February 7, 2006

Mr. Fred R. Dacimo
Site Vice President
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
295 Broadway, Suite 1
P.O. Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT 2 - NRC INTEGRATED INSPECTION REPORT NO. 05000247/2005005

Dear Mr. Dacimo:

On December 31, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Indian Point Nuclear Generating Unit 2 (IP2). The enclosed integrated inspection report documents the inspection findings, which were discussed on January 11, 2006, with Mr. Paul Rubin and other members of your staff.

The inspection examined 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.

Based on the results of the inspection, six findings were identified. Four of these findings were determined to be violations of NRC requirements, including one finding that was determined to be a Severity Level IV violation. However, because of the very low safety significance, and because they were entered into your corrective action program, the NRC is treating these four findings as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. If you contest the NCVs in this report, 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; the Director, Office of Enforcement; and the NRC Senior Resident Inspector at Indian Point 2.

In accordance with 10 CFR 2.390 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/adams.html (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Brian J. McDermott, Chief
Projects Branch 2
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000247/2005005
w/Attachment: Supplemental Information

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION I**

| | |
|---|---|
| Docket No. | 50-247 |
| License No. | DPR-26 |
| Report No. | 05000247/2005005 |
| Licensee: | Entergy Nuclear Northeast |
| Facility: | Indian Point Nuclear Generating Unit 2 |
| Location: | 295 Broadway, Suite 3<br>Buchanan, NY 10511-0308 |
| Dates: | October 1, 2005 - December 31, 2005 |
| Inspectors: | M. Cox, Senior Resident Inspector, IP2<br>T. Hipschman, Senior Resident Inspector, IP3<br>G. Bowman, Resident Inspector, IP2<br>C. Long, Acting Resident Inspector, IP2<br>S. Barr, Senior Operations Engineer, Region I<br>T. Fish, Senior Operations Engineer, Region I<br>R. Fuhrmeister, Senior Project Engineer, Region I<br>D. Jackson, Senior Project Engineer, Region I<br>R. Kahler, Senior Emergency Preparedness Specialist, NSIR<br>J. Noggle, Senior Health Physicist, Region I<br>D. Silk, Senior Emergency Preparedness Inspector, Region I<br>D. Johnson, Reactor Inspector, Region I<br>T. Sicola, Reactor Inspector, Region I |
| Approved by: | Brian J. McDermott, Chief<br>Projects Branch 2<br>Division of Reactor Projects |

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## SUMMARY OF FINDINGS

IR 05000247/2005005; 10/01/2005 - 12/31/2005; Indian Point Nuclear Generating Unit 2; Maintenance Rule; Maintenance Risk Assessment and Emergent Work; Emergency Planning; Problem Identification and Resolution.

The report covers a 3-month period of inspection by resident inspectors, 8 regional inspectors, and one inspector from the NRC's Office of Nuclear Security and Incident Response. Six findings were identified, four of which were non-cited violations (NCVs), including one that was determined to be a Severity Level IV violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management reviews. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. **The NRC identified a Green finding associated with Entergy's failure to maintain appropriate design control of the control rod drive mechanism fans. A design change to improve the reliability of these fans was incorrectly implemented, impacting lubrication of the fans' motor bearings and resulting in the early failure of one of the fans during plant operation. Entergy entered this issue into their corrective action program and ordered properly configured fans for installation during the next outage.**

  This finding **is** greater than minor because it is associated with the Mitigating Systems cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the reliability of the control rod drive mechanism fans, which are **required** to cool the control rod drive mechanisms during normal operation and are used in **the** emergency operating procedures to prevent void formation in the reactor head region during natural circulation cool down, was adversely affected. This finding is of very low safety significance because while equipment reliability was degraded, there was no actual loss of **system** function**, and this issue did not result in a plant transient or reactor trip**. (Section 1R12)

- Green. The NRC identified a Green NCV of Technical Specification 5.4.1 **associated with the Indian Point work control process, which inappropriately allowed implementation of work on safety-related components prior to the approval of work procedures, a modification package, and the associated engineering analysis**. Specifically, **Indian Point's work control procedure allowed**

maintenance to be declared "emergency work," which allowed bypassing of the required work review and approval processes, if that work was necessary to avoid a forced shutdown or plant transient. Entergy entered this issue into the corrective action program and took action to revise their work control procedure to modify their definition of emergency work. This finding is associated with the Human Performance cross-cutting area in that the decision to implement a modification in September 2005, without required evaluations, was based on inappropriate procedural guidance.

This finding is greater than minor, because if left uncorrected it would become a more significant safety concern. Failure to complete required evaluations prior to work on safety-related equipment could impact the operability of risk-significant components. On September 27, 2005, Entergy implemented a modification to FCV-447, a safety-related feedwater control valve, using the emergency work provision of the Indian Point work control procedure. This finding is of very low safety significance, because the safety-related work performed without an approved evaluation did not result in the actual loss of safety function of a system and did not impact fire, flooding, seismic, or severe weather initiating events. Because this finding is of very low safety significance and has been entered into Entergy's corrective action program, it is being treated as an NCV. (Section 1R13)

Cornerstone: Barrier Integrity

- Green. The NRC identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for a failure to follow procedures during implementation of a temporary alteration to FCV-447, the safety-related feedwater flow control valve to the 24 steam generator. Specifically, while implementing a modification to grind material from the valve actuator cap screw heads, maintenance personnel removed more material than allowed by the modification package. This error was not identified by the maintenance workers or engineering personnel upon completion of the modification. Entergy entered this issue into the corrective action program and completed an operability assessment to show that FCV-447 remained operable. This finding is associated with the Human Performance cross-cutting area because the failure to follow procedures was the result of a personnel error during implementation of the modification.

  This finding is greater than minor because it is associated with the Barrier Integrity cornerstone attribute of Barrier Performance, and affected the cornerstone objective of ensuring the availability and reliability of components used for containment isolation. Improper implementation of this modification could have resulted in the inability of this valve to perform its safety function. This finding is of very low safety significance because while the modification was incorrectly implemented, subsequent analysis showed that the valve remained operable. Because this finding is of very low safety significance and has been entered into Entergy's corrective action program, it is being treated as an NCV. (Section 1R13)

Cornerstone: Emergency Preparedness

- **Green. A Green NCV associated with emergency planning standard 10 CFR 50.47(b)(4) was identified by the inspectors, because no established means of indication or procedures were readily available for operators to determine if the service water bay level met the threshold for declaration of an Unusual Event (UE) described in EAL 8.4.3. Entergy installed temporary level indication and entered this issue into its corrective action program for further evaluation and implementation of long term corrective actions**

  This finding is greater than minor because it is associated with the Emergency Preparedness cornerstone attribute of Facilities and Equipment, and affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The deficiency is not greater than Green because it did not result in the Risk-Significant Planning Standard Function being lost or degraded. Section 4.4 of Manual Chapter 0609, Appendix B, provides examples for use in assessing emergency preparedness related findings. One example of a Green finding states, "The EAL classification process would not declare any Alert or Notification of Unusual Event that should be declared." Since the declaration of an UE based on low service water bay level could have been missed or delayed, this finding was considered consistent with the example provided and was therefore determined to be of very low safety significance (Green). Because this issue is of very low safety significance and has been entered into Entergy's corrective action program, it is being treated as an NCV. (Section 1EP4)

- Green. The inspectors identified a Green finding for a failure to implement timely corrective actions for multiple frame relay system problems dating back to 2003. Specifically, for issues related to the reliability of the frame relay system, adequate actions to prevent recurrence were not implemented in a timely manner. Entergy's corrective actions in response to the August 2005 frame relay failures resulted in a more thorough assessment of this issue and reasonable actions to prevent recurrence. **This finding was associated with the Problem Identification and Resolution cross-cutting area because it was related to Entergy's failure to implement timely corrective actions for reliability issues with the frame relay system.**

  This finding was determined to be more than minor because it is associated with the Emergency Preparedness cornerstone attribute of Facilities and Equipment. It affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding is not suitable for Significance Determination Process evaluation but has been reviewed by NRC management and is determined to be a finding of very low safety significance. This issue is not greater than Green, because of the short periods that the frame relay system was unavailable and, because the alert and notification system design included a secondary method (i.e., back-up radio system) to actuate the sirens. (Section 4AO2)

- Severity Level IV. A Severity Level IV violation of 10 CFR 50.72(b)(3)(xiii) was identified for not formally reporting a siren system problem that occurred on August 5, 2005. The inspectors noted that the duration of the siren system problem was short, the NRC was informally notified, the process for back-up route alerting was available, and the capability to actuate the sirens via a manual siren initiation method was not lost. Subsequent to this event, Entergy implemented corrective actions to formalize the manual siren system actuation method. Notwithstanding these circumstances, a formal notification to the NRC was required, because the normal processes for actuation of the sirens were not available and Entergy did not have formal procedures for, and had limited experience with, **the manual siren initiation** method.

  This deficiency was evaluated using the traditional enforcement process since the failure to make a required report could adversely impact the NRC's ability to carry out its regulatory mission. **Because this finding is of very low safety significance and has been entered into the corrective action program, it is being treated as an NCV.** (Section 4OA2)

B. Licensee Identified Violations.

None.

## Report Details

Summary of Plant Status

Indian Point 2 (IP2) began the inspection period at full power and operated at or near full power until December 22. On December 22, power was reduced to approximately 3 percent and the main turbine was taken off-line to repack FCV-447, the feedwater regulating valve to the 24 steam generator (S/G). Work was completed and the plant was returned to full power on December 23. The plant remained at full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather

a. Inspection Scope (71111.01 - 1 sample of system-related weather preparations)

The inspectors reviewed Entergy's administrative controls and implementation of a maintenance program to ensure adequate protection of safety-related water sources from freezing conditions. These systems were selected because their safety-related functions could be affected by adverse weather. Specifically, the inspectors reviewed Entergy's strategy for coping with cold weather effects on the condensate storage tank (CST), the primary water storage tank (PWST), and the refueling water storage tank (RWST). The inspectors also reviewed work orders (WOs) and condition reports (CRs) associated with these external tanks which had the potential to impact cold weather performance. In addition, the inspectors walked down the accessible areas of piping and instrumentation to evaluate the insulation and heat tracing material condition. The specific information reviewed is listed in the attachment. Cumulatively, this inspection of selected tanks and support systems constituted one inspection sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial System Walkdown

a. Inspection Scope (71111.04Q - 3 samples)

The inspectors performed three partial system walkdowns to verify the operability of redundant or diverse trains and components during periods of system train unavailability or following periods of maintenance. The inspectors referenced the system procedures and drawings in order to verify that the alignment of the available train was proper to support its required safety functions. The inspectors also reviewed applicable CRs and WOs to assure that Entergy had identified and properly addressed equipment discrepancies that could potentially impair the capability of the available train.

