


**United States Nuclear Regulatory Commission Official Hearing Exhibit**

In the Matter of:

Entergy Nuclear Operations, Inc.  
(Indian Point Nuclear Generating Units 2 and 3)ASLBP #: 07-858-03-LR-BD01  
Docket #: 05000247 | 05000286  
Exhibit #: NRC000094-00-BD01  
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Stricken:

NRC000094

Submitted: March 30, 2012

**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406

November 9, 2007

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

**SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT 2 - NRC INTEGRATED  
INSPECTION REPORT 05000247/2007004**

Dear Mr. Dacimo:

On September 30, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Indian Point Nuclear Generating Unit 2. The enclosed integrated inspection report documents the inspection results, which were discussed on October 3, 2007, with Mr. Anthony Vitale 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents three findings of very low safety significance (Green). These findings were also determined to be violations of NRC requirements. However, because of their very low safety significance, and because they were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCV's) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a written 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. 220555-001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Senior Resident Inspector at Indian Point Nuclear Generating Unit 2.

In accordance with Title 10 of the Code of Federal Regulations Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) 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/**

Eugene W. Cobey, Chief  
Projects Branch 2  
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000247/2007004  
w/ Attachment: Supplemental Information

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**SUNSI Review Complete: BDW (Reviewer's Initials)**

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-247

License No.: DPR-26

Report No.: 05000247/2007004

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating Unit 2

Location: 450 Broadway, GSB  
Buchanan, NY 10511-0249

Dates: July 1, 2007 through September 30, 2007

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## SUMMARY OF FINDINGS

IR 05000247/2007-004; 07/01/2007 - 09/30/2007; Indian Point Nuclear Generating Unit 2; Fire Protection, Maintenance Risk Assessment and Emergent Work Control, and Surveillance Testing.

The report covered a three-month period of inspection by resident and region-based inspectors. Three findings of very low significance were identified. These findings were determined to be non-cited violations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process (SDP) does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### A. NRC-Identified and Self-Revealing Findings

#### **Cornerstone: Mitigating Systems**

Green. The inspectors identified a non-cited violation (NCV) of License Condition 2.K., fire protection program, because Entergy failed to identify a degraded three-hour rated fire door on the east entrance of the 12 fire main booster pump room. The door was determined to be inoperable due to a misalignment, which prevented the door from fully closing. Entergy entered this issue into their corrective action program, took immediate compensatory actions, realigned the door, and ensured that it would fully close.

The inspectors determined that this finding was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone; and it affected the cornerstone objective of ensuring the 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 F, "Fire Protection Significance Determination Process." The inspectors determined that this issue was of very low safety significance because the degradation of the fire barrier was "moderate" based on the fire door displaying significant degradation affecting its performance or reliability. However, it was still expected to provide some defense-in-depth benefit. Specifically, the fire door was expected to provide a minimum of 20 minutes fire endurance protection, and the in-situ fire ignition sources and flammable materials were positioned such that the degraded fire door would not be subject to direct flame impingement.

The inspectors determined that the finding had a cross-cutting aspect in the area of problem identification and resolution because Entergy personnel who routinely traverse through or past the fire door had not identified the degraded condition. (P.1(a)) (Section 1R05)

Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy did not ensure



that procedures associated with operation of the safety injection (SI) system during venting were appropriate to the circumstances. Specifically, procedure 2-PT-M108, "RHR/SI [residual heat removal/safety injection] System Venting," did not have appropriate controls to ensure the safety injection piping and pumps remained operable during accident conditions. Entergy entered the issue into their corrective action program and revised the venting procedure to ensure operator actions are appropriately evaluated and credited to maintain operability of the system.

The inspectors determined that this finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone; and it impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was evaluated using Phase 1 of IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The inspectors determined this finding resulted in a loss of function of a single train of SI for approximately five minutes. Because the total inoperability time was less than the allowed outage time of 72 hours, and the finding is not potentially risk significant due to a seismic, flooding, or severe weather initiating event, this finding screens as very low safety significance (Green).

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because Entergy did not ensure that complete, accurate and up-to-date procedures were available. (H.2(c)) (Section 1R22)

### **Cornerstone: Barrier Integrity**

Green. The inspectors identified a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Actions," in that, Entergy did not implement timely corrective actions for a degraded condition associated with the 25 Containment Fan Cooler Unit (FCU) flow indicator. Specifically, the failure to take timely corrective actions for the degraded service water flow indicator for the 25 FCU, initially identified in October 2006, resulted in the inability to ensure that sufficient service water flow was available for the component to perform its intended function. Subsequently, it was identified that a reduced service water flow condition did exist. Entergy entered the issue into their corrective action program and implemented corrective actions to restore adequate indication of service water flow to the 25 FCU. Entergy is evaluating maintenance practices to determine the appropriateness of a periodic blow-down of the transmitter impulse lines to prevent sediment buildup.

The inspectors determined that this finding was more than minor because it was associated with the structure, system, and component and barrier performance attribute of the Barrier Integrity cornerstone; and it impacted the cornerstone objective of providing reasonable assurance that the physical design barrier (containment) protects the public from radionuclide releases caused by accidents or events. This finding was evaluated using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process." This was determined to be a Type B finding because it potentially impacted containment integrity but did not result in the increased likelihood of an initiating event. This finding was determined to be of very low safety significance

because, while it could impact late containment failure, it did not impact a function that was important to large early release frequency.

The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution because Entergy did not thoroughly evaluate the condition when initially identified. (P.1(c)) (Section 1R13)

B. Licensee-Identified Violation

None.

## REPORT DETAILS

### Summary of Plant Status

Indian Point Nuclear Generating Unit 2 began the inspection period operating at full power and remained at or near full power throughout the inspection period.

#### 1. REACTOR SAFETY

##### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

##### 1R01 Adverse Weather Protection (71111.01 - 1 sample)

###### a. Inspection Scope

The inspectors reviewed the readiness of risk-significant systems for extreme weather conditions, and evaluated implementation of extreme hot weather procedures and compensatory measures during the period August 3, 2007 through August 12, 2007. The inspectors conducted walkdowns of plant equipment, interviewed personnel, and reviewed operating procedures to ensure that two risk-significant systems during this condition (auxiliary feedwater and emergency diesel generators) would not be adversely affected by the hot weather. In addition, the inspectors reviewed offsite power reliability and protocols with the transmission operator to ensure the plant appropriately evaluated risk during these periods of hot weather. The documents reviewed are listed in the Attachment. This review represented one inspection sample of risk significant systems.

