

February 1, 2005

Mr. Fred R. Dacimo
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295 Broadway, Suite 1
P.O. Box 249
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SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT 3 - NRC INTEGRATED
INSPECTION REPORT NO. 05000286/2004009

Dear Mr. Dacimo:

On December 31, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Indian Point Nuclear Generating Unit 3 (IP3). The enclosed integrated inspection report documents the inspection findings, which were discussed on January 13, 2005, with Mr. Chris Schwarz 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.

Based on the results of the inspection, one finding of very low safety significance (Green) was identified. This finding was determined to be a violation of NRC requirements. However, because of its very low safety significance, and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A. of the NRC Enforcement Policy. If you contest the NCV 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 Resident Inspector at Indian Point 3.

In accordance with 10 CFR 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

Mr. Fred R. Dacimo

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Sincerely,

/RA/

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

Docket No. 50-286
License No. DPR-64

Enclosure: Inspection Report No. 05000286/2004009
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-286

License No. DPR-64

Report No. 05000286/2004009

Licensee: Entergy Nuclear Northeast

Facility: Indian Point Nuclear Generating Unit 3

Location: 295 Broadway, Suite 3
Buchanan, NY 10511-0308

Dates: October 1, 2004 - December 31, 2004

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SUMMARY OF FINDINGS

IR 05000286/2004009; 10/01/2004 - 12/31/2004; Indian Point Nuclear Generating Unit 3; Permanent Plant Modifications.

The report covers a 3-month period of inspection by resident inspectors, and seven regional inspectors. One Green NCV was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," (SDP). 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 inspector identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, regarding Entergy's failure to properly translate design requirements into the design change package (DCP) for the replacement of the instrument bus 34/34A alternate supply transformer. Specifically, Entergy replaced the existing safety-related transformer with a non-safety related transformer in April 2003 using a commercial grade dedication process, without performing calculations to verify the minimum output voltage was acceptable considering the wider tolerances of the replacement transformer.

The finding was more than minor because it affected the design control attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of instrument bus 34/34A to prevent undesirable conditions. The issue was a design deficiency that did not result in loss of function per Generic Letter (GL) 91-18, and was determined to be of very low safety significance (Green) because a procedure had been in place to ensure that the instrument bus voltage remained in an acceptable range. (Section 1R17)

B. Licensee-Identified Violations

- None

REPORT DETAILS

Summary of Plant Status

Indian Point 3 (IP3) operated at or near full power for the entire report period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity [REACTOR - R]

1R01 Adverse Weather Protection (71111.01 - 2 samples)

a. Inspection Scope

The inspectors completed the following two adverse weather protection samples.

- During the week of December 13, 2004 the inspectors reviewed Entergy procedure OAP-048, Rev. 0, "Seasonal Weather Preparation," and the associated station operating procedures and check-off lists involving cold weather preparations, to verify that these procedures and checklists were completed in accordance with procedural requirements. The inspectors verified that the actions taken by Entergy to assure freeze protection of plant equipment were completed consistent with prevailing weather conditions for the months of October, November, and December 2004. The inspectors performed walkdowns of accessible areas of the Unit 3 power plant operating and auxiliary support structures as well as hard to access areas such as the refueling water storage tank (RWST) temperature controllers; heat trace panels for the emergency diesel generators (EDGs), service water (SW) pumps, and process monitors; and RWST and condensate storage tank level instrumentation enclosures to assess the adequacy of system freeze protection measures. The inspectors also looked for any vulnerable components not previously identified by Entergy.

The inspectors reviewed past condition reports (CRs) for any weather-related adverse trends or repeat problems to ensure Entergy had adequately addressed them through the corrective action program (CAP). The inspectors reviewed Entergy's cold weather preparation progress as well as uncorrected deficiencies identified by Entergy. The inspector also reviewed outstanding work orders for selected systems to evaluate for any impacts on the freeze protection and cold weather preparations.

- On December 13, 14 and 15, 2004, the inspectors walked down outside areas to evaluate the susceptibility of external plant equipment to the very low ambient temperatures during that period. The inspectors evaluated accessible areas inside and outside of the plant's operating and auxiliary support structures to assess the adequacy of freeze protection measures. The inspectors also looked for vulnerable systems or components not previously identified by Entergy.

Enclosure

b. Findings

No findings of significance were identified.

1R02 Evaluations of Changes, Tests, or Experiments (71111.02 - 20 samples)

a. Inspection Scope

The inspectors reviewed five safety evaluations (SEs), all of which were either issued during the past two years or associated with plant modifications that were completed during the past two years. The SEs reviewed were in the Initiating Event and Mitigating System cornerstones. No SEs in the Barrier Integrity cornerstone were available for review during this inspection. The selected SEs were reviewed to verify that changes to the facility or procedures as described in the Final Safety Analysis Report (FSAR) were reviewed and documented in accordance with 10 CFR 50.59, and that the safety issues pertinent to the changes were properly resolved or adequately addressed. The reviews also included the verification that Entergy had appropriately concluded that the changes and tests could be accomplished without obtaining license amendments.