Referenced documents are listed in the attachment at the end of this report. The following system walkdowns were counted as inspection samples:

- Gas Turbine (GT) 3 with GT-1 Out of Service for Preventative Maintenance
- 22 and 23 Auxiliary Boiler Feed Pumps (ABFP) with the 21 ABFP Out of Service for Maintenance
- Emergency Diesel Generators 21, 22, and 23 Following Periodic Testing

b. Findings

No findings of significance were identified.

.2 Full Equipment Alignment

a. Inspection Scope (71111.04S - 1 sample)

The inspectors performed an extensive walkdown of the component cooling water (CCW) system. The inspectors walked down the system using 2-PT-Q90, "Component Cooling Water System Quarterly Alignment Verification," Revision 0, and the system flow diagrams. The inspectors verified that all accessible system components were in the proper position and verified that any discrepancies were properly documented. Additionally, the inspectors evaluated the physical condition of the equipment during the walkdown and reviewed open CRs and WOs to evaluate if any had the potential to impact system operability. This system walkdown was considered one inspection sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope (71111.05Q - 6 samples)

The inspectors toured areas that were identified as important to plant safety and risk significance. The inspectors consulted the Indian Point 2 Individual Plant Examination for External Events (IPEEE), Section 4.0, "Internal Fires Analysis," and the top risk-significant fire zones in Table 4.6-2, "Summary of Core Damage Frequency Contributions from Fire Zones." The objective of this inspection was to determine if Entergy had adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, and had adequately established compensatory measures for degraded fire protection equipment. The inspectors evaluated conditions related to: (1) control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment, and features; (3) the fire barriers used to prevent fire damage or fire propagation; (4) compensatory measures for out-of-service, degraded, or inoperable fire protection equipment were implemented in accordance with Entergy's fire

plan. Reference material used by the inspectors to determine the acceptability of the observed conditions in the fire zones are referenced in the attachment at the end of this report. The following areas were counted as inspection samples:

- Zone 11
- Zones 5, 6, 7
- Zone 14
- Zones 9, 12A, 13A
- Zones 19, 20, 45A
- Zone 1

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope (71111.06 - 1 internal flooding sample)

The inspectors reviewed Entergy's internal flood analysis, flood mitigation procedures, and design features to verify that they were consistent with IP2's design requirements. The inspectors walked down the emergency diesel generator (EDG) building and evaluated the condition and adequacy of mitigation equipment to assess whether flood protection design features were adequate. This walkdown constituted one inspection sample.

The inspectors reviewed Entergy's flood mitigation procedures. In addition, the inspectors reviewed the corrective action program (CAP) to determine if there was any history of flood problems in this area. The specific information reviewed is referenced in the attachment at the end of this report.

b. Findings

Introduction: The inspectors identified an Unresolved Item (URI) associated with the potential vulnerability of the normal and emergency 480 VAC vital alternating current (AC) power sources to flooding in the EDG building. Approximately 30 to 50 oil absorbing pads of varying sizes were found on the floor underneath all three EDGs. During a flooding event, these pads could be swept into the five building drainage sumps, preventing water from being drained from the building.

Discussion: On November 29, 2005, the inspectors reviewed the internal flood protection measures for the EDG building. All three 480 VAC EDGs are located in this building in a common area separated by installed fire barrier walls. The EDGs are approximately five feet above the concrete floor of the building and access to the EDGs is afforded by metal grate flooring. The major sources of potential flooding for the space are fire protection piping and the essential service water (ESW) system piping in the building. The building is designed such that water drains toward five shallow sumps that

are connected to a common 12-inch-diameter drain line that discharges to the site drainage system. Each sump has two 3-inch-diameter openings that have backwater ball check valves to prevent back-leakage into the EDG building. Inspectors observed between 30 and 50 oil absorbent pads on the concrete floor underneath the EDGs. These pads were not fixed to the floor by any means, and would be free to migrate to the building sumps along with water during a flooding event. The pads were of sufficient size to effectively block the 3-inch holes in each of the building sumps as water level rises in the building. The IPEEE credits the building drains being sufficiently sized to prevent significant accumulation of water due to a break of fire protection piping in the room. This assumes that the function of these drains is not impeded by foreign material blockage. In addition, both the IPEEE and the IP2 Probabilistic Safety Assessment (PSA) state that a break of an ESW line is bounded by the fact that the EDGs are cooled by ESW and would be the only equipment negatively impacted by the flooding, and that this occurrence is analyzed by the total loss of service water event. There are inconsistencies between the IPEEE, dated 1995, and the PSA, which was completed in the 1998 time frame. The PSA does not account for the fire protection header as being a potential source of flooding for the EDG building, whereas the IPEEE does. Both analyses credit open ventilation louvers along the building north wall at grade level to drain water if the building's installed drain capacity is insufficient. However, during the winter months these louvers are maintained shut. In addition, the IPEEE mentions an EDG building flood alarm in the control room and specific isolation procedures in the event of flooding. Neither the alarm, nor the specific isolation procedures, currently exist. Finally, the inspectors identified that 480 VAC normal feeder breaker control power exists in each EDG control cabinet. Flood water that reaches the bottom of the EDG control cabinets due to insufficient building drain capacity, and can not be relieved through closed building doors and closed ventilation louvers, could potentially render all three EDGs unavailable and trip the normal feeder breakers to all 480 VAC vital AC buses. In response to the **inspectors' observations**, Entergy removed the oil absorbent pads from the EDG building **floor** and entered the issue into the corrective action program (CR-IP2-05-4868). This issue will be treated as a URI pending additional licensee evaluation and inspector review of the potential impact of flooding in the EDG building on the normal and emergency vital AC power sources:
**URI 05000247/2005005-01, Emergency Diesel Generator Building Flood Mitigation Capability.**

1R07 Heat Sink Performance

a. Inspection Scope (71111.07 - 1 sample)

The inspectors performed a review of the instrument air closed cooling water (IACCW) heat exchangers to verify that Entergy was monitoring performance on a continuing basis and to ensure that any potential deficiencies which could mask degraded performance were identified. The inspectors reviewed the design basis documents and Final Safety Analysis Report (FSAR) to validate that testing acceptance criteria were appropriate. The inspectors also reviewed the latest inspection reports for both the 21 and 22 IACCW heat exchangers, evaluated the results of eddy current testing, and

ensured that the appropriate tube plugging criteria were used. In addition, the inspectors verified that Entergy was maintaining their commitments from Generic Letter 89-13 concerning heat exchanger inspection and testing. The inspection of the IACCW heat exchangers constituted one inspection sample.

b. Findings

No findings of significance were identified.

1R11 Operator Requalification Inspection

.1 Resident Inspector Quarterly Review

a. Inspection Scope (71111.11Q - 2 samples)

On November 30, 2005, the inspectors observed an Emergency Plan drill implementation by licensed operators in the simulator. The inspectors reviewed the simulator scenario performed as a part of the overall drill to determine if the scenario contained: (1) clear event descriptions with realistic initial conditions, (2) clear start and end points, (3) clear descriptions of visible plant symptoms for the crew to recognize, and (4) clear expectations of operator actions in response to abnormal conditions. The scenario involved a simulated reactor coolant system leak, small break loss of coolant accident, large break loss of coolant accident, and a loss of emergency coolant recirculation capability.

During the simulator exercise, the inspectors evaluated the team's performance for: (1) clarity and formality of communications, (2) correct use and implementation of emergency operating procedures (EOPs) and abnormal operating procedures (AOPs), (3) operators' ability to properly interpret and verify alarms, (4) operators' ability to classify events in a timely fashion, and (4) operators' ability to take timely actions in a safe direction based on transient conditions. In addition, the inspectors evaluated the control room supervisor's ability to exercise effective oversight and control of the crew's actions during the exercise.

On December 1, 2005, the inspectors observed in-plant training of 2-AOP-SSD-1, "Control Room Inaccessibility Safe Shutdown Control." The training involved rotating three groups of licensed operators between the primary auxiliary building, auxiliary feedwater pump building, and turbine hall to walk-through the complex procedure. The instructors were knowledgeable and asked probing questions of the students throughout the training. Actions in the procedures were simulated as actual performance was not possible due to plant operation.

The simulator scenario observation was counted as one inspection sample, and the observation of the walk through training was counted as a second inspection sample.

b. Findings

No findings of significance were identified.

.2 Annual Review of Operating Test and Comprehensive Written Exam Results

a. Inspection Scope (71111.11B - 1 sample)

On December 19, 2005, the inspector conducted an in-office review of licensee annual operating test results and comprehensive written exam results for 2005, constituting one inspection sample. The inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)." The inspector verified that:

- Crew failure rate was less than 20%. (Crew failure rate was 0%.)
- Individual failure rate on the dynamic simulator test was less than or equal to 20%. (Individual failure rate was 0%.)
- Individual failure rate on the walk-through test was less than or equal to 20%. (Individual failure rate was 2%.)
- Individual failure rate on the comprehensive written exam was less than or equal to 20%. (Individual failure rate was 11%.)
- Overall pass rate among individuals for all portions of the exam was greater than or equal to 75%. (Overall pass rate was 87%.)

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Maintenance Rule Implementation - Quarterly

a. Inspection Scope (71111.12Q - 3 samples)

**The inspectors conducted a review of the Maintenance Rule systems listed below to assess recent performance issues with the systems and the associated components. Using 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," the inspectors evaluated implementation of the Maintenance Rule (MR) program, and verified that Entergy was properly classifying equipment failures and using the appropriate performance criteria for MR systems.**

The inspectors also reviewed WOs, and associated post-maintenance test activities to assess whether: (1) the effect of maintenance work in the plant had been adequately

addressed by control room personnel, (2) work planning was adequate for the maintenance performed, (3) the acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing documents, and (4) the equipment was effectively returned to service. Referenced documents are listed in the Supplemental Information attachment at the end of this report. The below-listed systems maintenance activities were observed and/or evaluated. Each system review constituted one inspection sample.

- Control Rod Drive Mechanism Fans
- 480 VAC Circuit Breakers
- CCW System

b. Findings

Introduction: The inspectors identified a Green finding in that Entergy failed to maintain adequate design control of the control rod drive mechanism (CRDM) fans. This directly resulted in loss of lubrication and failure of the 23 CRDM fan.