###### b. Findings

No findings of significance were identified.

##### 1R04 Equipment Alignment (71111.04Q - 3 samples)

###### a. Inspection Scope

The inspectors performed 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, the Updated Final Safety Analysis Report (UFSAR), and system drawings to verify that the alignment of the available train supported its required safety functions. The inspectors also reviewed applicable condition reports and work orders to ensure that Entergy had identified and properly addressed equipment discrepancies that could potentially impair the capability of the available train, as required by Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action." The documents reviewed during these inspections are listed in the Attachment.

The inspectors performed partial walkdowns on the following systems which represented three inspection samples:

- 21, 22 and 23 emergency diesel generators (EDG's) during severe weather warning and elevated risk;
- Emergency diesel generator alignment during 480 Volt undervoltage testing; and
- Fire protection system following 11 fire main booster pump testing.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 10 samples)

.1 Quarterly Inspection

a. Inspection Scope

The inspectors conducted a tour of several fire areas to assess the material condition and operational status of fire protection features. The inspectors verified, consistent with applicable administrative procedures, that: combustibles and ignition sources were adequately controlled; passive fire barriers, manual fire-fighting equipment, and suppression and detection equipment were appropriately maintained; and compensatory measures for out-of-service, degraded, or inoperable fire protection equipment were implemented in accordance with Entergy's fire protection program. The inspectors evaluated the fire protection program against the requirements of Licensee Condition 2.K. The documents reviewed are listed in the Attachment. This inspection represented 10 inspection samples for fire protection tours and were conducted in the following areas:

- Fire Zone 23;
- Fire Zone 10;
- Fire Zone 4;
- Fire Zone 12, 13, 24, and 25;
- Fire Zone 14;
- Fire Zone 14A, 15A, 16A, 17A, and 19A;
- Fire Zone 361 and 362;
- Fire Zone 74A and 74B;
- Fire Zone 152; and
- Fire Zone 3 and 29A.

b. Findings

Introduction: The inspectors identified a Green non-cited violation (NCV) of License Condition 2.K., fire protection program, because Entergy failed to identify a degraded three-hour rated fire door on the east entrance of the 12 fire main booster pump room.

Description: On September 6, 2007, the inspectors performed a fire protection walkdown of the 11 and 12 fire main booster pump areas. The inspectors noted that the three-hour rated, swing-type fire door on the east side of the 12 fire main booster pump cell would not close properly and left a gap along the perimeter of the door. The inspectors reviewed Entergy's Fire Hazards Analysis Report and determined that the door is required to meet licensing commitments, and is designed to preclude the passage of flame and hot gases from the adjacent area. Degradation of this door could allow the propagation of a fire to impact the 12 fire main booster pump.

The inspectors informed shift operations personnel of the issue, and they determined the door was improperly aligned with the frame. Entergy evaluated the condition, took appropriate compensatory measures, realigned the door, ensured that it would fully close, and entered the condition into their corrective action program (CR-IP2-2007-03561). Additionally, the fire protection engineer was notified, and he determined that the door frame required replacement (CR-IP2-2007-03651).

The inspectors determined that this condition was a performance deficiency because the door was in a degraded condition that resulted in the fire barrier being non-functional. The inspectors determined it was reasonable that this condition should have been identified by Entergy because personnel routinely pass through the fire door, and the inability of the door to fully close was readily apparent. 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.

Analysis: The inspectors determined that this finding was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone; and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 screening of the deficiency in accordance with Inspection Manual Chapter (IMC) 0609 and evaluated the safety-significance using IMC 0609 Appendix F, "Fire Protection Significance Determination Process." The issue was determined to be of very low safety significance because the degradation of the fire barrier was "moderate" based on the fire door displaying significant degradation affecting its performance or reliability. However, it was still expected to provide some defense-in-depth benefit. Specifically, the fire door was expected to provide a minimum of 20 minutes fire endurance protection, and the in-situ fire ignition sources and flammable materials were positioned such that the degraded fire door would not be subject to direct flame impingement.

The inspectors determined that the finding had a cross-cutting aspect in the area of problem identification and resolution because Entergy personnel who routinely traverse through or past the fire door had not identified the degraded condition. (P.1(a))

Enforcement: License Condition 2.K., fire protection program, requires that Entergy implement and maintain in effect all provisions of the NRC-approved fire protection program, as approved in part by the NRC Safety Evaluation Report (SER) dated January 31, 1979. The January 31, 1979, SER requires administrative controls comparable to those described in NRC Branch Technical Position 9.5-1, "Guidelines for

Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976.” Branch Technical Position (BTP) 9.5-1 requires that measures be established to assure that conditions adverse to fire protection, such as deficiencies, deviations, defective components, and non-conformities are promptly identified, reported, and corrected. Contrary to the above, Entergy failed to promptly identify the degraded condition of the 12 fire main booster pump area fire door. Once identified by the inspectors, Entergy initiated CRs IP2-2007-03561 and IP2-2007-03651 documenting the deficiency in their corrective action program (CAP). Because the violation was of very low safety significance and entered into their CAP, this violation is being treated as an NCV per Section VI.A of the NRC Enforcement Policy: **NCV 05000247/2007004-01, Degraded 12 Fire Main Booster Pump Cell Fire Door.**

1R06 Flood Protection Measures (71111.06 - 1 sample)

a. Inspection Scope

The inspectors reviewed Indian Point Nuclear Generating Unit 2’s Individual Plant Examination and the UFSAR concerning internal flooding events. The inspection included a walkdown of accessible areas of the plant, including the service water pipe chase area of the primary auxiliary building. Inspectors evaluated these areas for potential susceptibilities to internal flooding and verified the assumptions included in the site’s internal flooding analysis. The inspectors also reviewed relevant abnormal operating and emergency plan procedures. The documents reviewed are listed in the Attachment. This inspection represented one sample for internal flood protection measures.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11Q - 1 sample)

a. Inspection Scope

On August 20, 2007, the inspectors observed licensed operator simulator training to verify that operator performance was adequate and that evaluators were identifying and documenting crew performance problems. The inspectors evaluated the performance of risk-significant operator actions, including the use of emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, the implementation of appropriate actions in response to alarms, the performance of timely control board operation and manipulation, and the oversight and direction provided by the shift manager. The inspectors also reviewed simulator fidelity with respect to the actual plant. Licensed operator training was evaluated against the requirements of 10 CFR Part 55, “Operators’ Licenses.” The documents reviewed during this inspection are listed in the Attachment. This observation of operator simulator training represented one inspection sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - 3 samples)

a. Inspection Scope

The inspectors reviewed performance-based problems that involved the selected structures, systems, or components (SSC's) to assess the effectiveness of the maintenance program. Reviews focused on:

- Proper Maintenance Rule scoping in accordance with 10 CFR 50.65;
- Characterization of reliability issues;
- Changing system and component unavailability;
- 10 CFR 50.65(a)(1) and (a)(2) classifications;
- Identifying and addressing common cause failures;
- Trending of system flow and temperature values;
- Appropriateness of performance criteria for SSCs classified (a)(2); and
- Adequacy of goals and corrective actions for SSCs classified (a)(1).

The inspectors also reviewed system health reports, maintenance backlogs, and Maintenance Rule basis documents. The inspectors evaluated the maintenance program against the requirements of 10 CFR Part 50.65. The documents reviewed during this inspection are listed in the Attachment. The following maintenance effectiveness samples were reviewed and represented three inspection samples:

- Service water piping and system leaks;
- Direct Current (DC) power; and
- Appendix 'R' lighting.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 5 samples)

a. Inspection Scope

The inspectors reviewed maintenance activities to verify that the appropriate risk assessments were performed prior to removing equipment for work. The inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4), and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The documents reviewed during this inspection are listed in the Attachment.

The following activities represented five inspection samples:

- 21 safety injection pump maintenance during 22 residual heat removal pump testing;
- Decreased indicated service water flow to 25 containment fan cooler unit;
- 22 auxiliary feedwater pump planned maintenance;
- 345 KiloVolt (KV) feeder W93 removed from service; and
- Rod control circuit QC-412B replacement.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," in that, Entergy did not implement timely corrective actions for a degraded condition associated with the 25 containment fan cooler unit (FCU) service water flow indication.

Discussion: On September 16, 2007, Entergy conducted a quarterly surveillance to verify adequate cooling water flow through the containment FCUs. Entergy identified that the 25 FCU did not meet the minimum required flow, and declared the FCU inoperable. Entergy initiated corrective actions to restore flow to greater than the minimum required by Technical Specifications, and the 25 FCU was restored to an operable status on September 20, 2007.

The inspectors evaluated Entergy's actions to restore adequate flow to the 25 FCU and reviewed the associated risk management actions during the emergent work. In addition, the inspectors reviewed the past work history associated with service water flow to the FCU. The inspectors identified that a condition report, CR-IP2-2006-05951, had been written on October 8, 2006, due to anomalous service water flow indications on 25 FCU during a valve stroke surveillance test. This issue was evaluated in the corrective action process, and it was determined that the most likely cause for the oscillating indication was excessive silting of the instrument lines to the flow transmitter. A work order was written to blowdown the instrument lines associated with the transmitter, and the condition report was closed to the work order. The work order was coded as elective maintenance because Entergy determined that the deficiency was only associated with the flow indication, and did not represent an actual reduction in flow. This work order was not implemented. Entergy failed to consider that the valve alignment for the test in which the anomaly was identified was the same alignment as required by the quarterly surveillance to verify adequate service water flow to the containment fan cooler units. Condition report, CR-IP2-2007-03424, was written on August 28, 2007, that identified the same anomalous flow condition and a corrective action to blowdown the impulse lines was completed on August 30, 2007.

The inspectors reviewed the data obtained during the quarterly surveillance test for periods before, and after the anomalous flow condition was identified in October 2006. Prior to the anomaly being identified, the flow for 25 FCU was routinely found to be in the range of 1760-1800 gallons per minute (gpm). After October 2006, the flow was recorded as being greater than 2000 gpm, with the exception of one instance where the



flow was 1780 gpm. 2000 gpm is the maximum value in the indicating range of the meter. The inspectors determined that, based on the identified anomaly in the flow indication and the prompt change in indicated flow during the quarterly surveillance, the meter did not provide a reliable indication of actual system flow. Entergy determined that the actual reduction in service water flow through the 25 FCU identified on September 16, 2007, was the result of flow blockage in the system and most likely occurred during heavy rains, and a subsequent increase in river water silt and debris, during April 2007. The inspectors determined that the unreliable service water flow indication prevented earlier indication of the flow reduction through the quarterly surveillance test. Entergy implemented corrective actions to restore adequate service water flow indication to 25 FCU and is evaluating maintenance practices to determine the appropriateness of a periodic blowdown of the transmitter impulse lines to prevent sediment buildup.

The inspectors determined that the failure to take timely corrective action for a degraded condition was a performance deficiency and did not meet the requirements of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Actions." The cause of this performance deficiency was within Entergy's ability to foresee and prevent, because Entergy did not fully evaluate anomalous flow indications on the 25 FCU in October 2006 and subsequent changes in flow rate during quarterly surveillance testing. 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.

Analysis: The inspectors determined that this finding was more than minor because it was associated with the SSC and barrier performance attribute of the Barrier Integrity cornerstone; and it impacted the cornerstone objective of providing reasonable assurance that the physical design barrier (containment) protects the public from radionuclide releases caused by accidents or events. Specifically, the failure to take timely corrective actions for the degraded service water flow indicator for the 25 FCU, initially identified in October 2006, resulted in the inability to ensure that sufficient service water flow was available for the FCU to perform its intended safety function. Subsequently, it was identified that a reduced service water flow condition did exist. The inspectors evaluated this finding using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process." This was determined to be a Type B finding because it potentially impacted containment integrity but did not result in the increased likelihood of an initiating event. This finding was determined to be of very low safety significance because, while it could impact late containment failure, it did not impact a function that was important to large early release frequency.

