critique. The training included simulator drills per Scenario 22 on responding to a steam generator tube rupture and a loss of reactor coolant using procedures E-0, E-3, ECA-3.1 and AOI 1.2. The inspector verified the training included instructions in the proper diagnosis and understanding of plant conditions, and emphasized management expectations on licensed operator performance.

b. Issues and Findings

No significant findings were identified.

.2 Enhanced Monitoring of Control Room Activities

a. Inspection Scope (71111.11, 71715)

The inspector continued an augmented inspection plan for heightened observation of control room activities and operator performance. The augmented inspection used resident and region-based inspectors. The inspector monitored control room activities to verify operators, control room supervision and shift managers remained cognizant of plant conditions and work activities in the field. The inspector verified the Shift Mentors were involved and interacted with the crews to provide real time feedback on performance and management expectations.

The inspector confirmed the plant was operated safely and that the conduct of operations was generally in conformance with licensee administrative requirements. The inspector verified operators properly responded to unexpected plant conditions, and followed alarm response and other operating procedures. Shift logs were reviewed to confirm proper responses to inoperable equipment and documentation of control room activities. Shift turnovers and shift briefings were observed to verify the information exchanged was accurate. Inspector observations of performance deficiencies having minor safety significance were discussed with licensee management.

b. Issues and Findings

No significant findings were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope (71111.12)

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The inspector reviewed risk significant equipment problems that occurred during the 4th quarter of 2001 on the gas turbine (GT) generator system, including potential problems with assuring black start capability. The inspector reviewed licensee follow-up actions to assess the effectiveness of maintenance activities. Issues selected for review included licensee identification of any functional failures, maintenance preventable functional failures, and repetitive failures as well as problem identification and resolution of any maintenance related issues. The inspector also reviewed system availability, system reliability monitoring, and system engineering involvement. The following issues were reviewed:

<u>Report No.</u>	<u>Condition Description</u>
200200383	GT3 black start diesel loss of control indication
200201385	GT3 black start diesel loss of field flashing
200200396	GT3 black start diesel control breaker alignment
200201226	GT1 black start diesel ventilation control
200201133	GT1 trip on overspeed

b. Issues and Findings

No significant findings were identified.

1R13 Maintenance Risk Assessment and Emergent Work Activities

a. Inspection Scope (71111.13)

The inspector observed selected portions of emergent maintenance work activities to assess Entergy's risk management. The inspector verified that the licensee took the necessary steps to plan and control emergent work activities, took actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems. The inspector reviewed the operations plan for the 138 KV outage. The inspector discussed the risk management with maintenance and operations personnel for the following activities:

- 22 Auxiliary Feedwater Pump Maintenance and Packing Leak (CR 200201029)
- 138 Kilovolt Off-site Feeder Maintenance on February 7-9, 2002 (CR 20020123)
-

b. Issues and Findings

No significant findings were identified.

1R15 Operability Evaluations

a. Inspection Scope (71111.15)

The inspectors reviewed selected operability determinations to assess the adequacy of the evaluations, the use and control of compensatory measures, compliance with the Technical Specifications, and the risk significance of the issues. The inspectors used the Technical Specifications, Technical Requirements Manual, Final Safety Analysis Report, and associated Design Basis Documents as references. The specific issues reviewed included:

- Non-conservative pressurizer level drift used in safety analysis (CR 200200313)
- Equipment tag-out error during planned maintenance on 23 Emergency Diesel Generator (CR 200200192)
- Cable tray deluge trouble alarm resulting in securing both cable tunnel exhaust fans (CR 200200351)
- Leak in service water piping penetrating containment (Licensee Event Report LER 2001-06)

LER 2001-06 concerned a leak in service water piping that results in postulated containment leakage in excess of technical specification limits. The inspector reviewed the information the licensee provided to describe and analyze this event, including calculation FMX-00285-00 and Condition Report 200110417.