Description: On June 2, 2005, the 23 CRDM fan failed during operation. These fans are used to remove the heat generated by the CRDMs when the plant is at power. Restrictions are placed on plant operation and additional actions by operators are required if more than one fan is out of service. The CRDM fans are also used in the EOPs to facilitate natural circulation cooldown of the plant by preventing void formation in the reactor head region. Alternate mitigation strategies are available to the operators in the event the fans are unavailable, however, this complicates and slows down the cooldown process.

Entergy's failure analysis for the 23 CRDM fan determined that the failure was due to a lack of grease in a motor bearing. It was further determined that the fan motor bearings were not built in accordance with design change package MSAP-00-00524-FFX. This design change, which installed a more robust bearing design, was implemented in 2000 to improve CRDM fan reliability and recover the system from Maintenance Rule (a)(1) status. The original motor design used light duty ball bearings, while the upgraded design used heavier duty bearings with a thrust bearing at one end. The thrust bearing required the installation of shields to ensure it could run for a 24 month cycle without additional grease. The shields in the 23 CRDM fan had not been properly installed, which ultimately resulted in bearing seizure due to lack of lubrication.

The inspectors also noted that following a failure of the 24 CRDM fan in April 2005 from an unrelated cause, Entergy identified that the spare motor was not properly configured. The company's investigation determined that there was an error in the purchase order for fans installed in the November 2004 plant outage, and Entergy could not be certain of the configuration of any of the installed motors. **Entergy did not effectively track the installed bearing configuration, resulting in an increased likelihood of bearing failure due to loss of lubrication**. Entergy entered this issue into the corrective action program (CR-IP2-05-2210) and has taken actions to ensure that the deficiency will be corrected during the upcoming refueling outage.

Analysis: The inspectors determined that the failure to maintain design control of the CRDM fans was a performance deficiency since it was the direct result of errors in Entergy's procurement process. This issue directly resulted in the failure of the 23 CRDM fan. It is reasonable that Entergy could have recognized and prevented this problem. Traditional enforcement does not apply since there were no actual safety consequences or potential for impacting the NRC's regulatory function, and the finding was not the result of any willful violation of NRC requirements or Entergy's procedures. This finding is greater than minor since it is associated with the Design Control attribute of the Mitigating Systems cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was evaluated using Phase 1 of Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The finding is of very low safety significance since the performance deficiency does not represent an actual loss of system function and did not screen as risk-significant due to seismic, flooding, or severe weather initiating events. Additionally, this issue did not result in a plant transient or reactor trip. While the 23 CRDM fan was out of service, the other three fans were available to perform the necessary system functions.

Enforcement: No violation of regulatory requirements occurred since the design control issues involved the non-safety-related CRDM fans which are outside the scope of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." This finding is identified as **FIN 05000247/2005005-02, Failure to Maintain Design Control of Control Rod Drive Mechanism Fans.**

.2 Maintenance Rule Implementation - Biennial

a. Inspection Scope (71111.12B - 4 samples)

The inspector conducted a review of the periodic evaluation of implementation of the Maintenance Rule as required by 10 CFR 50.65(a)(3) for IP2. The evaluation covered a period from April 2003 to April 2005. The purpose of this review was to ensure that IP2 established appropriate goals, and effectively assessed system performance and preventive maintenance activities. The inspector verified that the evaluation was completed within the required time period and that industry operating experience was utilized, where applicable. Additionally, the inspector verified that Indian Point appropriately balanced equipment reliability and availability and made adjustments when appropriate.

The inspector selected a sample of four risk-significant systems to verify that: (1) the structures, systems, and components were properly characterized; (2) goals and performance criteria were appropriate; (3) corrective action plans were adequate; and (4) performance was being effectively monitored in accordance with station procedure ENN-DC-121, "Maintenance Rule." The following systems were selected for detailed review and constituted four inspection samples:

- Auxiliary Feedwater System
- Chemical and Volume Control System
- Control Rod Drives
- Gas Turbines

These systems were either in (a)(1) status, had been in (a)(1) status at some time during the assessment period, or had experienced degraded performance. The inspector reviewed corrective action documents for malfunctions and failures of these systems to determine if: (1) system failures had been correctly categorized as functional failures, and (2) system performance was adequately monitored to determine if classifying a system as (a)(1) was appropriate.

The inspector interviewed the maintenance rule coordinator and system engineers, reviewed documentation for applicable systems, and reviewed a sample of condition reports. The documents that were reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope (71111.13 - 4 samples)

The inspectors observed selected portions of routinely scheduled and emergent maintenance work activities to assess Entergy's risk management in accordance with 10 CFR 50.65(a)(4). The inspectors verified that Entergy took the necessary steps to plan and control emergent work activities, to minimize the probability of initiating events, and to maintain the functional capability of mitigating systems. The inspectors observed and/or discussed risk management actions with maintenance and operations personnel. The following emergent work activities were observed, and constituted four inspection samples:

- WO IP2-05-25862, Replacement of the 22 S/G High Steam Flow SI Initiation Bistable
- CR IP2-05-4759, PCV-455C Low Nitrogen Pressure Alarms
- WO IP2-01-23320, Lighting Bus 22/23 Tie Breaker Maintenance
- FCV-447 Packing Leakage Corrective Actions

b. Findings

1. Introduction: The inspectors identified a Green non-cited violation (NCV) in that modification documents and procedures were not followed while implementing a temporary modification to the 24 S/G feedwater regulating valve, FCV-447. This was determined to be a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings."

Description: On September 27, 2005, a modification was performed on FCV-447 in which the cap screws holding the valve actuator onto the valve body were ground down at an angle to allow clearance between the cap screws and the packing gland follower. This valve is a safety-related component required for isolation of one of the four feedwater lines following a feed or steam line break inside the containment to minimize peak containment pressure. The additional clearance was required to allow further packing adjustments to prevent feedwater/steam leakage through the valve's packing. The temporary alteration package, TA-05-2-107, specified that the maximum thickness removed was to be three-eighths of an inch, which would leave a minimum of three-eighths of an inch of the cap screw head remaining. The supporting calculation to assure structural integrity following this modification also assumed the cap screw thickness to be three-eighths of an inch following the grinding.

The inspectors reviewed Entergy's analysis to show that the structural integrity of the cap screws would be maintained, and completed a walkdown of the valve to ensure the modification had been properly implemented. The inspectors identified that more material had been ground from the cap screws than allowed by the analysis. The inspectors also found that Entergy's structural integrity evaluation failed to consider seismic stresses. Based on the inspectors' observations, Entergy declared the valve inoperable and entered a 72 hour action statement as required by Technical Specifications. Entergy entered this issue into the corrective action program (CR-IP2-05-4615) and completed an additional evaluation which showed that the actuator cap screws on FCV-447 would remain operable under design conditions in the as-left condition. Following this evaluation, Entergy exited the 72 hour action statement.

Analysis: The inspectors determined that this is a performance deficiency since Entergy exceeded the grinding depth as specified in the alteration package and failed to identify this condition. It is reasonable that Entergy could have recognized and prevented this problem. Traditional enforcement does not apply since there were no actual safety consequences or potential for impacting the NRC's regulatory function and the finding was not the result of any willful violation of NRC requirements or Entergy's procedures. This finding is greater than minor, because it was associated with the Barrier Integrity cornerstone attribute of Human Performance, and affected the cornerstone objective of ensuring the containment would remain functional to protect the public from radionuclide releases caused by accidents or events. This finding was evaluated using Phase 1 of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations", and is of very low safety significance since the work performed on FCV-447 did not result in an actual loss of it's safety function.

This finding is also related to the cross-cutting area of Human Performance in that maintenance personnel failed to implement the modification as specified in the temporary alteration package. This error was not identified by the maintenance workers or engineering personnel upon completion of the modification. (Section 4OA4).

Enforcement: 10 CFR 50, Appendix B, Criterion V states, in part, that activities affecting quality shall be prescribed by procedures and shall be accomplished in accordance with these procedures. Contrary to this, Entergy failed to implement the modification of FCV-

447 as prescribed by the modification requirements. Because this failure to follow modification requirements for the valve is of very low safety significance and has been entered into Entergy's corrective actions program (CR-IP2-2005-4615) this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000247/2005005-03, Failure to Follow Procedural Requirements During Modification of a Safety-Related Valve.**

2. Introduction: The inspectors identified a Green NCV of Technical Specification (TS) 5.4.1, "Administrative Controls - Procedures," because Indian Point's work management procedure inappropriately allowed actions to be implemented to perform a modification on a safety-related component before the modification package was issued.

   Description: The inspectors reviewed procedure IP-SMM-WM-100, "Work Management Process." This procedure, which is specific to Indian Point, defines emergency work, in part, as: "Actions required to prevent a real or potential plant transient or forced shutdown." TS 5.4.1 requires Indian Point to establish, implement, and maintain those procedures discussed in Appendix A of Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operation)." RG 1.33 states that maintenance which can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.

   Entergy's work management procedure provided steps to bypass the established work control process in order to prevent a forced shutdown of the plant based on the procedural definition of emergency work. 10 CFR 50.54(x) allows licensees to take actions that depart from a Technical Specification requirement in an emergency, when that action is immediately needed to protect public health and safety, and there is no immediately apparent action consistent with the Technical Specifications which can provide adequate or equivalent protection. The inspectors determined that Entergy's definition of emergency work, specifically work to prevent a forced shutdown, **was not consistent with this specific allowance for departing from the TS requirements**. Therefore, there was no valid basis to bypass the established work control process, as required by TS 5.4.1, to prevent forced shutdowns or plant transients. In addition, the inspectors noted that EN-WM-100, "Work Request Generation, Screening and Classification," the Entergy fleet-wide governing document for the site specific work control procedure, did not classify work to prevent a forced shutdown as emergency work. The inspectors determined that Indian Point's work management procedure inappropriately allowed maintenance which could result in a shutdown or transient to be declared emergency work thus allowing the required work controls process to be bypassed.

   On September 27, 2005, and again on November 8, 2005, Entergy modified capscrews on a safety related valve (FCV-447), using the work management procedure's allowance for emergency work. Entergy's decision to use this process was based on the assumption that prompt action was required to prevent excessive damage to the packing, which would make future packing adjustments unsuccessful and leave valve

re-packing or leak repair as the only viable maintenance alternatives. The declaration of emergency work allowed the maintenance to be performed prior to completion of work procedures, a modification package, and the associated engineering analysis.