The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution because Entergy did not thoroughly evaluate the condition when initially identified. Specifically, the evaluation did not address the impact of the degraded condition on the flow indication obtained during the quarterly surveillance, which ensures adequate service water flow. Therefore, the work order to blow-down the instrument lines was not appropriately prioritized to ensure the corrective action was performed in a timely manner. (P.1(c))

**Enforcement:** 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, Entergy failed to correct a condition adverse to quality in a prompt manner, commensurate with its safety significance. Specifically, the corrective actions associated with the degraded service water flow indication, initially identified in October 2006, were not performed in a timely manner and resulted in the inability to promptly identify an actual degradation of service water flow to 25 FCU. Because of the very low safety significance of this finding and because the finding was entered into Entergy's corrective action program as CR-IP2-2007-03706, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000247/2007004-02, Untimely Corrective Actions to Repair a Degraded Service Water Flow Instrument.**

1R15 Operability Evaluations (71111.15 - 5 samples)

a. Inspection Scope

The inspectors reviewed operability evaluations to assess the acceptability of the evaluations, the use and control of compensatory measures when applicable, and compliance with Technical Specifications. The inspectors' reviews included verification that the operability determinations were performed in accordance with procedure ENN-OP-104, "Operability Determinations." The inspectors assessed the technical adequacy of the evaluations to ensure consistency with the Technical Specifications, UFSAR, and associated design basis documents. The documents reviewed during this inspection are listed in the Attachment. The following operability evaluations were reviewed and represented five inspection samples:

- CR IP2-07-02514, Service water pipe chase leak in the vicinity of SWN-840;
- CR IP2-07-03226, Service water leak downstream of SWN 71-5B;
- CR IP2-07-03161, 23 Station battery charger found below TS surveillance criteria;
- CR IP2-2007-03275, Potential to hydraulic lock containment sump recirculation valves (IP2 & 3); and
- CR IP2-2007-03820, Service water leak upstream SWN-46.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 6 samples)a. Inspection Scope

The inspectors reviewed post-maintenance test procedures and associated testing activities for selected risk-significant mitigating systems and assessed whether the effect of maintenance on plant systems was adequately addressed by control room and engineering personnel. The inspectors verified: test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design basis documentation; test instrumentation had current calibrations and appropriate range and accuracy for the application; and tests were performed as written, with applicable prerequisites satisfied. Upon completion, the inspectors verified that equipment was returned to the proper alignment necessary to perform its safety function. Post-maintenance testing was evaluated against the requirements of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control." The documents reviewed during this inspection are listed in the Attachment. The following post-maintenance activities were reviewed and represented six inspection samples:

- WO IP2-06-26506, 23 coolant charging pump following mechanical seal replacement;
- WO 51322853, recirculation sump LT 3301 replacement;
- WO IP2-06-28102, gas turbine #1 post work test;
- WO 51321155, repack 23 auxiliary feedwater pump inboard and outboard stuffing boxes;
- WO 51317764, 24 service water pump following maintenance; and
- WO 51314378, test 22 coolant charging pump following motor and coupling replacement.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 5 samples)a. Inspection Scope

The inspectors witnessed performance of surveillance tests and/or reviewed test data of selected risk-significant structures, systems and components to assess whether they satisfied Technical Specifications, UFSAR, Technical Requirements Manual, and Entergy procedure requirements. The inspectors verified that: test acceptance criteria were clear, demonstrated operational readiness, and were consistent with design basis documentation; test instrumentation had current calibrations and appropriate range and accuracy for the application; and tests were performed as written, with applicable prerequisites satisfied. Following the test, the inspectors verified that the equipment was capable of performing the required safety functions. The inspectors evaluated the surveillance tests against the requirements in Technical Specifications. The documents

reviewed during this inspection are listed in the Attachment. The following surveillance tests were reviewed and represented five inspection samples:

- 2-PT-Q16, "Containment fan cooler unit cooling water test;"
- 2-PT-M7, "Analog rod position functional test;"
- 2-PT-27A, "22 Auxiliary feed water pump;"
- 2-PT-M108, "Emergency core cooling system venting;" and
- 0-SOP-LEAKRATE-001, "Reactor coolant system leakrate surveillance, evaluation and identification."

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy did not ensure that procedures associated with operation of the safety injection (SI) system during venting were appropriate to the circumstances.

Description: During observation of a monthly operations procedure to perform safety injection system venting in accordance with procedure 2-PT-M108, "RHR/SI [residual heat removal/safety injection] System Venting," the inspectors noted the licensee did not declare the pumps or various safety injection subsystems inoperable during the actual venting process. In the case of the SI pump, which is vented every month, the procedure assumes the pump is operable. The inspectors questioned whether the pump remained operable with the casing vent open because some flow would not be available for core injection, and on sump recirculation the emergency core cooling system (ECCS) leakage outside the containment could be high. Entergy determined that the pump would not fulfill its safety function if the valve was left in the full open position. The inspectors reviewed the procedures to determine if credit would be reasonable for the operator to perform this manual action to close the valve instead of the function of the SI system to respond automatically. There were no procedure requirements in place to ensure that a dedicated operator would be present, in constant communication, and with appropriate guidance to take actions as needed if an event was to occur during the venting evolution. The inspectors concluded the pump should not be considered operable, because crediting manual operator action in lieu of the pump running automatically requires consideration of the manual actions needed to restore operability and reviewing them pursuant to 10 CFR 50.59. In addition, other possible piping vent paths are used in the procedure. Although these vents would only be used if gas voids are found in certain locations, there is a potential the vent could be used as the procedure directs. The procedure guidance for these paths was also deficient; crediting the operator to perform an action to ensure the SI system retained its safety function. The licensee wrote CR-IP2-2007-03032 to address these concerns. The licensee revised procedures, providing detailed guidance crediting operator action, or in the case for some piping vents, changed the procedure to ensure the valve was not opened such that excess SI flow would be lost during venting.

The inspectors concluded that the procedure lacked adequate guidance to ensure the SI system remained operable by controlling valve positions or having detailed instructions

to credit an operator to perform these actions. Entergy implemented corrective actions and revised the venting procedure to ensure operator actions were appropriately evaluated and credited to maintain operability of the system.

The inspectors determined that the failure to ensure that procedures associated with the venting of the SI lines were appropriate to the circumstances and included appropriate controls of plant equipment or dedicated operator was a performance deficiency and did not meet the requirements of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawing." The cause of this performance deficiency was within Entergy's ability to foresee and prevent, based on readily available NRC and industry guidance on maintaining the operability of systems during certain evolutions, such as venting. 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's procedures.