The following five SEs were reviewed:

EVL-02-3-123-MS	Evaluation of Steam Line Break Outside Containment for EQ Purpose
EVL-01-3-022	Instrument Bus 34 Inverter Replacement
EVL-02-3-070	Allowance for Additional Aluminum in Containment
EVL-99-3-063-NIS	Defeat Over-Power Delta T and Over-Temperature Delta T Turbine Run-back
EVL-02-3-115-SG	Use of Nozzle Dams in Indian Point 3 Steam Generator Lines

The inspectors also reviewed fifteen screen-out evaluations for changes, tests and experiments for which Entergy determined that SEs were not required. This review was performed to verify that Entergy's threshold for performing SEs was consistent with 10 CFR 50.59. The listing of the screen-out evaluations reviewed is provided in the Supplemental Information attachment at the end of this report.

In addition, the inspectors reviewed the administrative procedures that were used to control the screening, preparation, and issuance of the SEs to ensure that the procedure adequately covered the requirements of 10 CFR 50.59.

d. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04Q - 3 samples, 71111.04S - 1 sample)

.1 Partial System Walkdowns (71111.04Q - 3 samples)

a. Inspection Scope

The inspectors performed system walkdowns during periods of system train unavailability in order to verify that the alignment of the available train was proper to support the availability of safety functions, and to assure that Entergy had identified and properly addressed equipment discrepancies that could potentially impair the functional capability of the available train. The specific information reviewed to verify correct system alignment is referenced in the Supplemental Information attachment at the end of this report. The following system walkdowns were performed:

- On October 14, 2004, the inspector performed a partial system walkdown of the chemical and volume control system during and after the maintenance on the 33 charging pump.
- On October 19, 2004, the inspector performed a partial system walkdown of the 32 EDG and support systems during and after the maintenance on the 31 EDG.
- On December 14, 2004, the inspector performed a partial system walkdown of the 31 and 33 auxiliary boiler feedwater (ABFW) systems during and after the maintenance on MS-PCV-1139, 32 ABFW pump steam inlet valve.

b. Findings

No findings of significance were identified.

.2 Full Equipment Alignment (71111.04S - 1 sample)

a. Inspection Scope

The inspectors performed an extensive walkdown of the 125 VDC system. The inspectors walked down the entire system using COL-EL-3, "Instrument Buses and Distribution Panels," Rev. 13. The inspectors also did various walkdowns of individual components powered by the 125 VDC system using ONOP-EL-5, "Loss of a DC Bus," Rev. 12 to review the material condition of distribution cables and components. The inspectors verified that components were in the proper position per the checkoff list (COL) and verified that any position discrepancies were properly documented. The inspectors also verified that the field configuration was consistent with the current revision of the COL. In addition, the inspectors evaluated the physical condition of the equipment during the walkdown.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 12 samples)a. Inspection Scope

The inspectors toured areas that were identified as important to plant safety and risk significant. The inspectors consulted Section 4.0, "Fire," and the top risk significant fire zones in Table 4.4.4.2, "Core Damage Frequency for Fire Zones," within the Indian Point 3 Individual Plant Examination of External Events (IPEEE). 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; and 3) the fire barriers used to prevent fire damage or fire propagation. Reference material used by the inspectors to determine the acceptability of the observed conditions in the fire zones are referenced in the Supplemental Information section of this report. The areas reviewed were:

- C Fire Zone 10 on October 18.
- C Fire Zone 132 on October 19.
- C Fire Zone 131 on October 21.
- C Fire Zone 1 on October 6, 2004.
- Fire Zone 22 on October 6, 2005.
- Fire Zone 102A on October 28.
- Fire Zone 7 on October 29.
- Fire Zone 33A on November 3.
- Fire Zone 86A on November 9.
- Fire Zone 54A on November 29.
- Fire Zone 64A on November 30.
- Fire Zone 23 on December 14.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q - 1 sample)a. Inspection Scope

During continuing training for Emergency Response Organization (ERO) facility leads on December 21, 2004, the inspectors evaluated classroom training and exercises related to identification and classification of plant events using the site emergency plan. During the practical exercises, the inspectors evaluated the ERO manager's performance for correct use and implementation of Emergency Action Levels. The inspectors verified that the feedback from the instructors was thorough, that they identified specific areas

for improvement, and that they reinforced crew competencies in the areas of procedure use, communications, and peer checking.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - 2 samples)

a. Inspection Scope

The inspectors evaluated Entergy's work practices and follow-up corrective actions for selected structures, systems, and components (SSCs) issues to assess the effectiveness of maintenance activities. The inspectors reviewed the performance history of those SSCs and assessed extent of condition determinations performed by Entergy personnel for those issues with potential common cause or generic implications to evaluate the adequacy of corrective actions. The inspectors reviewed problem identification and resolution actions for these issues identified by Entergy personnel to evaluate whether they had appropriately monitored, evaluated, and dispositioned the issues in accordance with Entergy's procedures and the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed selected SSC classification, performance criteria and goals, and Entergy's corrective actions that were taken or planned, to verify whether the actions were reasonable and appropriate. The following issues were reviewed:

- The inspector reviewed maintenance activities to correct deficiencies associated with the outlet dampers for fans 316 and 317. These outlet dampers were observed to move towards the closed position, but, left an approximately one-half inch gap. To date, several corrective actions have been implemented, including adjusting the outlet dampers to close the gap. The inspector verified that Entergy's response to this degraded condition was appropriate and that Entergy properly assessed the 32 EDG ventilation system operability. Additionally, the inspectors reviewed maintenance, post work and surveillance test data.
- The inspector reviewed planned maintenance activities to upgrade the source range nuclear instrumentation system and to reduce preventative maintenance deficiencies. The inspector discussed these corrective actions with operations, engineering, and maintenance personnel. Additionally, the inspectors reviewed CRs, maintenance, post work and surveillance test data.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Control (71111.13 - 5 samples)a. Inspection Scope

The inspectors observed selected portions of emergent maintenance work activities to assess Entergy's risk management in accordance with 10 CFR 50.65(a)(4). The inspector 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 with maintenance and operations personnel. The following four emergent and one planned activities were observed:

- WO IP3-04-05010: Failed output voltage, frequency and current indications on the output of the 31 static inverter.
- WO IP3-04-05954: 31 central control room air conditioning unit trip due to malfunctioning SW cooling water supply valve.
- WO IP3-04-04900: 33 EDG fuel oil transfer valve stuck open.
- WO IP3-04-17382: 34 pressurizer spray valve isolation due to a packing leak.
- WO IP3-03-03111: 32 ABFW system MS-PCV-1139 planned maintenance activities.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions and Events (71111.14 - 1 sample)a. Inspection Scope

Following a period of slightly elevated unidentified leakage, Entergy identified the increased leakage was due to a packing leak on the 34 pressurizer spray valve, RC-PCV-455A. Engineering and maintenance personnel determined that the packing leakage could not be completely stopped without affecting the valve's performance, and decided to isolate the valve to stop the leakage. On November 8 and 10, the inspectors reviewed Entergy's performance during the non-routine evolution to isolate one of the two pressurizer spray valves. The inspectors reviewed operator logs, plant computer data, and strip charts to determine if operator and plant response was in accordance with plant procedure and training and to verify that continued operation in this condition is consistent with the licensee's design and licensing basis. Additionally, the inspectors verified that Entergy entered RC-PCV-455A into the CAP (CR IP3-2004-0383) for repair during the Spring 2005 refueling outage.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 4 samples)

a. Inspection Scope

The inspectors selected operability evaluations that Entergy had generated that warranted review on the basis of potential risk significance. The operability evaluations selected as samples are associated with 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 technical specifications (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. References used during these reviews included the TS, the Technical Requirements Manual, the FSAR, and associated design basis documents.

- CR IP3-2004-03323: Speed oscillations of 32 ABFW pump.
- CR IP3-2004-03410: Broken piping hanger and piping degradation on the 31/32 charging line.
- CR IP3-2004-03702: 33 EDG fuel oil LCV-1209A failed open.
- CR IP3-2004-03724: Reactor protection system power supply failure.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16 - 1 sample)

a. Inspection Scope

The inspectors performed a review of an operator workaround for the Refueling Water Storage Tank (RWST) temperature control valve (TCV-1116) to assess the effects on system reliability, availability, and the potential for mis-operation of a system due to manual operation. The inspectors toured affected areas of the plant to evaluate deficient conditions, and the potential impact on operators during emergency operating procedure, abnormal operating procedure, and off-normal operating procedure usage. In addition, the inspectors reviewed the work control and condition reporting programs to assess the open work requests and CRs for TCV-1116.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17B - 8 samples)a. Inspection Scope

The inspectors reviewed eight risk-significant plant modification packages selected from the design changes that were completed within the past two years. The review was performed to verify that: (1) the design bases, licensing bases, and performance capability of risk significant SSCs had not been degraded through the modifications; and (2) the modifications performed during increased risk configurations did not place the plant in an unsafe condition.

The following eight modifications were selected for review:

DCP-03-3-034	Replacement of Sola Transformer for 34 Inverter
DCP-01-3-022	Instrument Bus 34 Inverter Replacement
DCP-01-3-038	Scram Reduction Associated with RPS and RCP Breaker position Relays
DCP-00-3-049	Eliminate Vent Path From the Containment Building into PAB if VS-PCV-1190 Fails Open
DCP-01-3-047	Surge Suppressor Installation for Valves Associated with the Hydrogen Analyzer Sampling and Post Accident Monitoring Systems DC Solenoid Valves
DCP-01-3-077	Replace Service Water Piping at SWN-44 Valves
DCP-99-3-063	Permanent Deletion of OTDT/OPDT Cycle Turbine Run-Back by Lifting Leads at Relay
DCP-98-3-010	Power Feed to PT-406B (Motor-Driven Auxiliary Feedwater pump low pressure)

The selected plant modifications were distributed among Initiating Event, Mitigating Systems, and Barrier Integrity cornerstones. For these selected modifications, the inspectors reviewed the design inputs, assumptions, and design calculations to determine the design adequacy. The inspectors also reviewed field change notices that were issued during the installation to confirm that the problems associated with the installation were adequately resolved. In addition, the inspectors reviewed the post-modification testing (PMT), functional testing, and instrument and relay calibration records to determine readiness for operations. Finally, the inspectors reviewed the affected procedures, drawings, design basis documents, and FSAR sections to verify that the affected documents were appropriately updated.