In response to the inspector's concerns, Entergy entered the issue into the corrective action program (CR-IP2-05-4926). Additionally, procedure IP-SMM-WM-100 was revised to prevent the declaration of emergency work for issues which could result in a plant shutdown or transient. Entergy also completed an engineering analysis to show that FCV-447 would still be able to perform its safety function.

Analysis: The inspectors determined that Indian Point's development of a procedure allowing actions contrary to the plant's Technical Specifications is a performance deficiency and directly resulted in actions to commence modifications on a safety-related component before the required evaluation was completed. It is reasonable that Entergy could have recognized and prevented this problem. Traditional enforcement does not apply because there were no actual safety consequences or potential for impacting the NRC's regulatory function, and the finding was not the result of any willful violation of NRC requirements or Entergy procedures. This finding is greater than minor, because if left uncorrected, the issue could become a more significant safety concern. This finding was evaluated using Phase 1 of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The inspectors determined that the violation of TS 5.4.1 is of very low safety significance since the work performed on FCV-447 did not result in the actual loss of safety function of a system and did not impact fire, flooding, seismic, or severe weather initiating events.

This finding is associated with the Human Performance cross-cutting area in that the decision to implement the modification to FCV-447 without an adequate evaluation was based on inappropriate procedural guidance (see Section 4OA4).

Enforcement: TS 5.4.1 requires that written procedures be established, implemented, and maintained covering the activities recommended in RG 1.33. RG 1.33 states that maintenance which can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, Entergy developed a site work control procedure which allowed a modification to be performed on an in-service safety-related component prior to the modification documents being completed and formalized. Because this violation is of very low safety significance and has been entered into Entergy's corrective action program (CR-IP2-05-4926), it is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000247/2005005-04, Inadequate Procedure for Control of Work on Safety-Related Components.**

## 1R14 Personnel Performance During Non-routine Plant Evolutions and Events

a. Inspection Scope (71111.14 - 3 samples)

For the non-routine evolutions described below, the inspectors reviewed operator logs, plant computer data, and strip charts to determine what occurred and how the operators responded, and to determine if the response was in accordance with plant procedures. These non-routine evolutions constituted three inspection program samples.

- On November 7, 2005, the inspectors observed activities associated with implementation of a permanent increase of average coolant temperature (Tave) from 562 °F to 565 °F. The inspectors reviewed the implementing procedure, 2-TOP-006, "Permanent Tave Increase to 565 °F," Revision 0 to verify that it included appropriate and conservative precautions, limitations, and contingency actions. The inspectors also attended the brief conducted prior to commencement of the evolution to confirm that operators were adequately prepared, understood the expected plant response, and were cognizant of the precautions and limitations associated with the evolution. The inspectors observed portions of the Tave increase from the control room.

- On November 8 and again on November 17, 2005, the inspectors observed activities associated with diving operations in the Unit 2 spent fuel pool (SFP). The purpose of this evolution was to perform vacuum box testing on indications of potential defects in the SFP liner. The inspectors attended licensee pre-job briefs to ensure that workers understood the precautions associated with diving the SFP. The inspectors reviewed radiological work permit (RWP) 052040, "Diving Operations and Inspections in the Spent Fuel Pool," Revision 2 to verify that appropriate radiological controls were being used. The inspectors also observed the diving evolution to confirm that the operation was conducted as planned and in accordance with Entergy's procedures and NRC requirements.

- On December 22, 2005, the inspectors monitored Entergy's actions to reduce reactor power to approximately 3 percent and take the turbine off-line to repack FCV-447. The inspectors reviewed Entergy's procedures for plant shutdown and observed the evolution in the control room. The inspectors also observed important activities associate with the power ascension following completion of the maintenance. A list of documents reviewed is included in the attachment to this report.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope (71111.15 - 5 samples)

The inspectors selected operability evaluations that Entergy had generated that warranted review on the basis of potential risk significance. The selected samples are addressed in the CRs listed below. The inspectors assessed the accuracy of the evaluations, the use and control of compensatory measures, if needed, and compliance with the TSs. The inspectors' review included a verification that the operability evaluations were made as specified by procedure ENN-OP-104, "Operability Determinations." The technical adequacy of the evaluations was reviewed and compared to the TSs, Technical Requirements Manual (TRM), FSAR, and associated design basis documents. The operability evaluations that were inspected constituted five inspection samples.

- CR IP2-05-4246, Operations with the Low Feed Flow Bypass Isolation Valves Open
- CR IP2-05-4414, Failure of FCV-1176 (EDG Service Water Outlet Valve) to Close Following Surveillance Testing
- CR IP2-05-4642, EDG Fuel Oil Inventory
- CR-IP2-05-4792, Identification of a Gas Void Between the Outlet of the 21 Residual Heat Removal Heat Exchanger and Valve HCV-638
- CR IP2-05-4841, Cable Separation Issues Identified During Walkdowns Outside Containment

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope (71111.16 - 2 samples)

The inspectors reviewed the operator workaround associated with failure of a power supply for Control Room alarm panel AS-1. The inspectors reviewed the individual alarms lost, impact on plant operation, and the compensatory measures established by Entergy. The inspectors evaluated these measures to ensure they were appropriately scoped within Entergy's operator burdens program and that the required actions could feasibly be performed by the operations staff. This operator workaround review constitutes one inspection sample.

The inspectors also focused on the operator workaround associated with one pressurizer spray valve (PCV-455A) being isolated. The inspectors verified that the Operational Decision Making Process was followed for this issue, and that appropriate compensatory actions were taken. The inspectors used OAP-45, "Operator Burden Program," and EN-OP-111, "Operational Decision Making Issue Process," to evaluate plant deficiencies and their effects on plant operation.

The sample related to operation with PCV-455A isolated was originally documented in Inspection Report 05000247/2005-04. However, due to an oversight, it was not counted as a completed sample. It is being documented again in this report to correct the error.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope (71111.19 - 8 samples)

The inspector reviewed post-maintenance test (PMT) procedures and associated testing activities to assess whether: (1) the effect of testing in the plant was adequately addressed by control room personnel; (2) testing was adequate for the maintenance WO performed; (3) the acceptance criteria was 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 the IP2 Individual Plant Examination (IPE). The regulatory references for the inspection included TSs and 10 CFR 50, Appendix B, Criterion XIV, "Inspection, Test, and Operating Status." The following testing activities were evaluated, and constituted eight inspection samples:

- WO IP2-05-2522, Containment Sump Stop Valve 885B Following Mechanical Interlock Replacement
- WO IP2-05-26316, 21 CCP Following Internal Valve Replacements Due to Flow Oscillation
- WO IP2-05-27328, PWT Following On-Line Leak Repair of PCV-1135, the 22 S/G Atmospheric Dump Valve
- WO IP2-05-28030, 23 Station Battery Following Replacement of Cell 3 Due to Low Cell Voltage
- WO IP2-05-20640, 21 CCW Pump Following a Planned Component Maintenance Outage Period
- WO IP2-05-21932, 24 Service Water Pump (SWP) Following a Planned Component Maintenance Outage Period
- WO IP2-04-12427, 25 SWP Following a Planned Component Maintenance Outage Period
- WO IP2-05-26680, PWT for 3M Oil and Filter Change on 23 EDG Starting Air Compressor

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope (71111.22 - 5 samples)

The inspectors 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 were adequate and the equipment was properly calibrated; (5) the test was performed per the procedure; (6) test equipment was removed following testing; and (7) the test discrepancies were appropriately evaluated. The surveillance tests observed were based on risk-significant components as identified in the IP2 IPE. 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 TS 6.8.1.a. The following test activities were reviewed and constituted five inspection samples:

- 2PT-Q29B, "22 Safety Injection Pump Quarterly Test," Revision 15
- 2PI-3Y2A, "23 Auxiliary Boiler Feed Pump Suction and Discharge Inservice Inspection Pressure Test," Revision 4
- 2PT-Q27A, "21 Auxiliary Boiler Feed Pump Quarterly Test," Revision 12
- 2PT-SA067, "Main Turbine Stop and Control Valves," Revision 1
- 2PT-M21A, "Emergency Diesel Generator 21 Load Test," Revision 11

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope (71111.23 - 2 samples)

The inspectors reviewed two temporary modifications, that constituted two inspection samples, to ensure that the effects on plant operation were well understood and to ensure that no unintended, adverse consequences would result from the modification. The inspectors evaluated the modification documentation for accuracy and completeness, the basis for the modification, and any associated procedures or changes to procedures to control the temporary modification operation. The following temporary modifications were reviewed:

- WO IP2-05-27331, On-line Leak Repair of PCV-1135, 22 S/G Atmospheric Dump Valve
- TA-05-2-039, Removal and Installation of SWN-840 Actuator on 22 CCW Heat Exchanger Valve SWN-35-1

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testing

a. Inspection Scope (71114.02 - 1 Sample)

An onsite review of Entergy's alert and notification system (ANS) was conducted to ensure prompt notification of the public for taking protective actions. During the inspection at Indian Point, the inspectors reviewed the test and maintenance documentation for the siren system. Distribution records were sampled pertaining to the tone alert radio portion of the ANS. CRs generated as a result of siren testing were reviewed for causes, trends, and corrective actions. The inspectors interviewed personnel responsible for the alert and notification program. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 02. Planning standard 10 CFR 50.47(b)(5) and the related requirements of 10 CFR 50, Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation Testing

a. Inspection Scope (71114.03 - 1 Sample)

A review of Indian Point's ERO augmentation staffing requirements and the process for notifying the ERO was conducted to ensure the readiness of key staff for responding to an event and to ensure timely facility activation. The inspectors reviewed procedures and CRs associated with the ERO notification system and process. The inspectors interviewed personnel responsible for the ERO augmentation process. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03. Planning standard 10 CFR 50.47(b)(2) and related requirements of 10 CFR 50, Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes

.1 EAL Review **(71114.04 - 1 sample)**

a. Inspection Scope

The inspectors reviewed changes to Entergy's EALs to ensure that the changes did not decrease the effectiveness of the Emergency Plan. The inspectors reviewed Entergy procedures to determine if an EAL scheme had been changed in a manner that decreased its effectiveness such that the EALs may not produce the appropriate emergency classification. The inspectors verified that the EAL scheme continued to meet the planning standard.

b. Findings

Introduction: The inspectors identified a Green NCV associated with emergency planning standard 10 CFR 50.47(b)(4). The inspectors determined that a performance deficiency existed in that inadequate indications were available for operators to determine if a threshold for an unusual event (UE), based on service water bay level, had been met. This issue did not result in the loss or degradation of a risk significant planning standard based on the inspectors assessment of the criteria in NRC Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process."