Analysis: The inspectors determined that this finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone; and it impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, procedure 2-PT-M108, "RHR/SI System Venting," did not have appropriate controls to ensure the SI piping and pumps remained operable during accident conditions. This finding was evaluated using Phase 1 of IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The inspectors determined this finding resulted in a loss of function of a single train of SI for approximately five minutes. Because the total inoperability time was less than the allowed outage time of 72 hours, and the finding is not potentially risk significant due to a seismic, flooding, or severe weather initiating event, this finding screens as very low safety significance (Green).

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because Entergy did not ensure that complete, accurate and up-to-date procedures were available. Specifically, Entergy did not ensure that the venting procedure for the SI system had adequate guidance to ensure the SI system remained operable by controlling valve positions, or having detailed instructions to credit an operator to perform these actions. (H.2(c))

Enforcement: 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires, in part, that activities affecting quality be prescribed by documented instructions or procedures of a type appropriate to the circumstances and include appropriate quantitative or qualitative acceptance criteria to determine that the activities were satisfactorily accomplished. Contrary to this, Entergy's procedure for venting SI pumps and piping contained in 2-PT-M108, "RHR/SI System Venting," did not contain instructions appropriate to the circumstances which would have ensured that the action was satisfactorily accomplished. Specifically, the procedure did not provide appropriate controls to ensure the SI piping and pumps remained operable during accident conditions. Because of the very low safety significance of this finding and because the finding was entered into Entergy's corrective action program as CR-IP2-2007-03032,

this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000247/2007004-03, Procedure Inadequate to Ensure Operability of SI Pumps During Venting.**

**Cornerstone: Emergency Preparedness**

1EP2 Alert and Notification System Evaluation (71114.02 - 1 Sample)

a. Inspection Scope

A region-based specialist inspector reviewed Entergy's activities related to the existing Indian Point alert and notification system (ANS), and reviewed the progress made in the design and installation of a new siren system. This inspection was conducted in accordance with the baseline inspection program deviation authorized by the NRC Executive Director of Operations (EDO) in a memorandum dated October 31, 2005, and renewed by the EDO in a memorandum dated December 11, 2006.

The new siren system is being installed around the Indian Point Energy Center to satisfy commitments documented in an NRC Confirmatory Order (dated January 31, 2006) that implements the requirements outlined in the 2005 Energy Policy Act. In January 2007, Entergy requested an extension of the deadline for completing the ANS project as described in the Confirmatory Order. The Confirmatory Order set a January 30, 2007, deadline for completing installation. Entergy's extension request cited several issues that were beyond their control, as the basis for the delay. On January 23, 2007, the NRC granted Entergy's extension request and established April 15, 2007, as the new installation completion date. The licensee conducted a full-system demonstration test of the new ANS on April 12, and the results of that test failed to meet the acceptance criteria for the new system. On April 13, 2007, Entergy requested another extension which was subsequently denied. On April 23, 2007, the NRC issued a Notice of Violation (NOV) and civil penalty for Entergy's failure to comply with the siren operability date in the Confirmatory Order. On May 23, 2007, Entergy responded to the NOV and committed to August 24, 2007, as the latest date anticipated for declaring the new ANS operable.

On August 30, the NRC issued a NOV to Entergy due to its failure to take timely and necessary actions to ensure the Federal Emergency Management Agency's (FEMA) approval for the use of the ANS by August 24, 2007. On September 12, 2007, FEMA issued a letter indicating that the new ANS was not adequate in the areas of acoustics, sound blockage from foliage, and control systems. In a letter dated September 21 2007, Entergy requested a meeting with FEMA to discuss the technical aspects of Entergy's proposed plans and determine a mutually acceptable schedule for resolving the open items.

The inspectors conducted the following onsite inspection activities during this quarter:

- Observed the full-volume sounding to obtain far-field acoustical data (August 9, 2007); and

- Met with Entergy representatives to discuss and obtain complete back-up battery testing results (August 13 - 14, 2007).

The inspectors also inspected the status of and corrective actions for the current ANS to assure that Entergy was appropriately maintaining the system, including the quarterly full-system growl test of the current ANS to demonstrate its functionality. Inspectors were on site on September 12, 2007, to observe and verify the performance of the current ANS during the annually-conducted full-volume test of the current ANS.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety (OS)**

2OS1 Access Control to Radiologically Significant Areas (71121.01 - 14 samples)

a. Inspection Scope

During July 16 through 19, 2007, the inspectors conducted the following activities to verify that the licensee was properly implementing physical, engineering, and administrative controls for access to high radiation areas, and other radiologically controlled areas, and that workers were adhering to these controls when working in these areas. Implementation of the access control program was reviewed against the criteria contained in 10 CFR 20, Technical Specifications, and the licensee's procedures.

- (1) There were no occupational exposure cornerstone performance indicator incidents during the current assessment period.
- (2) The inspectors walked down exposure significant work areas of the plant (both Units 2 and 3) and reviewed licensee controls and surveys to determine if licensee surveys, postings, and barricades were acceptable and in accordance with regulatory requirements.
- (3) The inspectors walked down exposure significant work areas of the plant (both Units 2 and 3) and conducted independent surveys to determine whether prescribed radiation work permit and procedural controls were in place and whether licensee surveys and postings were complete and accurate.
- (4) There were no internal dose assessments greater than 50 mrem during 2007.
- (5) The licensee's physical and programmatic controls for highly activated materials stored underwater in the Unit 2 and Unit 3 spent fuel pools were reviewed and

evaluated through observation and a review of the applicable access control procedure.