For the accessible components associated with the modifications, the inspectors also walked down the systems to detect possible abnormal installation conditions.

b. Findings

Introduction. The inspectors identified a Green NCV for Entergy's failure to properly translate design requirements into the DCP for the replacement of the Instrument bus 34/34A alternate supply transformer. Specifically, Entergy replaced the existing

safety-related Westinghouse transformer with a non-safety related Sola transformer in April 2003 using a commercial grade dedication process, without performing calculations to verify the minimum output voltage was acceptable considering the wider tolerances of the replacement transformer.

Description. The original constant voltage transformer that supplied alternate power to instrument bus 34/34A was supplied by Westinghouse and was classified as safety-related equipment at IP3. This transformer failed during the April 2003 outage. Entergy issued Design Change 03-3-034 to replace the failed transformer with a non-safety-related Sola transformer using a commercial grade dedication process (by a third party). The design attributes specified in the DCP showed that both the existing and the replacement transformers were rated at 7.5 kVA. The design attributes also specified that the existing transformer had an input voltage of 480 Vac with +10% /-20% tolerance (528 Vac - 384 Vac) and a specified output voltage of 120 Vac with +/-1% tolerance; and that the replacement Sola transformer had an input voltage of 480 Vac with +10% / -20% tolerance and an output voltage of 120 Vac with +/- 3% tolerance. These specified design attributes showed that the output voltage tolerance of the replacement transformer was three times that of existing transformer. Entergy's electrical evaluation (IP3 ECCF-936) for this modification did not contain voltage drop calculations to show the minimum required output voltage of the replacement transformer sufficient to justify the acceptance of the wider tolerance of the replacement transformer. Instead Entergy used the data in the Design Basis Document (IP3-DBD-307, revision 2) as the acceptance criteria.

IP3-DBD-307 for the 120 Vac vital electrical distribution system specified the load rating of the transformer to be 7.5 kVA, with input voltage of 480 Vac +/- 15% and output voltage of 120Vac +/- 3%, which differed from the design attributes discussed above. The inspector's review of the dedication test result for a loaded condition of the replacement transformers (total four transformers, one for replacement plus three spares) indicated that the voltage dropped to 114.1 Vac (about -5%) for one of the transformers with a test load of 65.4 amperes and an input voltage of 379.6 Vac. Entergy accepted this test result without providing any evaluation.

Preliminary voltage drop data supplied by Entergy during the inspection indicated that there would be insufficient voltage supply to instrument bus 34/34A if the Sola transformer was relied upon when inverter 34 (non-safety-related) was not functioning. Entergy issued a CR (IP3-CR-2004-3712) and completed an operability evaluation which showed that the minimum required output voltage of the replacement transformer was 117.71 Vac. Entergy stated that they already had alarm response procedures that could be used to administratively limit the input voltage range to the Sola transformer to within 444.0 Vac to 498.0 Vac (described in Section 5 of the operability evaluation). Within this range, sufficient voltage would be available at instrument bus 34/34A when the bus was powered by the Sola transformer.

Analysis. The inspectors determined that the finding described above (failure to perform the voltage drop calculation and to properly translate the minimum design output voltage requirement into the DCP for the replacement transformer in April 2003) was more than

minor because it affected the design control attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of instrument bus 34/34A to prevent undesirable conditions. The issue was a design deficiency that did not result in loss of function per GL 91-18, and was determined to be of very low safety significance (Green) because a procedure had been in place to ensure that the instrument bus voltage remained in an acceptable range.

Enforcement. 10 CFR 50, Appendix B, Section III, Design Control, states, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis for those structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, it was identified on October 29, 2004, that the minimum design output voltage requirement (117.71 Vac) for instrument bus 34/34A alternate supply transformer was not calculated and correctly translated into the DCP when the existing Westinghouse transformer was replaced with a Sola transformer. Because this finding is of very low safety significance and has been entered into the CAP (CR IP3-CR-2004-3712), this violation is being treated as an NCV, consistent with Section V1.A of the Enforcement Policy: **NCV 05000286/2004009-01, Failure to Complete the Voltage Calculation and to Properly Translate Design Output Voltage Requirements Into Design Change Package.**

1R19 Post-Maintenance Testing (71111.19 - 5 samples)

a. Inspection Scope

The inspectors reviewed PMT procedures and associated testing activities to assess whether: 1) the effect of testing in the plant had been adequately addressed by control room personnel; 2) testing was adequate for the maintenance performed; 3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing documents; 4) test instrumentation had current calibrations, range, and accuracy for the application; and, 5) test equipment was removed following testing.

The selected testing activities involved components that were risk significant as identified in the IP3 Individual Plant Examination. The regulatory references for the inspection included TS 6.8.1.a and 10 CFR 50, Appendix B, Criteria XIV, "Inspection, Test, and Operating Status." The following testing activities were evaluated:

- WO IP3-04-04942: Post-work test (PWT) after repair of a broken sight glass on the 36C feedwater heater local level indication LG-1110 performed on November 2, 2004.
- WO IP3-04-20862: PWT to perform 3PT-M079A, "31 EDG Functional Test," Rev. 32 after quarterly preventive maintenance inspections on December 21, 2004.
- WO IP3-04-05242: PWT after packing adjustment on the 31 feedwater regulating valve performed on December 29, 2004.