b. Issues and Findings

GREEN. During the October 2001 maintenance outage with the plant in cold shutdown, the licensee identified a through wall leak in the service water return line from the 22 fan motor cooler unit inside the containment. The cause of the leak was accelerated erosion due to a defect in the root pass of a weld in the 2-inch diameter, copper-nickel

pipe. The size of the defect was about 1/8 to 3/16 inches. The erosion was localized and there was no evidence that the flaw itself, or the minor leakage that was present, could impact on overall structural integrity of the piping and lead to a rupture of the pipe and significantly greater leakage. Neither pre-outage surveillance or work performed in the area of the leak earlier in the outage identified this minor leakage. Also, during plant operation prior to the outage, containment sump operations were not abnormal, and monthly reactor compartment entries did not identify signs of leakage. There were no other indications that the leak was increasing prior to its identification (e.g., containment humidity). The licensee completed repairs prior to plant startup from the outage, and performed an extent of condition review which identified no other defects in service water piping.

The licensee assessed the significance of the event assuming the defect existed during plant operations, although there was no indication of service water leaking into the containment via the sumps or fan cooler weirs prior to the October 2001 shutdown. Further, the licensee had not noted leakage from the line during outage work activities in the area prior to initial identification. Nonetheless, the licensee assumed the service water pipe defect could have existed during past periods of plant operations. The licensee estimated that a 3/16 inch defect could result in potential containment leakage of 0.18 weight per cent during a postulated loss of coolant accident, which would be in excess of the Technical Specification 4.4.A.2 limit of 0.1 weight per cent. Thus, the item was reported per 50.73(a)(2)(v) as LER 2001-06 on December 21, 2001, for a condition that could potentially have prevented the fulfillment of a safety function of a system needed to control the release of radiation and mitigate the consequences of an accident. Entergy concluded, based on an analysis from the reactor vendor (reference Westinghouse letter IPP-02-11 dated February 11, 2002), that the resulting doses were below the 10 CFR 50.67 limits, and thus the safety consequences were minimal.

In accordance with the NRC Inspection Manual Chapters 0609, "Significance Determination Process," and 0610*, "Power Reactor Inspection Reports," this issue was determined to be more than minor because leakage in the service water piping penetrating containment affects the integrity of the containment. However, the leak did not affect the function of the 22 fan since the motor cooler would have received adequate cooling. No other safety systems were affected. Further, the size of the leak was significantly less than that which would result in a large early release fraction. After consultation with the NRC Senior Reactor Analyst, and when evaluated in accordance with the SDP Phase 2 (IMC 0609 Appendix H), the issue was considered to be of very low safety significance (Green).

Technical Specification 3.6, requires, in part, that containment integrity be established for plant operation above cold shutdown, with leakage verified in accordance with Technical Specification 4.4 to be less than 0.1 weight per cent per day. Contrary to this requirement, on October 29, 2001, the licensee identified leakage in service water system piping which could have resulted in a containment leakage of 0.18 weight per cent during a postulated accident. The failure to maintain containment integrity is being treated as a Non-cited violation, consistent with Section VI.A of the Enforcement Policy, issued on May 1, 2000 (65 FR 25388). **(NCV 50-247/01-14-01)** The licensee entered

this item in the corrective actions program as Condition Report 200110417. See Section 4OA4.2 for further review of LER 2001-06.

1R16 Operator Workarounds

a. Inspection Scope (71111.16)

The inspector reviewed the licensee's list of twelve operator work-arounds as of January 18, 2002 to assess the cumulative effects on system reliability, availability and potential for mis-operation of a system. The inspector evaluated the following work-arounds to assess the operator's ability to implement abnormal operating procedures or emergency operating procedures:

- CR 200000908, Position indication variation on the lower right turbine control valve
- CR 200104684, Pressure relief tank pressure indication difference between the control room and the waste disposal panel
- CR 200105819, Reactor head vent valve tail pipe temperature differences with thermography
- CR 200112426, Intermediate range nuclear instrument start-up rate recorder differences with plant process computer
- CR 200112425, Oscillations of the 24 feedwater regulating valve
- CR 200110312, Narrow range containment pressure instrument reading higher than expected

The review also included the cumulative effect of the work-arounds for either increasing the potential for initiating events or impacting mitigating systems. The inspector verified the condition of the deficiencies and the compensatory measures taken. The inspector also reviewed the expectations in Operations Administrative Directive (OAD)-41, "Operator Burden Program", Revision 3.