- (6) A review of licensee radiation protection program self-assessments and audits during 2007 was conducted to determine if identified problems were entered into the corrective action program for resolution.
- (7) Seven condition reports associated with the radiation protection access control and ALARA areas between March 2007 and July 2007, were reviewed and discussed with licensee staff to determine if the follow-up activities were being conducted in an effective and timely manner commensurate with their safety significance.
- (8) Based on the condition reports reviewed, repetitive deficiencies were screened to determine if the licensee's self-assessment activities were identifying and addressing these deficiencies.
- (9) There were no Occupational Exposure Performance Indicator incidents reported during the current assessment period.
- (10) Changes to the high radiation area and very high radiation area procedures since the last inspection in this area were reviewed and management of these changes were discussed with the Radiation Protection Manager.
- (11) Controls associated with potential changing plant conditions to anticipate timely posting and controls of radiation hazards was discussed with a radiation protection supervisor.
- (12) All accessible locked high radiation area entrances in both Units 2 and 3 were verified to be locked through challenging the locks or doors.
- (13) Several radiological condition reports were reviewed to evaluate if the incidents were caused by radiation worker errors and determine if there were any trends or patterns and if the licensee's corrective actions were adequately addressing these trends.
- (14) Several radiological condition reports were reviewed to evaluate if the incidents were caused by radiation protection technician errors and determine if there were any trends or patterns and if the licensee's corrective actions were adequately addressing these trends.

b. Findings

No findings of significance were identified.



2OS2 ALARA Planning and Controls (71121.02 - 2 samples)a. Inspection Scope

During July 16 through 19, 2007, the inspectors conducted the following activities to verify that the licensee was properly maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). Implementation of the ALARA program was reviewed against the criteria contained in 10 CFR 20.1101(b) and the licensee's procedures.

- (1) The procedure and methodology for adjusting work activity exposure estimates was evaluated to include revisions for emergent work and unexpected radiological conditions. The methodology for the exposure estimate adjustments was evaluated with respect to sound radiation protection and ALARA principles and to ensure the revised exposure estimates provided an effective ALARA performance measure.
- (2) Based on the condition reports reviewed, repetitive deficiencies in the ALARA program were screened to determine if the licensee's self-assessment activities were identifying and addressing these deficiencies.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES [OA]**4OA1 Performance Indicator Verification (71151 - 3 samples)a. Inspection Scope

The inspectors reviewed performance indicator (PI) data for the cornerstones listed below and used Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, to verify individual PI accuracy and completeness. The documents reviewed during this inspection are listed in the Attachment.

Mitigating Systems Cornerstone

- Mitigating Systems Performance Index – RHR (July 2006 – June 2007)
- Mitigating Systems Performance Index – HPI (July 2006 – June 2007)

Barrier Integrity Cornerstone

- Reactor Coolant System Leakage (January 2006 – June 2007)

The inspectors reviewed data and plant records from the above noted periods. The records included PI data summary reports, licensee event reports, operator narrative logs, the licensee corrective action program, and Maintenance Rule records. The inspectors verified the accuracy of the number of critical hours reported, and interviewed the system engineers and operators responsible for data collection and evaluation.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Problem Identification and Resolution (PI&R) Program Review

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and to identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of all items entered into Entergy's corrective action program. The review was accomplished by accessing Entergy's computerized database for condition reports (CRs) and attending CR screening meetings.

In accordance with the baseline inspection modules, the inspectors selected corrective action program items across the Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones for additional follow-up and review. The inspectors assessed Entergy's threshold for problem identification, the adequacy of the cause analyses, extent of condition reviews, operability determinations, and the timeliness of the specified corrective actions. The CRs reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153 - 1 sample)

.1 Operations performance during single control rod drop of 20 steps on August 23, 2007

a. Inspection Scope

The inspectors observed control room personnel response during an unexpected control rod drop on August 23, 2007, that occurred during control rod surveillance testing. During control rod exercise testing of Shutdown Bank 'B,' control rod G-3 dropped from 213 steps to 198 steps with no operator action. The inspectors observed Entergy's response in the control room to verify that plant equipment response was appropriately evaluated, and to ensure that operating procedures were being appropriately implemented. The inspectors discussed the event and corrective actions with plant management in order to confirm that

Entergy had taken appropriate corrective actions in restoring the plant. The documents reviewed are included in the Attachment.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Groundwater Contamination Investigation

a. Inspection Scope

Continued inspection of Entergy's plans, procedures, and characterization activities affecting the contaminated groundwater condition at Indian Point, relative to NRC regulatory requirements, was authorized by the NRC Executive Director of Operations in a Reactor Oversight Process deviation memorandum dated October 31, 2005 (ADAMS Accession Number ML053010404) and renewed on December 11, 2006 (ADAMS Accession Number ML063480016). Accordingly, continuing oversight of licensee progress has been conducted throughout this quarterly inspection report period, which included: onsite review of licensee performance, progress, and achievements; independent split sample analyses of selected monitoring wells; expanded sampling of the edible portions of various fish collected from multiple locations in the Hudson River; review of an onsite underground auxiliary steam pipe leak; and frequent communication of NRC observations with interested Federal, State, and local government stakeholders. In July and August 2007, NRC staff and U.S. Geological Survey (USGS) scientists, in consultation with representatives of New York State Department of Environmental Conservation, conducted an independent assessment of selected data and information developed by Entergy and its geophysical contractor relative to fracture flow modeling, and groundwater characterization relative to flow and transport.

The methodology applied by USGS utilized data collected from downhole geophysical and flow logs conducted by Geophysical Applications, Inc, under the direction of the Entergy's principal contractor for the groundwater investigations, GeoEnvironmental, Inc. (GZA). The geophysical data (i.e., caliper, optical and acoustic televiewer, fluid resistivity and temperature logs), fracture mapping and flow logs were processed and visualized with a computer-based system, WELLCAD. The method permitted a systematic mapping of fracture orientations, density, associated flow conditions and properties using composite portrayals of vertical plots of the geophysical logs and hydraulic test data and analyses. These composite portrayals facilitated comparisons and analyses of selected IPEC monitoring wells for the determination of the location and direction of discrete high flow zones, including associated flux and transmissivity. It is expected that the information and analyses will aid the NRC and USGS staff in evaluations of GZA's conceptual groundwater flow and transport model that was derived from previous hydraulic pump and tracer tests conducted on selected monitoring wells.

b. Findings and Observations

No findings of significance were identified.

The fracture flow assessment provided an effective means of visualizing fracture zones and properties of certain IPEC monitoring wells; and provided an enhanced conceptualization of groundwater flow and transport characteristics which is important to the NRC's overall assessment of the licensee's groundwater modeling and characterization. The NRC and USGS will apply the knowledge gained from this assessment for independent review of Entergy's characterization of groundwater behavior, its selection of monitoring locations and performance indicators for long-term site groundwater monitoring, and its determination of remediation strategies, as appropriate. This assessment provides another tool to be used to effectively verify and validate that Entergy's groundwater modeling and dose assessment methods continue to assure that public health and safety, and protection of the environment is maintained.