- WO IP3-04-04500: PWT after replacement of LCV 1209A on November 2, 2004.
- WO IP3-04-05226: PWT following planned maintenance on MS-PCV-1139 on December 17, 2004.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 6 samples)

a. Inspection Scope

The inspectors observed portions of the surveillance tests listed below and reviewed the test procedures to assess whether: 1) the test preconditioned any of the components; 2) the effect of the testing was adequately addressed in the control room; 3) the scheduling and conduct of the tests were consistent with plant conditions; 4) the acceptance criteria demonstrated system operability consistent with design requirements and the licensing basis; 5) the test equipment range and accuracy were adequate for the application, and the test equipment was properly calibrated; 6) the test was performed in the proper sequence in accordance with the test procedure; and, 7) the affected system was properly restored to the correct configuration following the test.

- 3PT-Q120C, "33 ABFP (Motor Driven) Surveillance and IST," Rev. 7, on October 18, 2004.
- 3-PT-W021, "Weekly Surveillance Requirements" portions satisfying SR 3.2.4.1 for axial flux difference as well as in-core flux map data to satisfy SR 3.2.1.1, SR 3.2.2.1 and SR 3.2.3.1 for verification of compliance with core thermal limits performed during the weeks of November 1-7 and 8-15, 2004.
- 3-PT-Q120A, "31 ABFP (Motor Driven) Surveillance and IST," Rev. 8, performed on November 19, 2004.
- 3PT-M079A, "31 EDG Functional Test," Rev. 27, performed on October 27, 2004.
- 3PT-Q038A, "31 Boric Acid Transfer Pump Functional Test," Rev. 2, performed on November 19, 2004.
- 3PT-Q120B, "32 ABFP (Turbine Driven) Surveillance and IST," Rev. 7, performed on November 20, 2004.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 1 sample)

a. Inspection Scope

The inspector reviewed documentation on Temporary Modification No: TM 90-3-600 "Install Portable AC Unit - RMS Room." Additional process and area radiation monitoring equipment was added to the plant during the period preceding refueling outage nine. This additional equipment raised the heat generation rate in the radiation monitoring system (RMS) room and required additional cooling capacity to maintain the room temperature below the 86°F limit of the sensitive RM-80 microprocessors. The modification involved adding an additional portable air conditioning unit to an already existing temporary modification to provide adequate cooling to the RMS room. Additionally, the inspectors verified that installation and preventive maintenance of the equipment was comparable to permanent equipment.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

On December 15, 2004, the inspectors observed a full siren activation and the feedback system from the Indian Point Emergency Operating Facility and the Westchester County Emergency Operating Center. The inspectors reviewed siren reliability and other results from the test to verify the accuracy of announced results, as well as Entergy's follow-up of the full siren test to ensure that problem areas were properly identified (CR IP3-2004-04108).

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 - 7 samples)

Inspection Activities Previously Performed but Not Documented

a. Inspection Scope

During August 16-19, 2004, the inspector conducted the following activities to verify that Entergy was properly implementing physical, engineering, and administrative controls for access to HRAs, and other RCAs, 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, site TSSs, and Entergy's procedures.

- (1) The inspector walked down the plant and verified there were no posted airborne radioactivity areas or potential internal exposure accessible work areas > 50 mrem CEDE.
- (2) Controls for the under water storage of highly activated reactor components in the Unit 2 and Unit 3 spent fuel pools were examined by visual observations.
- (3) Radiation Protection Audit No. QA-14-2004-IP-1, dated July 20, 2004, was reviewed.
- (4) Four CRs were reviewed (see Section 4OA2), dated between April 2004 and August 2004, to ensure the RP audit was identifying any repetitive deficiencies in the RP program.
- (5) During the previous 4 quarters, there were no PI incidents relative to the Occupational Radiation Safety Cornerstone.
- (6) The following procedures for controlling access to HRAs, HRAs >1 rem/hr, and very high radiation areas were reviewed: O-RP-RWP-400, RWP Preparation and ALARA Planning; and O-RP-ACC-501, Access Control for Radiological Areas.
- (7) On August 16-18, 2004, utilizing the latest HRA checklist, the inspector walked down Units 1, 2 and 3 and verified the postings, barricades, and locked status of all the plant HRAs.

b. Findings

No findings of significance were identified.

Enclosure

2OS2 ALARA Planning and Controls (71121.02 - 5 samples).1 Inspection Activities Performed from October 1, 2004, to December 31, 2004
(71121.02 - 3 samples)a. Inspection Scope

During October 18-20 and November 1-5, 2004, the inspector conducted the following activities to verify that Entergy was properly maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). Implementation of the site wide ALARA program was reviewed against the criteria contained in 10 CFR 20.1101(b) and Entergy's procedures

(1) Scheduled Unit 2 outage work activities were selected during the inspection period that were estimated to result in the highest collective exposures. These included:

- Replace RTDs: 26.9 person-rem estimate
- Reactor disassembly/reassembly: 25 person-rem estimate
- Refurbish valves: 15 person-rem estimate
- Reactor head insulation modification: 6.5 person-rem estimate
- In-service inspection: 5.7 person-rem estimate

(2) Based on the work activities listed in (1) above, the conduct of these work activities was observed with respect to Entergy's use of engineering controls to achieve dose reductions.