The inspector noted a minor deficiency in that operators were not consistently characterizing the operator burdens when initiating a condition report. The licensee documented this item in condition report 20020112.

• Issues and Findings

No significant findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspector reviewed post-maintenance test (PMT) procedures and associated testing activities to assess whether 1) the effect of testing in the plant had been adequately addressed by control room personnel, 2) testing was adequate for maintenance performed, 3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing documents, 4) test instrumentation had

current calibrations, range, and accuracy for the application, and 5) test equipment was removed following testing.

The selected testing activities involved components that were risk significant as identified in IP2's Individual Plant Examination. The regulatory references for the inspection included Technical Specification 6.8.1.a. and 10 CFR 50 Appendix B criteria XIV, "Inspection, Test, and Operating Status." The following testing activities were evaluated:

- 22 auxiliary boiler feedwater pump test per PT-Q34 (TPC 02-040)
- GT-1 testing following overhaul per PT-M38A (CR 200201133, 200201153)
- 21 auxiliary feedwater pump run-out protection relay replacement (CR 200200073, 200200157, WO NP-02-25156)

b. Issues and Findings

No significant findings were identified.

1R22 Surveillance Testing

.1 Routine Surveillance Test Observations

a. Inspection Scope (71111.22)

The inspector reviewed surveillance test procedures and observed testing activities to assess whether 1) the test preconditioned the component tested, 2) the effect of the testing was adequately addressed in the control room, 3) the acceptance criteria demonstrated operational readiness consistent with design calculations and licensing documents, 4) the test equipment range and accuracy was adequate and the equipment was properly calibrated, 5) the test was performed per the procedure, 6) the test equipment was removed following testing, and 7) test discrepancies were appropriately evaluated. The surveillance observed was based upon risk significant components as identified in the Indian Point 2 Individual Plant Examination. The regulatory requirements that provided the acceptance criteria for this review were 10 CFR 50 Appendix B criterion V, "Instructions, Procedures, and Drawings," Criterion XIV, "Inspection, Test, and Operating Status," Criterion XI, "Test Control," and Technical Specifications 6.8.1.a.

The following test activities were reviewed:

- Containment sump leak rate per PT-M45, Revision 11 (CR 200201129)
- Reactor coolant system leak rate per SOP 1.7, Revision 29
- 480 Volt under voltage alarm per PT-M48, Revision 13
- Auxiliary feedwater pressure drop testing per PT-3Y7, Revision 1
- Primary to Secondary Leak Rate Determination per IPC-A-110S, Revision 8

The results of auxiliary feedwater system testing per PT-3Y7 were reviewed to verify that the integrity of underground piping was pressure drop tested in accordance with the ASME Boiler and Pressure Vessel Code, Section XI.

The inspector reviewed licensee actions throughout the inspection period to monitor primary to secondary system leakage. The inspector verified that the estimated leak rate correlated from condenser air ejector activity remained generally constant and well below the minimum reliable detection sensitivity of 0.5 gallons per day.

b. Issues and Findings

No significant findings were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope (71111.23A)

The inspector reviewed temporary facility change (TFC) package, TFC-2001-060, "N2 Backup to AFW and Atmos". This TFC was prepared to install a temporary backup AFW nitrogen supply header and thereby allow maintenance on the permanent backup nitrogen system without interrupting service. The inspector reviewed the TFC and associated safety evaluation to verify the facility change did not impact safety system operability and the license requirements, and did not violate 10 CFR 50.59. The inspector performed a field walkdown, reviewed the site procedure for performing temporary facility changes, SAO 206, Revision 22, "Temporary Field Change", and discussed the design with the lead system engineer.

b. Issues and Findings

GREEN. The temporary facility change package for the temporary backup AFW nitrogen supply was deficient because components critical to the design were not specified in the design package. The TFC consisted of piping, valves, hoses, and regulators to connect three existing high pressure nitrogen cylinders to the existing supply piping for the backup nitrogen system. Critical aspects of this TFC included the ability of the system to provide an adequate flowrate at a specified pressure for a certain duration. Important considerations were the regulator, valve and piping sizes. However, the design description in the TFC did not specify the regulators or valves that would meet the design requirements. The TFC package contained a sketch of the installation, but this also lacked specific component data.