During this period, the NRC continued split sampling of selected monitoring wells for independent analysis by the Oak Ridge Institute for Science and Education, Environmental Site Survey and Assessment Program (ORISE/ESSAP) radioanalytical laboratory. The NRC's assessment of the licensee's sample analytical results data indicated that the licensee's analytical contractor reported final sample results that were comparable with the NRC's analytical results.

Fish samples were also split and independently analyzed during this period. The samples were collected from three separate locations on the Hudson River (i.e., an area in the near vicinity of the plant, the Roseton control location (20-30 miles, up river), and the Catskills region (about 80 to 90 miles, up river)). The NRC analyzed edible portions of the fish samples, commensurate with the requirements of the environmental monitoring program and the existing pathway for exposure from liquid radiological releases to the Hudson River. None of the 18 samples indicated any detectable radioactivity distinguishable from background (i.e., all samples were less than the Minimum Detectable Activity established by ORISE for gamma and strontium-90 radionuclides).

The NRC's ORISE/ESSAP sample results are available in ADAMS under the following Accession Numbers: ML072840255, ML072840278, ML072840292, ML072840312, ML072840323, ML072840334, ML072840357. To date, plant-related radioactivity has not been detected in any of the site's southern boundary wells or offsite environmental groundwater monitoring locations. Information collected and assessed to-date, continues to support that the estimated radiological release fraction through groundwater is negligible relative to NRC regulatory limits.

On April 7, 2007, two separate underground steam leaks were detected emanating through the asphalt surfaces west and north of Unit 3. The affected 8" auxiliary steam line was isolated on April 23, 2007, and subsequently excavated and replaced. As expected, a very low tritium concentration was detected in the area, likely due to normal tritium diffusion or deposition onsite, Condition Report No. CR-IP3-2007-1852 pertains. Entergy performed a very conservative bounding evaluation of the resulting ground and air

releases that indicated approximately  $1\text{E-}8$  mrem/yr and  $2\text{E-}6$  mrem/yr due to the liquid and air release pathways, respectively. Such releases are not considered significant and are below reporting requirements.

4OA6 Meetings, including Exit

Exit Meeting Summary

On October 3, 2007, the inspectors presented the inspection results to Mr. Anthony Vitale and other Entergy staff members, who acknowledged the inspection results presented. Entergy did not identify any material as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION****KEY POINTS OF CONTACT****Entergy Personnel**

B. Christman, Manager of Training and Development  
 P. Conroy, Director of Nuclear Safety Assurance  
 F. Dacimo, Site Vice President  
 R. Hansler, Reactor Engineering Superintendent  
 T. Jones, Licensing Supervisor  
 S. Manzione, Component Engineering Supervisor  
 B. McCarthy, Indian Point Unit 2 Assistant Operations Manager  
 E. O'Donnell, Indian Point Unit 2 Operations Manager  
 T. Orlando, Director of Engineering  
 D. Parker, Maintenance Superintendent  
 B. Ray, Maintenance Superintendent  
 B. Sullivan, Emergency Planning Manager  
 P. Studley, Planning, Scheduling, and Outage Manager  
 M. Vasely, Balance of Plant System Engineering Supervisor  
 S. Verrochi, System Engineering Manager  
 A. Vitale, General Manager of Plant Operations  
 R. Walpole, Licensing Manager

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED****Opened and Closed**

05000247/2007004-01	NCV	Degraded 12 Fire Main Booster Pump Cell Fire Door. (Section 1R05)
05000247/2007004-02	NCV	Untimely Corrective Actions to Repair a Degraded Service Water Flow Instrument. (Section 1R13)
05000247/2007004-03	NCV	Procedure Inadequate to Ensure Operability of SI Pumps During Venting. (Section 1R22)

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

#### Procedures

OAP-008, "Severe Weather Preparations," Revision 1  
SOP 24.1.1, "Hot Weather Preparations," Revision 9  
3PT-Q101, main Steam valves Stroke test, revision 11  
IP-SMM-OP-104, "Offsite Power Continuous Monitoring and Notification," Revision 6  
ECA 0.0, Loss of All AC, Revision 41  
ECA 0.0, Loss of All AC, Revision 0

#### Miscellaneous

IPEC Letter NL-06-043, Entergy Northeast Response to Generic Letter 2006-02, Grid Reliability and The Impact on Plant Risk and Operability of Offsite Power, April 3, 2006  
Transaction Form, Con Edison and Entergy Nuclear Operations, June 7, 2006  
NYISO Major Emergency Report, August 4, 2007  
PQE-20.1, EQ file Installed transmitter 1153HD4PB, Revision 1  
Report IP-RPT-04-00337, Station Blackout report Final, March 9, 1990

#### Condition Reports

IP2-2007-03284      IP2-2007-03353

#### Calculations

IP-CALC-07-00143, Auxiliary FeedWater Pump Room temperatures, Revision 6

### **Section 1R04: Equipment Alignment**

#### Procedures

2-SOP-27.3.1.1, "21 Emergency Diesel Generator Manual Operation," Revision 16  
2-SOP-27.3.1.3, "23 Emergency Diesel Generator Manual Operation," Revision 16  
2-PT-M021B, "Emergency Diesel Generator 23 Load Test," Revision 14  
2-COL-27.3.1, "Diesel Generators," Revision 25  
2-PT-M048, "480 Volt Undervoltage Alarm," Revision 20  
2-COL-24.1.1, "Service Water and Closed Cooling Water Systems," Revision 41  
PT-M34A, "11 Fire Main Booster Pump," Revision 1  
2-COL-29.6, "Fire Protection System," Revision 54

#### Drawings

9321-H-2029, "Flow Diagram, Starting Air to Diesel Generators"  
9321-F-2030, "Flow Diagram, Fuel Oil to Diesel Generators"  
A207698, "Flow Diagram, Lube Oil for Diesel generators No. 21, 22 & 23"  
A227552, "Fire Protection System Diagram, Sheet 2"  
A227553, "Fire Protection System Diagram, Sheet 3"

**Section 1R05: Fire Protection**

Procedures

ENN-DC-161, "Transient Combustible Program," Revision 1  
ENN-DC-189, "Fire Drills," Revision 0  
SAO-703, "Fire Protection Impairment Criteria and Surveillance," Revision 25  
PT-M55, "Fire Doors," Revision 12  
2-PT-SA020, "Swing Fire Doors," Revision 0