Description: A combination of low tides and debris on the intake structure trash bars resulted in a low service water bay level at the Indian Point Unit 3 (IP3) intake structure between November 23 to November 25, 2005. Operators were alerted to this condition due to the occasional trips of the non-safety related screen wash pumps. EAL 8.4.3 requires the declaration of a UE if service water bay level drops to 4 feet 5 inches below mean sea level. In response to the low water conditions, the operators improvised a means to measure the service water bay level and determined that the UE criteria had not been met. The inspectors discussed the availability of instrumentation for assessment of the UE entry criteria with IP operations and emergency planning staff, reviewed relevant plant procedures, and performed a walkdown of the intake structure. The inspectors determined that Entergy had no established means of indication or instrumentation for operators to assess the service water bay level and evaluate the associated entry criteria of EAL 8.4.3. Upon further review, **the inspectors determined that this issue was also applicable to Indian Point Unit 2. Entergy installed temporary level indication and entered this issue into its corrective action program for further evaluation and implementation of long term corrective actions (CR-IP3-2005-5380).**

Analysis: The performance deficiency is that no established means of indication or procedures were readily available for operators to determine if the service water bay level met the threshold declaration of an UE described in EAL 8.4.3. The failure to provide adequate indication for assessment of EAL entry criteria could impact the timely declaration of an emergency and is contrary to 10 CFR 50.54(q) and 50.47(b)(4). This finding is greater than minor because it was associated with the Emergency

Preparedness (EP) cornerstone attribute of Facilities and Equipment, and affected the cornerstone objective of ensuring that a licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 1, "Failure to Comply." This finding is associated with a failure to meet or implement a regulatory requirement. The deficiency is not greater than Green because it did not result in the Risk-Significant Planning Standard Function being lost or degraded. Section 4.4 of Manual Chapter 0609, Appendix B, provides examples for use in assessing emergency preparedness related findings. One example of a Green finding states, "The EAL classification process would not declare any Alert or Notification of Unusual Event that should be declared." Since the declaration of an UE based on low service water bay level could have been missed or delayed, this finding was considered consistent with the example provided and was therefore determined to be of very low safety significance (Green).

Enforcement: 10 CFR 50.54(q) requires that the facility licensee follow and maintain in effect emergency plans which meet the standards in 10 CFR 50.47(b). 10 CFR 50.47(b)(4) requires, in part, that emergency response plans include a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters. The emergency classification and action level scheme is required to be used by the nuclear facility licensee, and State and local response plans rely on information provided by facility licensees for determinations of minimum initial offsite response measures. Contrary to the above, prior to November 2005, Entergy did not have adequate means of indication or procedures to support an EAL classification based on service water bay intake level. Entergy entered this issue into its CAP as CR-IP3-2005-5380 and installed temporary level indication pending the development of permanent corrective actions. Because this issue is of very low safety significance and has been entered into Entergy's CAP, it is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000247/2005-05-05, Inadequate Equipment to Assess Threshold for Emergency Action Level 8.4.3.**

.2 Emergency Plan Change Review

a. Inspection Scope **(71114.04 - 1 sample)**

Prior to this inspection, the NRC had received and acknowledged the changes made to the Indian Point Emergency Plan and implementing procedures. These changes were made in accordance with 10 CFR 50.54(q), which Entergy had determined did not result in a decrease in effectiveness to the Plan and concluded that the changes continued to meet the requirements of 10 CFR 50.47(b) and Appendix E of 10 CFR 50. During this inspection, the inspectors conducted a sampling review of the changes which could potentially result in a decrease in effectiveness. This review does not constitute an approval of the changes and, as such, the changes are subject to future NRC inspection. The inspection was conducted in accordance with NRC Inspection

Procedure 71114, Attachment 4. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope (71114.05 - 1 Sample)

The inspectors reviewed CRs initiated by Indian Point from drills, self-assessments, and audits, and the associated corrective actions to determine the significance of the issues and to determine if repeat problems were occurring. A list of the CRs reviewed are contained in the attachment to this report. Also, the 2004 and 2005 audit reports were reviewed to assess Indian Point's ability to identify issues, assess repetitive issues, and evaluate the effectiveness of corrective actions through their independent audit process. This inspection was conducted according to NRC Inspection Procedure 71114, Attachment 05. Planning standard 10 CFR 50.47(b)(14) and the related requirements of 10 CFR 50, Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope **(71114.06 - 1 sample)**

The inspectors observed an EP drill conducted on November 30. The inspectors used NRC Inspection Procedure 71114.06, "Drill Evaluation," as guidance and criteria for evaluation of the drill. The drill consisted of an Emergency Notification Siren test and Emergency Response Organization Drill. The inspectors observed the drill and conducted reviews from the Indian Point Emergency Operations Facility (EOF). The inspectors focused the reviews on the identification of weaknesses and deficiencies in the classification and notification timeliness and quality and accountability of essential personnel during the drill. The inspectors were briefed on Entergy's critique results and compared the NRC-identified weaknesses and deficiencies to those identified by Entergy to ensure that problem areas were properly identified. Inspection of this EP Drill constitutes one inspection sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

.1 Occupational Exposure Control Effectiveness

a. Inspection Scope (71151 - 1 sample)

The inspector reviewed implementation of Entergy's Occupational Exposure Control Effectiveness Performance Indicator (PI) Program. Specifically, the inspector reviewed CRs, and radiological controlled area dosimeter exit logs for the past four calendar quarters. These records were reviewed for occurrences involving locked high radiation areas, very high radiation areas, and unplanned exposures against the criteria specified in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2, to verify that all occurrences that met the NEI criteria were identified and reported as performance indicators. This inspection activity represents the completion of one sample relative to this inspection area, completing the annual inspection requirement.

b. Findings

No findings of significance were identified.

.2 RETS/ODCM Radiological Effluent Occurrences

a. Inspection Scope (71122.01 - 1 Sample)

The inspector reviewed a listing of relevant effluent release reports for the past four calendar quarters, for issues related to the public radiation safety PI, which measures radiological effluent release occurrences per site that exceed 1.5 mrem/quarter whole body or 5.0 mrem/quarter organ dose for liquid effluents, 5 mrad/quarter gamma air dose, 10 mrad/quarter beta air dose, and 7.5 mrads/quarter for organ dose for gaseous effluents. This inspection activity represents the completion of one sample relative to this inspection area, completing the annual inspection requirement.

The inspector reviewed the following documents to ensure Entergy met all requirements of the performance indicator:

- monthly projected dose assessment results due to radioactive liquid and gaseous effluent releases;
- quarterly projected dose assessment results due to radioactive liquid and gaseous effluent releases; and
- dose assessment procedures.

b. Findings

No findings of significance were identified.

.3 Emergency Preparedness

a. Inspection Scope (71151 - 3 Samples)

The inspectors reviewed Entergy's procedure for developing the data for the EP PIs which are: (1) Drill and Exercise Performance (DEP), (2) ERO Drill Participation, and (3) ANS Reliability. The inspectors also reviewed Entergy's drill and exercise reports, training records, and ANS testing data to verify the accuracy of the reported data. Data generated since the June 2004 EP PI verification was reviewed during this inspection. Therefore, data submitted from the second quarter of 2004 through the end of the third quarter of 2005 were reviewed. The review was conducted in accordance with NRC Inspection Procedure 71151. The acceptance criteria used for the review were 10 CFR 50.9 and NEI 99-02, Revision 3, "Regulation Assessment Performance Indicator Guideline."

d. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Review

a. Inspection Scope (71152)

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive failures or specific human performance issues for follow-up, the inspectors screened all items entered into Entergy's corrective action program. This review was accomplished by reviewing copies each condition report (CR).

b. Findings

No findings of significance were identified.

.2 Semi-annual Trend Review

a. Inspection Scope (71152 - 1 sample)

The inspectors performed a semi-annual review to identify trends that might indicate the existence of a more significant safety issue. The inspectors included in this review repetitive or closely related issues that may have been documented by Entergy outside of the normal CAP, such as trend reports, PIs, major equipment problem lists, maintenance rework lists, departmental challenges, system health reports, maintenance rule assessments, and maintenance and CAP backlogs.

The inspectors reviewed Entergy's CAP database during 2005 in order to assess the total number and significance of CRs written in various subject areas such as equipment or processes, and to discern any notable trends in these areas. The CRs entered into the CAP in all quarters included those written as a result of NRC findings. This semi-annual review represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems - Emergency Preparedness

a. Inspection Scope (71152 - 2 samples)

The inspectors reviewed Entergy's corrective actions for recent problems associated with components used to actuate the siren system. These problems included malfunctions of the frame relay telephone network that connects the county actuation points with the siren system (primary actuation method) and problems associated with the radio system (back-up actuation method). The inspectors reviewed CR evaluations and associated root or apparent cause reports, and interviewed licensee and contractor personnel responsible for maintenance of the siren system and the corrective action program. The inspection was conducted per NRC Inspection Procedure 71152. The applicable emergency preparedness planning standards, 10 CFR 50.47(b) and the requirements of 10 CFR 50 Appendix E were used as reference criteria.

b. Findings

1. Introduction: The inspectors identified a Green finding for a failure to implement timely corrective actions for multiple frame relay system problems.

Description: While reviewing documentation pertaining to an August 5, 2005, frame relay problem, the inspectors noted nine condition reports referenced in Entergy's higher tier apparent cause (CR-IP2-2005-3345) for various frame relay problems dating back to September 23, 2003. Following the inspection, Entergy identified an additional 13 CRs pertaining to frame relay issues, the oldest going back to March 21, 2003. The inspectors found that the evaluation and corrective actions described in CR IP2-2005-3345 following the August 5, 2005, frame relay system failure to be appropriate.

Entergy's corrective action program, as described in procedure, EN-LI-102, "Corrective Action Process," Revision 3, groups CRs into significance categories. Category C and D issues can be closed by fixing the immediate problem or by confirming that the condition has been corrected. Category B CRs require an apparent cause evaluation be conducted to address the apparent causes for the failures. The inspectors noted that the nine frame relays system CRs, referenced in CR-IP2-2005-3345, had been characterized as Category C or D. The inspectors also noted that Entergy had not performed any type of apparent cause evaluation to identify the underlying causes and to prevent recurrence of these repeat unplanned frame relay system outages.