The inspector discussed the issue with the system engineer and determined that the correct components were in fact installed. The system engineer provided the specific component requirements to the job planner outside of the TFC process. However, the inspector considered the TFC documentation inadequate because the lack of specific information precluded an adequate package review and could lead to inappropriate material substitutions that could impact the system function.

The failure to document critical aspects of the temporary field change of the AFW backup nitrogen system was considered more than minor because of the potential for an improper component substitution to impact operability of this risk significant system. However, this issue was determined to be of very low safety significance (Green) using phase one of the SDP because the modification was adequate as installed. This failure

to document the design of the TFC was a violation of 10CFR50, Appendix B, Criterion III, "Design Control", that requires measures for selection and review of materials, parts, and equipment that are essential to the safety related functions. This violation is being treated as a Non-cited Violation, consistent with Section VI.A of the Enforcement Policy, issued on May 1, 2000 (65FR25368). The issues associated with this violation are in the corrective action system as CR 200200360. (**NCV 50-247/01-14-02**)

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Data Collecting and Reporting

The inspector reviewed the licensee's performance indicator (PI) data collecting and reporting process as described in procedure SAO-114, "Preparation of NRC and WANO Performance Indicators." The purpose of the review was to determine whether the methods for reporting PI data are consistent with the guidance contained in NEI 99-02, Revision 0, "Regulatory Assessment Performance Indicator Guidelines." The inspection included a review of the indicator definitions, data reporting elements, calculation methods, definition of terms, and clarifying notes for the performance indicators. Plant records and data were sampled and compared to the reported data. The inspector reviewed the licensee's actions to address discrepancies in the performance indicator measurements to verify problems were satisfactorily resolved.

.1 Residual Heat Removal System Unavailability

a. Inspection Scope (71151)

The inspector reviewed the Performance Indicator (PI) for Residual Heat Removal System Unavailability. The PI remained in the green band. The inspector reviewed logs and data collection for the system for the four quarters of 2001. The inspector verified that the issues which impacted RHR system unavailability were addressed in the corrective action system (reference CR 200100848, 200108129, and 200101621).

b. Issues and Findings

No significant findings were identified.

4OA2 Cross Cutting Issues

a. Inspection Scope (71153)

On January 6, 2002 during an independent verification of equipment tagout 2001-N-15679 to support planned maintenance on the 23 emergency diesel generator (EDG), the non-licensed operator inadvertently tripped the 21 EDG. The consequence of the tagout error resulted in the entry into Technical Specification 3.0.1 for approximately five minutes until the overspeed trip device for the 21 EDG was properly reset.

The inspector reviewed the causes and licensee corrective actions associated with this human performance event. The inspector conducted interviews with the operator and

licensee personnel investigating the event. The inspector walked down the active tagouts associated with the 23 emergency diesel generator (2001-N-015679, 2002-N-15781, 2002-N-15683, and 2002-N-15681). The inspector also reviewed abnormal operating instruction (AOI) 27.1.1, "Loss of Normal Station Power," NUREG-1022, and the following plant drawings: 9321-F-3006-91, A208507-32, and A249955, to assess the significance of this event in accordance with NRC Manual Chapter 0609, "Significance Determination Process."

b. Issues and Findings

GREEN. The operator error during a tagout verification resulted in one of the three emergency diesel generators being inoperable, concurrent with the planned inoperability of a second emergency diesel generator. This issue was determined to be Green (of very low safety significance) using phase two of the SDP (Table 3.6, SDP Worksheet for Indian Point Unit 2 - Loss of Offsite Power) because the exposure time was five minutes, the error was self-revealing (control room 21 EDG trouble annunciator), and the impact on the mitigating systems cornerstone.