Condition Reports

IP2-2006-06613	IP2-2007-01670	IP2-2007-02393	IP2-2007-03562
IP2-2007-03561	IP2-2006-00945	IP2-2006-02072	IP2-2006-02203
IP2-2006-04242	IP2-2007-00389	IP2-2007-03651	IP2-2007-00318

Work Orders

IP2-06-01177            IP2-06-27924

Miscellaneous

Indian Point Nuclear Generating Station, Unit No. 2, "Fire Protection Program Plan," Revision 9  
IP2-RPT-03-00015, "IP2 Fire Hazards Analysis," Revision 3

**Section 1R06: Flood Protection Measures**

Condition Reports

IP-2-2007-03035

Miscellaneous

USNRC Safety Evaluation report (SER), Susceptibility of Safety Related Systems to Flooding from failure of Non-Category I systems for Indian Point Unit 2, November 1980  
ANSI 18.2- 1975, Revision and Addendum to Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants

**Section 1R11: Licensed Operator Requalification Program**

Procedures

2-FR-C.2, "Response to Degraded Core Cooling," Revision 0  
2-E-0, "Reactor Trip or Safety Injection," Revision 0  
2-E-1, "Loss of Reactor or Secondary Coolant," Revision 0  
2-AOP-LEAK-1, "Sudden Increase in Reactor Coolant System Leakage," Revision 7  
2-AOP-INST-1, "Instrument/Controller Failures," Revision 4

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**Section 1R12: Maintenance Effectiveness**Condition Reports

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 SEP-SW-001, "Generic Letter 89-13 Service Water Program," Rev 1

Drawings

A209762, "Flow Diagram, Service Water System (Sh 2 of 2)"  
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IP2-03-03082	IP2-06-17587	IP2-06-17592	IP2-06-22281
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51287133	IP2-07-00578	IP2-07-20411	00105027
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Miscellaneous

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IP2-2006-06735	IP2-2006-07115	IP2-2006-07117	IP2-2006-07329
IP2-2007-01627	IP2-2007-01712	IP2-2007-01721	IP2-2007-01840
IP2-2006-04946	IP2-2006-05373	IP2-2006-05829	IP2-2006-05972
IP2-2006-06511	IP2-2007-00124	IP2-2007-01789	IP2-2007-03421
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IP2-2007-03338

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B208052, "Wiring diagram of Engine Generator Set for Diesel Generators," Revision 9

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A208508, "Wiring Diagram Diesel Generator 22," Revision 23

S000285, "DC Schematic for Diesel Generator 22," Revision 14

Miscellaneous

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**Section 1R15: Operability Evaluations**

Procedures

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2-PT-Q016, "Containment Fan Cooler Unit Cooling Water Flow Test," Revision 1

Condition Reports

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IP2-2007-03035

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**Section 1R19: Post-Maintenance Testing**

Condition Reports

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 2-SOP-31.1.2, "Gas Turbine 1 Local Operations," Revision 26  
 PT-M38A, "Gas Turbine No.1," Revision 5  
 PT-A36A, "Gas Turbine #1 Overspeed," Revision 8  
 2-PT-Q033C, "23 Charging Pump," Revision 10  
 2-PT-Q68C, "23 Charging Pump Check Valves," Revision 3  
 2-PT-Q027B, "23 Auxiliary Feed Pump"  
 EN-OP-102, "Protective and Caution Tagging," Revision 6  
 OAP-024, "Operations Testing," Revision 3  
 2-PT-Q026D, "24 Service Water Pump," Revision 9  
 2-PT-Q033B, "22 Charging Pump," Revision 11  
 2-OSP-3.1, "Support Procedure – Charging Sealwater and Letdown Control," Revision 4  
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Work Orders

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**Section 1R22: Surveillance Testing**

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0-LUB-401-GEN, "Lubrication of Plant Equipment," Revision 5  
0-OSP-TG-001, "Main Turbine Stop and Control Valve Contingency Actions," Revision 0  
2-PT-Q27B, "23 Auxiliary Feedwater Pump," Revision 14  
2-PT-SA67, "Main Turbine Stop and Control Valves Exercise Test," Revision 4  
3-PT-Q120A, "31 ABFP (Motor-Driven) Surveillance and IST," Revision 10  
2-SOP-21.3, "Auxiliary Feedwater System Operation," Revision 36  
PT-2Y11A, "Gas Turbine 1 Blackstart Timing," Revision 2  
2-PT-Q029A, "21 Safety Injection Pump," Revision 18  
2-PT-M108, RHR/SI System Venting, revision 3  
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0-SOP-LEAKRATE-001, "RCS Leakage Surveillance, Evaluation and Identification," Revision 0

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**Section 40A1: Performance Indicator Verification**

Procedures

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NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5  
2-PT-Q028A, "21 RHR Pump," Revision 18  
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Condition Reports

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**Section 40A2: Identification and Resolution of Problems**

Procedures

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**Section 40A3: Event Followup**

Procedures

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Condition Report

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**LIST OF ACRONYMS**

ADAMS	agency wide document and management system
ALARA	as low as reasonable achievable
ANS	alert and notification system
BTR	Branch Technical Position
CAP	corrective action program
CFR	Code of Federal Regulations
CR	condition report
CRVS	Control Room Ventilation System
ECCS	emergency core cooling system
EDG	emergency diesel generator
EDO	Executive Director for Operations
ESSAP	Environmental Site Survey and Assessment Program
FCU	fan cooler unit
FEMA	Federal Emergency Management Agency
°F	Fahrenheit
gpm	gallons per minute
IMC	Inspection Manual Chapter
IPEC	Indian Point Energy Center
LER	Licensee Event Report
NCV	non-cited violation
NRC	Nuclear Regulatory Commission
ORISE	Oak Ridge Institute for Science and Education
PARS	Publically Available Records System
PI	performance indicator
PI&R	problem identification and resolution
RHR	residual heat removal
SDP	significance determination process
SI	safety injection
SSC	structures, systems, or components
TS	Technical Specifications
UFSAR	Updated Final Safety Evaluation Report
USGS	U.S. Geological Survey
WO	work order