(3) Based on the work activities listed in (1) above, the conduct of radiation worker and RP technician performance was observed to evaluate if workers demonstrated ALARA in the performance of their work activities in these high dose areas.

b. Findings

No findings of significance were identified.

.2 Inspection Activities Previously Performed but Not Documented (71121.02 - 2 samples)a. Inspection Scope

During August 16-19, 2004, the inspector conducted the following activities to verify that Entergy was properly maintaining individual and collective radiation exposures ALARA. Implementation of the site wide ALARA program was reviewed against the criteria contained in 10 CFR 20.1101(b) and Entergy's procedures.

- (1) Procedure O-RP-RWP-400, Rev. 0, "RWP Preparation and ALARA Planning" was reviewed with respect to processes used to estimate, re-estimate, and track work activity exposures.
- (2) ALARA work planning exposure estimates were reviewed for the Unit 2 Fall 2004 refueling outage. The five highest exposure outage tasks were identified as listed below.
 - Replace RTDs: 26.9 person-rem estimate
 - Reactor disassembly/reassembly: 25 person-rem estimate
 - Refurbish valves: 15 person-rem estimate
 - Reactor head insulation modification: 6.5 person-rem estimate
 - In-service inspection: 5.7 person-rem estimate

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

.1 Reactor Coolant System Specific Activity (71151 - 1 sample)

a. Inspection Scope

The inspectors reviewed the PI for RCS specific activity for the period from April 2003 - September 2004. The RCS specific activity PI is reported as a percentage of the maximum TS limit for dose equivalent iodine-131 in micro-curies per cubic centimeter. For the period reviewed, this PI remained in the Green band. The inspectors reviewed monthly average RCS sample results based upon daily samples obtained in accordance with procedure SOP-SS-001, "Operation of the Primary Sampling System," Rev 14. The inspectors compared the PI data against the guidance contained in NEI 99-02, Rev. 2, "Regulatory Assessment Performance Indicator Guideline."

b. Findings

No findings of significance were identified.

.2 Occupational Exposure Control Effectiveness (71151 - 1 sample)

a. Inspection Scope

The inspector reviewed implementation of Entergy's Occupational Exposure Control Effectiveness Performance Indicator (PI) Program. Specifically, the inspector reviewed CRs, and radiological controlled area (RCA) dosimeter exit logs for the past four calendar quarters. These records were reviewed for occurrences involving locked

Enclosure

HRAs, very high radiation areas, and unplanned exposures against the criteria specified in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 2, to verify that all occurrences that met the NEI criteria were identified and reported as PIs.

b. Findings

No findings of significance were identified.

.3 RETS/ODCM Radiological Effluent Occurrences (71151 - 1 sample)

a. Inspection Scope

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/qtr whole body or 5.0 mrem/qtr organ dose for liquid effluents; 5mrads/qtr gamma air dose, 10 mrad/qtr beta air dose, and 7.5 mrads/qtr for organ dose for gaseous effluents.

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

- 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.

4OA2 Problem Identification and Resolution (71152)

.1 Daily Review

a. Inspection Scope

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 CAP. This review was accomplished by reviewing hard copies of each CR.

b. Findings

No findings of significance were identified.

.2 Semi-annual Trend Review (71152 - 1 sample)

a. Inspection Scope

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 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 2004 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.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution - Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed CRs associated with 10 CFR 50.59 issues and plant modification issues to ensure that Entergy was identifying, evaluating, and correcting problems associated with these areas and that the planned or completed corrective actions for the issues were appropriate. The inspectors also reviewed four self-assessments related to 10 CFR 50.59 SEs and plant modification activities at Indian Point Unit 3. The listing of the CRs and self assessments reviewed is provided in the Supplemental Information attachment at the end of this report.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution - Occupational Radiation Safety (71121)

a. Inspection Scope

The inspector reviewed 15 corrective action CRs that were initiated between May 2004 and November 4, 2004 and were associated with the RP program. The inspector verified that problems identified by these CRs were properly characterized in Entergy's event reporting system, and that applicable causes and corrective actions were identified commensurate with the safety significance of the radiological occurrences.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

Reactor Containment Sump Blockage (NRC Bulletin 2003-01)

Background

On June 3, 2003, the NRC issued Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors," to all pressurized-water reactor (PWR) licensees requesting that they provide a response within 60 days. On August 7, 2003, Entergy responded and stated that they had implemented the following interim compensatory measures (Option 2 as outlined in Bulletin 2003-01): (1) operator and staff training on indications of and responses to sump clogging; (2) procedural modifications, if appropriate, that would delay the switchover to containment sump recirculation; (3) ensuring that alternative water sources are available to refill the refueling water storage tank (RWST) or to otherwise provide inventory to inject into the reactor core and spray the containment atmosphere; (4) more aggressive containment cleaning and increased foreign material controls; (5) ensuring containment drainage paths are unblocked; and (6) ensuring sump screens are free of adverse gaps and breaches.

a. Inspection Scope (2515/153)

During the weeks of October 5 and 12, the inspectors reviewed Entergy's activities in response to NRC Bulletin 2003-01 to assess whether Entergy effectively implemented reasonable compensatory measures. The inspectors independently verified that Entergy had implemented the interim compensatory measures or had planned and scheduled these activities consistent with their response.