The causes for this human error were inadequate self checking, the operator's misunderstanding of the appropriate method for independent verification, and a lack of component labeling sufficient to prevent crossing safety systems. The independent verification was for the operator to verify that the overspeed trip level was tripped. The operator observed on the EDG status panel that the 23 EDG overspeed relay was tripped; however, he believed that physical verification of the trip lever was necessary. The operator failed to verify he was working on the correct diesel generator when he exercised the overspeed trip lever on the 21 EDG. The overspeed lever component label does not identify the associated EDG. All three emergency diesel generators are located in the same building.

The tagout error was considered more than minor since it could reasonably have been viewed as a precursor to a station blackout event. The event impacted the mitigating system cornerstone since on-site emergency power was not available for a short time to one third of the mitigating systems. The inoperability of the 21 EDG concurrent with the planned maintenance on the 23 EDG resulted in an actual loss of safety function for the emergency AC power systems as documented in UFSAR section 8.2.3.6. However, this issue was determined to be of very low safety significance (Green) using phase two of the SDP because of the short time that the mitigating systems were impacted, and since the error was self-revealing, which allowed credit for operator restoration of the safety function.

The failure to properly install equipment tagout 2001-N-15679 was a violation of technical specification 6.8.1.a, that requires, in part, written procedures be implemented for activities referenced in Appendix "A" of Regulatory Guide 1.33, Rev. 2. Appendix A includes the requirement for item "1c", "Equipment Control." This violation is being treated as a Non-cited Violation, consistent with Section VI.A of the Enforcement Policy, issued on May 1, 2000 (65 FR25368). The issues associated with this violation are in the corrective action system as CR 200200192. (**NCV 50-247/01-14-03**)

4OA4 Licensee Event Report Reviews

- .1 (Closed) LER 05000247/2001-04-00: Human Performance Error Resulted in a Missed Technical Specification Surveillance. The inspector reviewed the information the licensee provided to describe and analyze this event. Technical Specification 3.9 requires that the blowdown system flow be estimated every four hours when flow instrument FI-1241 is inoperable. The licensee performed the surveillance requirement 30 minutes late on October 15, 2001, because a Shift Manager and a Watch Engineer failed to recognize the TS requirement. During the time the compensatory measures were not in effect, there was no primary to secondary system leakage, blowdown flow was constant, and there was no unmonitored release. The safety significance of the error was minimal. The failure to meet TS 3.9 is being treated as a minor violation because there was no impact on plant safety and the item was entered in the corrective action program as Condition Report 200109887. The LER accurately described the event. This LER is closed.
- .2 (Closed) LER 05000247/2001-06-00: Leak in Service Water Pipe Results in Postulated Containment Leakage in Excess of Technical Specification Limits. The inspector reviewed the information the licensee provided to describe and analyze this event. In the LER, the licensee referenced LERS 95-14 and 91-12 as previous occurrences, but not LERs 82-31 and 82-37 or Information Notice 1980-37, which also concerned service water leaks inside the containment. When questioned by the inspector, the licensee representative stated he was aware of the 1980 events, but had not tried to describe the complete history of service water leaks. Further, the licensee determined the October 2001 event had no impact on overall structural integrity and was substantially different from the 1980 event. The inspector noted that LER 2001-06 was consistent with 10 CFR 50.73(b)(5) and the guidance in Revision 2 of NUREG 1022, Section 5.2.5. The LER guidance does not require the LER to summarize the 20 year plant history. Section 1R15 of this report also describes further NRC review of this issue. This LER is closed.

4OA5 Review of Entergy's November 2001 Site Wide Self Assessment and The Fundamentals Improvement Plan

a. Inspection Scope (IP 71152)

The scope of this inspection was to assess Entergy's efforts to identify the underlying causes of performance issues at IP2 and the adequacy of the improvement plans developed to address the issues. The inspectors reviewed the "Site Wide Self Assessment" completed in November, 2001 by Entergy to identify and characterize performance weaknesses at Indian Point Unit 2. The inspectors also reviewed the Site Wide Action Plans developed to identify the corrective actions for the performance issues and organizational deficiencies identified in the November 2001 Self Assessment. Additionally, the inspectors reviewed aspects of Entergy's 2002 Fundamentals Improvement Plan (FIP), which was submitted to the NRC in a letter dated, January 25, 2002, to communicate to the NRC the performance improvement actions in the following IP2 underlying areas of weakness:

- Human Performance
- Design Control/Licensing Basis

- Equipment Performance/Work Management
- Problem Identification and Resolution
- Licensed Operator Performance

The inspectors evaluated the FIP to assess whether it included actions to address the underlying performance areas that were identified in NRC Supplemental Inspection (95003) Report 05000247/2001002 and other NRC inspections.