Entergy disagreed with the characterization of this finding and stated that the frame relay system availability had improved during the period and also that there was no identified connection between the frame relay problems dating back to 2003 and the corrective actions identified in the recent apparent cause evaluation (CR IP2-2005-3345). The inspectors considered this information and concluded that Entergy should have acted in a more timely manner to identify and correct the underlying causal factors that led to the earlier frame relay system outages. The failure to implement a timely and thorough evaluation of these failures adversely impacted the reliability of the frame relay system.

Analysis: The performance deficiency involved the failure to implement timely corrective actions to prevent repeat unplanned failures of the frame relay system. This finding was determined to be more than minor because the finding is associated with the EP cornerstone attribute of Facilities and Equipment (alert and notification system availability). It affected the cornerstone objective of ensuring that Entergy is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding is not suitable for Significance Determination Process evaluation but has been reviewed by NRC management and is determined to be a finding of very low safety significance. This issue is not greater than Green because of the short periods that the frame relay system was unavailable and because the ANS design included a secondary method (i.e., back-up radio system).

This finding was associated with the Problem Identification and Resolution cross-cutting area because it was related to Entergy's failure to implement timely corrective actions for reliability issues with the frame relay system.

Enforcement: No violation of regulatory requirements occurred. This finding of very low significance was entered into Entergy's corrective action process (CR-IP2-2005-4475). **FIN 05000247/2005-05-06; Inadequate Corrective Actions for Frame Relay System Problems.**

**2.** Introduction: An NCV of 10 CFR 50.72(b)(3)(xiii) was identified for not formally reporting a siren system problem that occurred on August 5, 2005.

Description: At about 0830 on August 5, 2005, Entergy identified a frame relay system problem that prevented use of the primary siren system actuation method from the Putnam County warning point. Entergy contacted the vendor to correct this condition. At about 1200, Entergy noted that the frame relay system, used to provide the primary siren system actuation method for all four counties located in the Indian Point emergency planning zone, was out of service. Entergy again contacted the vendor to effect repairs and learned that the entire frame relay system had been inoperable since approximately 0901. Entergy checked the back-up radio activation system for each of the four counties at about 1200 and identified that the radio activation system for Westchester County was non-functional. The back-up radio system for the remaining three counties had remained functional. The frame relay system for all four counties was restored at about 1435 and the back-up radio system for Westchester County was restored by 1820. The inspectors determined that the primary and back-up systems

relied upon to actuate the sirens in Westchester County had been non-functional from about 0900 to 1435 (approximately five and one-half hours).

Entergy reported that the counties were informed regarding the above actuation system problems and the NRC was also informally notified regarding the above actuation system problems. The inspectors questioned why Entergy did not formally report the problem associated with actuation of the Westchester County sirens per 10 CFR 50.72. Entergy indicated that formal reporting of this problem was not required since manual actuation from the Indian Point emergency operations facility was available to actuate the sirens upon a request by the County. The inspectors reviewed the procedures, protocols, and practices that would have been relied upon to implement this alternate manual siren actuation method at the time of the loss of the normal and back-up siren actuation methods for Westchester County and noted that they were not described in any formal procedure or documentation. The inspectors also questioned how Entergy had practiced or demonstrated the manual notification method and were informed that the manual actuation method was attempted during a practice exercise in 2004. Entergy documented (CR IP2-2005-3245) several problems associated with the manual activation method including the lack of formal guidance and protocol for Indian Point and County emergency response staff. Subsequent to this event, Entergy implemented appropriate corrective actions to address the identified manual actuation system problems.

The inspectors reviewed the process for manual actuation of the sirens and considered that successful actuation would have involved a series of tasks including identification of an actuation problem and effective interaction with county representatives to obtain direction and permission to actuate the sirens. The inspectors reviewed NUREG-1022 which provided guidance for reportabilty under 10 CFR 50.72, and noted that Entergy could refrain from reporting emergency notification system problems based upon, “the existence of procedures or practices to compensate for the lost emergency sirens.” The inspectors determined that Entergy should have reported the Westchester County siren system actuation problem per 10 CFR 50.72 based on the lack of formal procedures for using the manual actuation method and also based on the limited experience and practices where Entergy had demonstrated use of this method. Entergy disagreed with this conclusion and indicated that the manual actuation method should be considered a “practice” as described in NUREG-1022. The inspectors, in coordination with specialists from the Office of Nuclear Reactor Regulation and from the Office of Nuclear Security and Incident Response, reviewed Entergy’s position and concluded that Entergy should have formally reported the siren system problem for the Westchester County sirens per 10 CFR 50.72.

Analysis: The performance deficiency involved the failure to formally notify the NRC regarding a siren system actuation problem as required by 10 CFR 50.72. This deficiency was evaluated using the traditional enforcement process since the failure to make a required report could adversely impact the NRC’s ability to carry out its regulatory mission.

While reviewing this finding, the inspectors considered the short duration of the siren system problem, the fact that the NRC was informally notified, that back-up route alerting was available, and also that the capability to actuate the sirens via the manual siren initiation method was not lost. The inspectors also noted that subsequent to this event Entergy implemented corrective actions to formalize the manual siren system actuation method as described in CR IP2-2005-3245. The inspectors considered the above and evaluated the severity of this violation using the criteria contained in Supplement I - Reactor Operations and Section VI.A.1 of the NRC's Enforcement Policy and determined that this finding met the criteria for disposition as a non-cited violation.

Enforcement: 10 CFR 50.72(b)(3)(xiii) requires that problems associated with operation of the off-site notification system be reported to the NRC. Contrary to the above, on August 5, 2005, Entergy did not formally report a problem that affected the primary and back-up actuation systems for the sirens located in Westchester County. This is a violation of 10 CFR 50.72(b)(3)(xiii). Because this finding met the criteria contained in Section VI.A.1 of the NRC's Enforcement Policy, it is being dispositioned as a non-cited violation. **NCV 05000247/2005-05-07; Failure to Make a 10 CFR 50.72(b)(3)(xiii) Notification.**

.4 PI&R Annual Sample - Fire Brigade

a. Inspection Scope (71152 - 1 sample)

The inspector reviewed CRs pertaining to the fire brigade which were generated during calender year 2005. The inspector also reviewed procedures controlling fire brigade activities, reviewed fire brigade drill reports and attendance sheets, and discussed fire brigade performance with the Site Fire Protection Engineer to determine whether Entergy was identifying areas for improvement and entering them into the corrective action program.

b. Findings and Observations

No findings were identified. During calender year 2005, Indian Point generated 65 CRs related to fire brigade activities. Issues included equipment, manning, drill response times, and access through locked doors on-site, among others. Fire brigade response times were noted to be outside the administrative requirements on several drills, from several areas both within and outside the protected area. Fire protection personnel are monitoring response times for each brigade member, and recording both the response time and the area of the plant from which the individual responded. This effort was intended to continue through the end of the year when results were to be evaluated for additional enhancements. Actions taken to date include having operators outside the protected area taking logs remain in direct contact with the control room, providing a company vehicle to operators leaving the protected area on assigned duties, and having the brigade member pre-stage personnel protective equipment near the security access point. Assigned fire brigade members are prohibited from attending training outside the protected area.

Several instances were identified where fire brigade members were unable to enter areas of the facility to respond to alarms due to locked doors. This delayed response to smoke detector alarms on more than one occasion. When problems were identified, actions were taken to provide appropriate keys or keycards to the brigade. In the event of an actual fire, the brigade could use the available forcible entry tools to gain access.

On those occasions where deficiencies were identified with regard to fire brigade equipment, actions were implemented to restore the inventory and condition of equipment to that required.

4OA4 Cross-Cutting Aspects of Findings

Section 1R13 describes a finding related to improper implementation of a temporary alteration on a safety-related component that had a cross-cutting aspect in the area of human performance. Specifically, maintenance personnel exceeded the maximum allowable material removal allowed by the modification package while grinding the cap screw heads on FCV-447.

Section 1R13 describes a finding related to a work control procedure which inappropriately allowed a modification to be implemented on a safety-related component prior to the completion of an adequate evaluation. This finding had a cross-cutting aspect in the area of human performance because the decision to implement the modification was based on inappropriate procedural guidance.

Section 4AO2 describes a finding related to Entergy's failure to take timely corrective actions for a series of problems with the frame relay portion of the alert and notification system. This finding had a cross-cutting aspect in the area of problem identification and resolution because Entergy properly evaluate a problem with the ANS system, and as a result did not take timely and effective corrective actions.

4OA6 Meetings, including Exit

Exit Meeting Summary

On January 11, 2006, the inspectors presented the inspection results to Mr. P. Rubin and other Entergy staff members, who acknowledged the inspection results presented. The inspectors asked Entergy what materials examined during the inspection should be considered proprietary. No proprietary information is presented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee Personnel

| | |
|---|---|
| F. Dacimo | Site Vice President |
| P. Rubin | Plant Manager |
| J. Comiotes | Director, Nuclear Safety Assurance |
| A. Vitale | Site Operations Manager |
| T. Barry | Security Manager |
| P. Conroy | Manager, Licensing |
| R. DeCensi | Technical Support Manager |
| F. Inzirillo | Emergency Planning Manager |
| S. Petrosi | Manager, Design Engineering |
| J. Ventosa | Engineering Manager |
| C. Wend | Radiation Protection Manager |
| T. Orlando | Systems Engineering Manager |
| D. Mayer | Unit 1 Project Manager |
| G. Hinrichs | Project manager |
| J. Tuohy | Manager, Cable Separation Program Improvements |
| J. Baker | Shift Manager |
| P. Studley | Shift Manager |
| H. Santis | Project Construction Manager |
| G. Schwartz | ISFSI Project Manager |
| G. Dean | Assistant Operations Manager - Training |
| R. Drake | Supervisor, Mechanical Design Engineering |
| V. Andreozzi | Systems Engineering Electrical Systems Supervisor |
| D. Gately | Assistant Radiation Protection Superintendent |
| M. Sicard | I&C Superintendent |
| L. Lee | Systems Engineering Primary Systems Supervisor |
| J. Raffaele | Supervisor, Electrical Design Engineering |
| E. Anderson | Lead Engineer, Cable Separation Program Improvements |
| T. Beasley | System Engineer |
| C. Bergeren | In-Service Testing Engineer |
| J, Bretti | System Engineer |
| T. Chan | System Engineer |
| G. Dahl | Technical Specialist, Licensing |
| R. Daley | System Engineer |
| T. Foley | System Engineer |
| D. Friedle | System Engineer |
| M. Johnson | System Engineer |
| T. Jones | Nuclear Safety/Licensing Specialist, Licensing |
| T. Lowe | System Engineer |
| W. Mahlmeister | Technical Lead, Cable Separation Program Improvements |
| B. Meek | System Engineer |
| P. Peloquin | Project Engineer |

| | |
|---|---|
| B. Rokes | Licensing Engineer |
| J. Skonieczny | Project Engineer |
| D. Smith | Scheduling and Work Order Coordinator |
| A. Stewart | Licensing |
| R. Sutton | System Engineer |
| S. Wilkie | System Engineer |