The inspectors reviewed operator training records, procedures, documentation of containment inspections and foreign material control activities, and containment sump related corrective action reports. (See the attachment for a listing of documents and corrective action reports reviewed). The inspectors also discussed Entergy's Bulletin response with the NRR Project Manager. During the inspection period, the resident inspectors interviewed four operators, representing two operating shifts, to assess their awareness of reactor containment sump blockage issues and expected operator mitigating actions.

b. Findings & Observations

No findings of significance were identified with respect to Entergy's response to NRC Bulletin 2003-01. A number of specific observations are listed below.

The inspectors were not able to find a specific lesson plan that presents the mechanisms and potential consequences of sump clogging. The NRC has issued a request for additional information regarding Entergy's response to NRC Bulletin 2003-01 regarding operator training.

Entergy's 60-day response to NRC Bulletin 2003-001 indicates Entergy would participate in a Westinghouse Owner's Group (WOG) program to assess potential changes to the generic Emergency Response Guidelines. The NRC has issued a request for additional information regarding Entergy's response to NRC Bulletin 2003-001 regarding procedural modifications.

The inspectors reviewed Entergy procedure OAP-007, "Containment Entry and Egress" and noted that it contains guidance to ensure that no unrestrained items are left in containment that could block a drainage path. Entergy has concluded that additional compensatory measures regarding containment drainage paths are not necessary.

During the refueling outage from March 28, 2003 to April 20, 2003, Entergy implemented procedure OAP-007, "Containment Entry and Egress" to ensure that the containment sumps were inspected for debris prior to containment close out. Subsequent to the licensee's inspection, the inspectors performed a detailed walkdown of the condition of all containment sumps, including recirculation system sumps. This was done to evaluate the condition of sump screens and to look for the presence of any solid material that could potentially degrade sump performance during postulated accident conditions. No findings were more than minor.

Entergy's 60-day response to NRC Bulletin 2003-01 stated that the interior layout of the containment building does not involve 'chokepoints' that would restrict flow from reaching the containment or recirculation sumps. The inspectors reviewed Entergy procedure OAP-007, "Containment Entry and Egress" and noted that it contains guidance to ensure that no unrestrained items are left in containment that could block a drainage path. Entergy has concluded that additional compensatory measures regarding containment drainage paths are not necessary.

The inspectors reviewed Entergy procedure OAP-007, "Containment Entry and Egress," and the implementation of this procedure, which is used to verify the presence and size of any gaps that could create a bypass around the sump screens.

Entergy is planning to replace the recirculation pumps during the 2005 refueling outage with a newer design that will require less net positive suction head for operation thus reducing these pumps susceptibility to screen blockage phenomena.

4OA6 Meetings, including Exit

.1 Exit Meeting Summary

On January 13, 2005, the inspectors presented the inspection results to Mr. C. Schwarz and other Entergy staff members, who acknowledged the inspection results presented. Entergy did not identify any material as proprietary.

.2 Management Site Visits

On December 15, 2004, Sam Collins, Regional Administrator, visited the Indian Point Energy Center, toured IP2 and IP3 plant areas, and met with senior members of Entergy Nuclear Northeast, Inc.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Boccio, I&C Superintendent
T. Carson, Manager, Maintenance
J. Comiotes, Director, Nuclear Safety Assurance
P. Conroy, Manager, Licensing
F. Dacimo, Site Vice President
G. Dahl, Technical Specialist, Licensing
G. Dean, Assistant Operations Manager - Training
R. DeCensi, Technical Support Manager
P. Donahue, Senior Environmental Specialist
R. Drake, Supervisor, Mechanical Design Engineering
A. Eng, Licensing, White Plains Office
M. Garofalo, Supervisor, Quality Assurance
C. Ingrassia, Systems Engineer
F. Inzirillo, Emergency Planning Manager
T. Jones, Licensing Supervisor
D. Leach, Director, Site Engineering
T. McCaffrey, Manager, Systems Engineering
R. Milici, Senior Engineer, Electrical Design Engineering
V. Myers, Systems Engineering Primary Systems Supervisor
E. O'Donnell, IP3 Assistant Operations Manager
J. O'Driscoll, Systems Engineer
J. Parrotia, QA Manager
F. Phillips, Emergency Planner
J. Raffaele, Supervisor, Electrical Design Engineering
P. Rubin, Manager, Site Planning and Outage Services
C. Schwarz, General Manager, Plant Operations
A. Stewart, Nuclear Safety/Licensing Specialist, Licensing
J. Ventosa, Site Operations Manager
A. Vitale, Operations Manager, IP3
C. Wend, Radiation Protection Manager

Other Personnel Contacted

J. Cahill, Westchester County

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSEDOpened and Closed

50-286/2004-009-01	NCV	Failure to Complete the Voltage Calculation and to Properly Translate Design Output Voltage Requirements into DCP for Instrument Bus 34/34A Alternate Supply Transformer Replacement. (Section 1R17)
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Closed

50-286/2002-002-01	URI	(Administrative Closure) Potential Failure to Obtain NRC Approval Prior to Reducing the Effectiveness of the Emergency Plan. Inspection Report 05000286/2002002 documented this unresolved issue (URI), which was closed in inspection report 05000286/2002003 as a non-cited violation (50-286/02-03-01) but did not document closure of the URI.
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LIST OF DOCUMENTS REVIEWED**Section 1R01: Adverse Weather Protection**Procedures