The inspectors also conducted interviews with management and station personnel associated with the FIP to gain their perspective concerning the issues identified in the November 2001 Self Assessment and the corrective actions identified in Entergy's Site Wide Action Plans and the FIP.

The inspectors reviewed selected items in the corrective action program to determine if the licensee was identifying issues related to the findings from self assessments at an appropriate threshold, entering them into the corrective action program, and prescribing the appropriate corrective actions. The condition reports reviewed are listed in Attachment 1 of this report.

b. Findings

No significant findings were identified.

The FIP included plans to address the IP2 underlying problem areas identified in previous NRC inspection reports and Entergy's November 2001 Self Assessments.

The FIP identifies specific actions to improve plant performance, and uses a combination of performance indicators and effectiveness reviews to monitor performance. However, the team noted that the area of operating experience (OE), which has been previously documented in NRC inspection reports and the Entergy Self Assessment as needing improvement, was not included in the FIP. In addition, the use of "effectiveness reviews" were not consistently applied to the problem areas addressed within the FIP. The inspectors did note that OE was addressed in the Site Wide Action Plan.

4OA6 Meetings

On February 13, 2002 , the inspector presented the inspection results to Mr. L. Temple and members of the plant staff who acknowledged the findings. During the review of the Fundamentals Improvement Plan, the inspector reviewed four propriety documents which were returned to the licensee. No other proprietary information was identified.

On February 27, 2002, at 1:00 p.m., a meeting was conducted in the NRC Public Meeting Room in King of Prussia, PA, between the Nuclear Regulatory Commission (NRC) staff and Entergy Nuclear Operations, Inc. The purpose of the meeting was to discuss the status of performance improvement efforts at Indian Point Unit 2 (IP2) under the Fundamentals of Improvement Plan (FIP). Entergy discussed how the FIP was established, including its relationship with their site Improvement Plan. This was followed by discussion of IP2's design control and licensing basis documentation improvement efforts and FIP performance indicators in this and other areas. During the meeting, the NRC questioned Entergy on the FIP and on its various performance indicators.

Senior NRC and Entergy management met for the IP2 annual performance assessment meeting at 7:00 p.m., March 14, 2002, in Peekskill, NY. The meeting was open to the public. The purpose was to review IP2 performance for the period 4/1/01 through 12/31/02. During the meeting, Entergy's management discussed progress in implementing the FIP. The meeting provided a useful exchange of information about Entergy's progress to date on the FIP, including a review of its performance indicators.

ATTACHMENT 1**a. Key Points of Contact**

B. Allen	Manager, Regulatory Affairs
P. Asendorf	Security Manager
W. Axelson	Manager Corrective Action Program
F. Dacimo	Vice President, Operations
M. Donegan	Health Physics Manager
N. Ertle	I&C Engineer
K. Finucan	Senior QA Engineer, NQA
M. Hornyak	Coordinator, Operating Experience
M. Huestis	Manager, Planning, Scheduling, and Outage
L. Glander	Supervisor, Radiological Support
T.R. Jones	Senior Engineer, Nuclear Safety and Licensing
K. Kuran	Specialist, System Engineering
R. Louie	Senior Engineer, Nuclear Safety and Licensing
T. McCafferty	System Engineering Manager
J. McCann	Manager, Nuclear Safety and Licensing
M. Miele	Radiation Protection Department Manager
M. Miller	Manager, Generation Support
D. Morris	General Manager, Nuclear Quality Assurance and Oversight
V. Nutter	Radiological Support Manager
W. Osmin	Reactor Engineer
P. Parker	Maintenance Supervisor
J. Parry	Department Manager, IP2
G. Schwartz	Director of Engineering
P. Rubin	Operations Manager
R. Sutton	Senior Engineer
L. Temple	Plant Manager
M. Vaseley	System Engineer Supervisor
J. Ventosa	Engineering Manager
E. Woody	I&C Manager

b. List of Items Opened, Closed, and DiscussedOpened and Closed During this Inspection