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|---|---|---|
| 05000247/2005005-01 | URI | Emergency Diesel Generator Building Flooding (Section 1R06) |

Opened and Closed

| | | |
|---|---|---|
| 05000247/2005005-02 | FIN | Failure to Maintain Design Control of Control Rod Drive Mechanism Fans (Section 1R12) |
| 05000247/2005005-03 | NCV | Failure to Follow Procedural Requirements During Modification of a Safety-Related Valve (Section 1R13) |
| 05000247/2005005-04 | NCV | Inadequate Procedure for Control of Work on Safety-Related Components (Section 1R13) |
| 05000247/2005005-05 | NCV | Inadequate Equipment to Assess Threshold for Emergency Action Level 8.4.3. (Section 1EP4) |
| 05000247/2005005-06 | FIN | Inadequate Corrective Actions for Frame Relay System Problems |
| 05000247/2005005-07 | NCV | Failure to Make a 10 CFR 50.72(b)(3)(xiii) Notification |

## LIST OF DOCUMENTS REVIEWED

### Section 1R01: Adverse Weather Protection

Procedures

OAP-008, “Severe Weather Preparations,” Revision 0
2-SOP-20.2, “Condensate System Operation,” Revision 40
2-SOP-11.5, “Space Heating and Winterization,” Revision 31
OAP-048, “Seasonal Weather Preparations,” Revision 2

SOP-30.1, “Electric Heat Trace System,” Revision 24

Condition Reports

| | | |
|---|---|---|
| IP2-03-02655 | IP2-04-06749 | IP2-05-04130 |
| IP2-04-06700 | IP2-05-00378 | IP2-05-04667 |

Work Orders

| | | |
|---|---|---|
| IP2-03-20868 | IP2-03-21069 | IP2-04-24084 |
| IP2-03-21054 | IP2-03-21591 | IP2-04-24091 |

**Section 1R04: Equipment Alignment**

Procedures

2-AOP-CCW-1, “Loss of Component Cooling Water,” Revision 1
2-COL-27.3.1, “Diesel Generators,” Revision 25
2-SOP-4.1.2, “Component Cooling System Operation,” Revision 29
2-COL-31.3, “Gas Turbine 3,” Revision 6

Condition Reports

| | | |
|---|---|---|
| IP2-04-00213 | IP2-04-01706 | IP2-05-01179 |
| IP2-04-01328 | IP2-05-00541 | |

Drawings

9321-F-2028-36, “Jacket Water to Diesel Generators,” Revision 1
9321-H-2029-49, “Starting Air to Diesel Generators,” Revision 11
9321-F-2030-39, “Fuel Oil to Diesel Generators,” Revision 39
302775-04, “Fuel Oil System Flow Diagram”
304122-05, “Fuel Forwarding System Flow Diagram”
UFSAR Figure 9.3-1, “Auxiliary Coolant System - Flow Diagram Sheet 1,” Revision 17B
UFSAR Figure 9.3-1, “Auxiliary Coolant System - Flow Diagram Sheet 2,” Revision 17B
UFSAR Figure 9.3-1, “Auxiliary Coolant System - Flow Diagram Sheet 3,” Revision 1

Miscellaneous

CCWS DBD, “Design Bases Document for the Component Cooling Water System,” Revision 0

**Section 1R05: Fire Protection**

Procedures

PFP-207, “General Floor Plan - Primary Auxiliary Building,” Revision 0

PFP-209, “Component Cooling Pump Room - Primary Auxiliary Building,” Revision 0
PFP-255D, “Boiler Feed Pumps - Turbine Building,” Revision 0
PFP-252, “Cable Spreading Room - Control Building,” Revision 0
PFP-211, “General Floor Plan - Primary Auxiliary Building,” Revision 0

**Section 1R06: Flood Protection Measures**

Condition Reports

IP2-03-04868 IP2-05-00543 IP2-05-04686

Miscellaneous

IPEEE (1995) Section 5, “Internal Flooding”
IP2 PSA Section 4.7, “Internal Flooding Analysis”

**Section 1R07: Heat Sink Performance**

Calculations

PGI-00089-00, “22 Instrument Air Closed Cooling Heat Exchanger Performance,” Revision 0
PGI-00090-00, “21 Instrument Air Closed Cooling Heat Exchanger Performance,” Revision 0

Condition Reports

IP2-05-00674

Heat Exchanger Test Reports

Report 21-87, “Eddy Current Inspection Results for 21 Instrument Air Closed Cooling Heat Exchanger,” June 8, 2004
Report 21-106, “Eddy Current Inspection Results for 22 Instrument Air Closed Cooling Heat Exchanger,” February 14, 2005
SE-330, Attachment III, “Heat Exchanger Inspection Report for 22 Instrument Air Closed Cooling Water Heat Exchanger,” February 14, 2005

Miscellaneous

Indian Point Response to Generic Letter 89-13, “Service Water System Problems Affecting Safety-Related Equipment,” February 2, 1990
Indian Point 2 Maintenance Rule Basis Document - Instrument Air Closed Cooling Water

Work Orders

IP2-02-60313
IP2-03-11687

**Section 1R11: Operator Requalification**

Miscellaneous

Lesson Plan IP2LPLORAOP003, "Safe Shutdown/ Control Room Inaccessibility Review and Drill"

**Section 1R12: Maintenance Effectiveness**

Maintenance Rule (A)(1) Evaluations

Maintenance Rule Action Plan, Gas Turbine Reliability, Revision 6
Maintenance Rule Action Plan, Control Room HVAC System
Maintenance Rule Action Plan, Component Cooling Water System
Maintenance Rule Action Plan, Vapor Containment System, July 2005
Maintenance Rule Action Plan, Rod Control System
Maintenance Rule Action Plan, CVCS System, June 2005
Maintenance Rule Action Plan, IP2 and IP3 Structural Monitoring Program

Maintenance Rule Basis Documents

Maintenance Rule SSC Basis Document:: Auxiliary Feedwater System, Revision 4
Maintenance Rule SSC Basis Document:: Chemical and Volume Control System, Revision 2
Maintenance Rule SSC Basis Document:: Nuclear Instrumentation System
Maintenance Rule SSC Basis Document:: Control Rod Drive System
Maintenance Rule SSC Basis Document:: 345 kV Electrical System
Maintenance Rule SSC Basis Document:: Emergency Lighting System
Maintenance Rule SSC Basis Document:: Heating, Ventilation, and Air Conditioning, Revision 2
Maintenance Rule SSC Basis Document:: Control Rod Drive Fans, Revision 2
Maintenance Rule SSC Basis Document:: Component Cooling Water System, Revision

Administrative Documents

ENN-DC-121, "Maintenance Rule," Revision 2
ENN-DC-171, "Maintenance Rule Monitoring," Revision 2
ENN-DC-172, "Maintenance Rule (a)(3) Periodic Assessment," Revision 0
ENN-MS-S-008, "ENN Engineering Standard - Action Plans," Revision 0
IP3-LO-2005-00208, Maintenance Rule Periodic Assessment, June 2005
IP-SMM-WM-100, "Work Control Process," Revision 4

Condition Reports

| | | |
|---|---|---|
| IP2-03-06179 | IP2-04-03669 | IP2-05-00794 |
| IP2-03-07485 | IP2-04-04366 | IP2-05-01101 |
| IP2-04-02334 | IP2-05-00211 | IP2-05-01350 |
| IP2-04-02668 | IP2-05-00212 | IP2-05-01402 |
| IP2-04-02668 | IP2-05-00568 | IP2-05-01662 |

| | | |
|---|---|---|
| IP2-05-01691 | IP2-05-02210 | IP2-05-03670 |
| IP2-05-01691 | IP2-05-02717 | IP2-05-04580 |
| IP2-05-01884 | IP2-05-02729 | IP2-05-04704 |
| IP2-05-01908 | IP2-05-03018 | IP2-05-04744 |
| IP2-05-01944 | IP2-05-03206 | |

Miscellaneous

ES-0.2 Deviation, "Natural Circulation Cooldown," Revision 17
Indian Point Energy Center Maintenance Rule Program Quarterly Report second Quarter 2005
Shulz Electric Motor Failure Report, Q-9993
Maintenance Rule Expert Panel Meeting #2005-03 Minutes, May 9, 2005
Maintenance Rule Expert Panel Meeting #2005-04 Minutes, May 23, 2005
IPEC Maintenance Rule Program Quarterly Report, First Quarter 2005
IPEC Maintenance Rule Program Quarterly Report, Second Quarter 2005
IPEC Maintenance Rule Program Quarterly Report, Fourth Quarter 2005
Top Ten Technical Issue - IPEC NI System Reliability, Revision 5, May 2005
Top Ten Equipment Reliability Action Plan - Control Rod Drive System
Performance Criteria/Goal Evaluation - 345 kV System

System Health Reports

Auxiliary Feedwater System Health Report, Third Quarter 2005
CVCS System Health Report, Third Quarter 2005
Control Rod Drive Annual System Health Report, 2004
345 kV Annual System Health Report, 2004
Control Room HVAC System Health Report, Third Quarter 2005
Component Cooling Water System, First Quarter 2004
Component Cooling Water System, Second Quarter 2004
Component Cooling Water System, Fourth Quarter 2004
Component Cooling Water System, Second Quarter 2005
Component Cooling Water System, Third Quarter 2005
HVAC Annual Report, June 2004 to June 2005

**Section 1R13: Maintenance Risk Assessment and Emergent Work Control**

Work Orders

IP2-05-25862

Calculations
1487203-C-003, "Assessment of Actuator Bolting with Shaved Cap Screw Heads"
IP3-Calc-FW-02760, "Allowable Margin for Cap Screw Grinding"
FPX-00281-00, "Nitrogen Supply Capacity Requirement of an Accumulator for Power-Operated Relief Valves PCV-455C and PCV456," Revision 0

Condition Reports:

| | | |
|---|---|---|
| IP2-05-03847 | IP2-05-04544 | IP2-05-04671 |
| IP2-05-04137 | IP2-05-04615 | IP2-05-04926 |
| IP2-05-04354 | IP2-05-04666 | IP2-05-04979 |
| IP2-05-04408 | | |

Miscellaneous

Operators Daily Risk Report 10/28/05
IEEE Standard C37.106-2003, "Guide for Abnormal Frequency Protection for Power Generating Plants"
Westinghouse I.L. 14429-A, "Instructions of A/200 Series Mechanical Interlocks"
Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2
TA-05-2-107, "Grind the socket head cap screws to facilitate packing adjustment"

Procedures

2-ARP-SKF, "Bearing Monitor," Revision 23
EN-WM-100, "Work Request Generation, Screening and Classification," Revision 0
0-VLV-416-AOV, "Copes-Vulcan Steam Generator Feedwater Regulating Valve Maintenance," Revision 1

Drawings

A225103-08, "Logic Diagram Steam Generator Trip Signals"
D252556-4, "Flow & Pressure Channel 1 (SG #22)"

**Section 1R14: Non-Routine Events**

Procedures

2-TOP-006, "Permanent Tave Increase to 565F," Revision 0
OAP-030, "Infrequently Performed Tests and Evolutions," Revision 0
2-POP-1.3, "Plant Startup, Mode 2 to Mode 1," Revision 69
2-POP-3.1, "Plant Shutdown, Mode 1 to Mode 3," Revision 47
2-SOP-26.4, "Turbine Generator Startup, Synchronizing, Voltage Control and Shutdown," Revision 48
2-ARP-SCF, "Condensate and Boiler Feed," Revision 35
2-ARP-SAF, "Reactor Coolant System," Revision 34

Miscellaneous

IP-EP-AD13 Attachment 2, "EAL Technical Bases," Revision 2
Operator Logs November 30, 2005
Operator Logs December 22-23, 2005

**Section 1R15: Operability Evaluations**

Calculations

IP-CALC-05-00951, "Evaluation of an Increase in SG Feedwater Regulating Valve Stroke Time" Revision 0
CN-CRA-02-38, "Indian Point 2 Steamline Break Inside Containment with Feedwater Valve Failure," Revision 0
CN-CRA-03-20, "Indian Point 2 Steamline Break Inside Containment Analysis for Stretch Power Uprate," Revision 0`

Condition Reports

| | | |
|---|---|---|
| IP2-04-01075 | IP2-05-04246 | IP2-05-04642 |
| IP2-04-06818 | IP2-05-04414 | IP2-05-04792 |
| IP2-04-06837 | | |

Drawings

A235296, "Flow Diagram - Safety Injection System," Revision 65
B206909-5, "Inservice Inspection Isometric of Safety Injection Line 361 - Inside Containment (Sheet 1 of 2) (RHR Return)," November 21, 1975
D252680, "EDG's Jacket Water and Lube Oil Coolers Cooling Water System," Revision 4

Miscellaneous

10 CFR 50.59 Evaluation EVL-IP2-05-26384, "Operation of Feedwater Bypass BFD-90 Series and 417L Series Valves at Stretch Uprate Power," Revision 0
UFSAR Section 14.2.5, "Rupture of a Steam Pipe," Revision 17
IP2-RPT-05-00112, "Outside VC Cable Tray Walkdown Summary"

Procedures

2-PT-M108, "RHR/SI System Venting," Revision 2
2-PT-Q013, "Inservice Valve Tests," Revision 36

Work Orders

IP2-05-02442

**Section 1R19: Post Maintenance Testing**

Condition Reports

| | | |
|---|---|---|
| IP2-03-05294 | IP2-05-04125 | IP2-05-04138 |
| IP2-04-06150 | IP2-05-04137 | IP2-05-04795 |

Work Orders

IP2-04-12427
IP2-04-35956
IP2-05-02517
IP2-05-02521
IP2-05-02522
IP2-05-20640
IP2-05-21932
IP2-05-25316
IP2-05-26680
IP2-05-27328

Drawings

IP2-S-000221-01, "RHR Pump Suction from Containment Pump Vaive-MOV 885A"
9321-F-3006-92, "Single Line Diagram 480V MCC 26A and 26B"

Miscellaneous

IEEE Std 43-2000, "Recommended Practice for Testing Insulation Resistance of Rotating Machinery"

Procedures

2-PT-Q013-DS249, "Valve PCV1135 IST Data Sheet," Revision 24
2-PT-Q026D, "24 Service Water Pump," Revision 8
2-PT-Q030A, "21 Component Cooling Water Pump," Revision 12
BAT-C-001-A, "Replacement of Battery Cells," Revision 8
PT-A35C, "23 Station Battery Intercell Resistance Checks," Revision 1
PT-Q17E, "Alternate Safe Shutdown Supply Verification to 24 SWP," Revision 8
PMP-006-CVCS, "Replacement of Fluid Cylinder Valves - Union QX-300 Charging Pump," Revision 6
PT-Q33A, "21 Charging Pump," Revision 9
PT-Q68A, "21 Charging Pump Check Valves," Revision 3
2-PT-Q026E, "25 Service Water Pump," Revision 9
2-PT-Q013, "Inservice Valve Tests," Revision 36

**Section 1R22: Surveillance Testing**

Procedures

2-PT-SA067, "Main Turbine Stop and Control Valves," Revision 1
2-PT-M021A, "Emergency Diesel Generator 21 Load Test," Revision 14
2-SOP-27.3.1.1, "21 Emergency Diesel Generator Manual Operation," Revision 13
PI-3Y2A, "Inservice Inspection Pressure Tests - 23 AFP Suction & Discharge," Revision 1

Condition Reports

IP2-05-04269
IP2-05-04504

Drawings

UFSAR Figure 10.2-7, “Flow Diagram Boiler Feedwater”

**Section 1R23: Temporary Alterations**

Calculations

IP-CALC-05-1032, “Evaluation of Leak Repair Injection for PCV-1135, 22 S/G Atmospheric Relief,” Revision 0

Condition Reports

IP2-05-04912

Engineering Requests

IP2-05-27331-RS, “Leak Repair on PCV-1135 Lubricator Nipple,”

Procedures

0-LKR-401-GEN, “Temporary On-Line Leak Repairs,” Revision 0
ENN-ME-S-001, Attachment 7.3, “Leak Repair Evaluation,” Revision 0

Miscellaneous

10 CFR 50.59 Screening for PCV-1135 Leak Repair

Work Orders

IP2-05-02498

**Section 1EP4: Emergency Action Level (EAL) and Emergency Plan Changes**

Procedures

IPEC-EP-AD-13, “IPEC Emergency Plan Administrative Procedures,” Revision 2
3-ARP-012, “Panel SJF - Cooling Water and Air,” Revision 44
3-AOP-SW-1, “Service Water Malfunction,” Revision 1
3-ARP-049, “Panel Local - Intake Structure,” Revision 1

Drawings

9321-F-20015, “Screenwash Pump”
9321-F-10113-8, “Intake Structure Top Slab Plan”
9321-F-10143-7, “Intake Structure Miscellaneous Steel Details”

Condition Reports

IP3-05-05375
IP3-05-05380
IP3-05-05388
IP3-05-05389
IP3-05-05401

Calcalations

IP3-CALC-SWS-03622, “Service Water Header Pressure”

**Section 4OA1: Performance Indicator Verification**

Condition Reports

IP2-05-05457

**Section 4OA2: Problem Identification and Resolution**

Procedures
IPEC Operations Night Orders, December 6, 2005
IP-SMM-TQ-122, “Fire Protection Training Program,” Revision 1
IP-SMM-DC-901, “IPEC Fire Protection Program Plan,” Revision 2
OAP-001, “Conduct of Operations,” Revision 8
OASL-15.21, “Shift Manning Requirements,” Revision 5
OASL-15.22, “Fire Brigade Requirements,” Revision 7

Condition Reports

IP2-2005-00429
IP2-2005-00530
IP2-2005-00584
IP2-2005-00808
IP2-2005-01763
IP2-2005-02555
IP2-2005-02700
IP2-2005-03308
IP2-2005-03319
IP2-2005-03354
IP2-2005-03448
IP2-2005-03999
IP2-2005-04033
IP2-2005-04257
IP2-2005-04282
IP2-2005-04546
IP2-2005-04606
IP2-2005-04760
IP3-2005-00471
IP3-2005-00675
IP3-2005-00744
IP3-2005-02763
IP3-2005-02776
IP3-2005-02912
IP3-2005-03081
IP3-2005-03882
IP3-2005-04138
IP3-2005-05047
IP3-2005-05060
IP3-2005-05231
IP3-2005-05620

Miscellaneous
Standing Order 05-02
Temporary Procedure Change 03-0229

## LIST OF ACRONYMS

| | |
|---|---|
| ABFP | Auxiliary Boiler Feedwater Pump |
| ADAMS | Agencywide Document Management System |
| AOP | Abnormal Operating Procedure |
| CAP | Corrective Action Program |

| | |
|---|---|
| CCP | Coolant Charging Pump |
| CCW | Component Cooling Water |
| CFR | Code of Federal Regulations |
| CR | Condition Report |
| CRDM | Control Rod Drive Mechanism |
| CST | Condensate Storage Tank |
| EDG | Emergency Diesel Generator |
| EOP | Emergency Operating Procedure |
| EP | Emergency Preparedness |
| ESW | Emergency Service Water |
| FSAR | Final Safety Analysis Report |
| GT | Gas Turbine |
| IACCW | Instrument Air Closed Cooling Water |
| IMC | Inspection Manual Chapter |
| IP2 | Indian Point 2 |
| IP3 | Indian Point 3 |
| IPE | Individual Plant Examination |
| IPEEE | Individual Plant Examination of External Events |
| MR | Maintenance Rule |
| NCV | Non-Cited Violation |
| NEI | Nuclear Energy Institute |
| NRC | Nuclear Regulatory Commission |
| PARS | Publically Available Records System |
| PI | Performance Indicator |
| PSA | Probabilistic Safety Assessement |
| PWST | Primary Water Storage Tank |
| PWT | Post Work Test |
| RG | Regulatory Guide |
| RWP | Radiation Work Permit |
| RWST | Refueling Water Storage Tank |
| SDP | Significance Determination Process |
| SFP | Spent Fuel Pool |
| S/G | Steam Generator |
| SI | Safety Injection |
| SWP | Service Water Pump |
| Tave | Average Coolant Temperature |
| TRM | Technical Requirements Manual |
| TS | Technical Specification |
| URI | Unresolved Item |
| WO | Work Order |