50-247/01-14-01	NCV	Postulated Containment Leakage in Excess of TS 3.6 Limits
50-247/01-14-02	NCV	Inadequate Design Control in TFC for Nitrogen Backup System
50-247/01-14-03	NCV	Failure to Follow Tagging Procedure Results in Inoperable EDG

Closed

50-247/2001-04	LER	Human Error Resulted in Missed Surveillance
50-247/2001-06	LER	Leak In Service Water Pipe Penetrating Containment

c. List of Documents Reviewed

References for Procedure 71111.04S - Diesel Fuel Oil

- CR 200005891, Scheduling problems for annual underground storage tank inspection
- CR 200100262, Underground fuel oil storage tank readings do not match manual method of inventory verification
- CR 200100782, Updated Final Safety Analysis Report basis for fuel oil storage requirements
- CR 200108468, 20010380, EDG fuel oil "flash point" below specification
- CR 200006965, Modification SCN-91-06979 setpoints for storage tank level switches inconsistent with preventative maintenance procedure
- CR 200007642, 3-way valves for primary and secondary fuel oil filters not in required position
- CR 200009398, Excessive 23 fuel oil transfer pump packing leakage
- CR 200101470, 23 day tank level control valve found in mid-position
- CR 200103037, 22 day tank maintenance problems with level control system
- CR 200103901, Seismic qualification of day tank level switches
- CR 200104793, 21 fuel oil transfer pump excessive pump gland leakage
- CR 200107784, 22 day tank level controller could not be calibrated in accordance with procedures

References for Section 4OA5 - Fundamentals Improvement PlanProcedures

SAO-112, Rev 5 Condition Reporting Process

Self Assessments

*Site Wide Self Assessment of Indian Point Station Unit No.2, October 15 through October 26, 2001, dated November 2, 2001

* Assessment of IP2 Engineering and Technical Support Programs and Functional Areas, 7/06/2001

IP2 Engineering Document Quality Review, January 5, 2001

Design Engineering Assessment, Second Quarter 2001

Self-Assessment 01-ENG-04, Design Engineering, 2nd Quarter, dated November 30, 2001

Nuclear Safety and Licensing Self-Assessment - 10 CFR 50.59 Function, dated August 2001

Self-Assessment Report, Engineering Support Personnel Training, dated October 2001

Engineering Self-Assessment of Design Engineering, System Engineering, and Maintenance/Construction, Assessment of Modification Package preparation and installation, dated December 15, 2000

Self-Assessment on Equipment Reliability, dated January 24, 2002

Condition Reports

200104217 200104219 200010638 200101497 200104216 200106167

200104220

Miscellaneous

Entergy Ltr to NRC, Subject: 2002 Fundamentals Improvement Plan, January 25, 2002
Action Plan - Response to Site Wide Self Assessment Areas for Improvement

* IP2 Design Basis Initiatives Project - Project Plan, December 21, 2001

* Site Wide Improvement Plans

IP2 Design Basis Initiatives Project Plan, dated December 21, 2001

* Denotes Proprietary Document

d. **List of Acronyms**

AFW	auxiliary feedwater
AOI	Abnormal Operating Instruction
CFR	Code of Federal Regulations
COL	check off list
CR	Condition Report
DBD	design basis document
DBT	design basis threat
EDG	emergency diesel generator
FIP	Fundamentals Improvement Plan
GT	gas turbine
IPEEE	Individual Plant Examination of External Events
KV	kilovolt
MR	maintenance rule
NCV	Non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
OAD	operations administrative directive
OE	Operating Experience
PARS	publicly available records
PCV	pressure control valve
PMT	post maintenance test
RCS	reactor coolant system
SAO	station administrative order
SDP	significance determination process
SOP	station operating procedure
SSC	structure, system and component
TFC	temporary facility change
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report