OAP-008, "Severe Weather Preparations," Rev. 0
 OAP-048, "Seasonal Weather Preparation," Rev. 0

Section 1R02: Evaluations of Changes, Tests, or Experiments10 CFR 50.59 Screened-out Evaluations

DCP-03-3-022	Rod Control System Gripper Circuit Fuses Upgrade
DCP-01-3-038	Scram Reduction Associated with RPS Relays
DCP-01-3-050	Control Switch Replacement for MOV LCV-112C and LCV-112B
DCP-00-3-049	Eliminate Vent Path From the Containment Building into PAB if VS-PCV-1190 Fails Open
ER-04-3-058	Replace Breaker #1 Closing Valve and ASCO SOV With ABB Model(Made by Norgren) as Proposed by Future Energy
DCP-02-3-003	Replacement of PS-SOV-1431 and -1433
DCP-03-3-058	Installation of Under-Voltage Relays that Utilize an Adjustable Time Delay Dropout
DCP-01-3-022	Instrument Bus 34 Inverter Replacement

A-3

DCP-01-3-047	Surge Suppressor Installation for Valves Associated with the Hydrogen Analyzer Sampling and Post Accident Monitoring Systems DC Solenoid Valves
DCP-01-3-077	Replace Service Water Piping at SWN-44 Valves
DCP-03-3-004	Add Individual Air Isolation Valves to the SGBD CIVs
DEM-90-3-164	Replacement of Hydraulic Snubber Support Pins with Two-Piece ITT Tapered Pins
DCP-01-3-006	CRDM Fan Power Cable Replacement
DCP-98-3-010	Power Feed to PT-406B (Motor-Driven Auxiliary Feedwater pump low pressure)
DCP-02-3-023	Replacement of MS-PCV-1010A and -1010B

Self-Assessments

QA-09-2004-IP-1	Design Control Program
IP3-LO-2003-00285	Indian Point Energy Center 10 CFR 50.59 Program Implementation
IP3-LO-2003-00081	Modification Close Out Process
IP3-2003-00356	Permanent Modifications

Condition Reports

CR-IP3-2004-01211	CR-IP3-2004-00469	CR-IP3-2004-00240
CR-IP3-2003-06463	CR-IP3-2003-05448	CR-IP3-2004-01136
CR-IP3-2004-01337	CR-IP3-2004-02331	CR-IP3-2004-02468
CR-IP3-2004-03009	CR-IP3-2003-01496	CR-IP3-2003-01954
CR-IP3-2003-05772	CR-IP3-2004-02912	CR-IP3-2004-03057
CR-IP3-2003-05635	CR-IP3-2004-02967	CR-IP3-2004-03009
CR-IP3-2003-03029		

Procedures

ENN-LI-100	Process Applicability Determination, Revision 5
ENN-LI-101	10 CRF 50.59 Review Process (Superseded SAO-460), Revision 4
ENN-DC-112	Engineering Request and Project Initiation Process, Revision 3
ENN-DC-116	Engineering Request Response Installation, Revision 3
ENN-DC-117	Post Modification Testing and Special Testing Instruction, Revision 3
ENN-DC-126	Calculation, Revision 4
ENN-DC-134	Design Verification, Revision 1
ENN-DC-141	Design Inputs, Revision 0
MCM-8	Setpoint Control IP3, Revision 6

Section 1R04: Equipment Alignment

Procedures

3-COL-EL-1, "6900 and 480 Volt AC Distribution," Rev. 36
3-COL-RCS-1, "Reactor Coolant System," Rev. 27
3-COL-FW-2, "Auxiliary Feedwater System," Rev. 29

Section 1R05: Fire Protection

Procedures

IP3-RP-UNSPEC-02182, "Indian Point Three Nuclear Power Plant Individual Plant Examination of External Events," dated September 1997
SMM-DC-901, "IPEC Fire Protection Program Plan," Rev. 1
ENN-DC-127, "Control of Hot Work and Ignition Sources," Rev. 1
ENN-DC-161, "Transient Combustible Program," Rev. 1
IP-EP-AD13, "IPEC Emergency Plan Administrative Procedures," Rev. 0

Section 1R11: Licensed Operator Requalification Program

Miscellaneous

LRQ-SES-33, "IPEC Simulator Guide," Rev. 9
IP-EP-AD13, "IPEC Emergency Action Level Technical Bases," Rev. 0

Section 1R12: Maintenance Effectiveness

Work Orders

I3-000080617	IP3-03-16250	IP3-03-16522
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Condition Reports

IP3-2004-04107	IP3-2003-04707	IP3-2004-02242
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Miscellaneous

"Maintenance Rule Basis Document for Emergency Diesel Generators," Rev. 0
"Maintenance Rule Basis Document for Nuclear Instrumentation System," Rev. 0

Section 1R17: Permanent Plant Modifications

See Section 1R02 above.

Section 1R23: Temporary Plant Modifications

Safety Evaluations

04-0561-TM-00-RE, Rev. 0

Work Orders

IP3-04-14652 IP3-04-16287

Section 2OS1/2OS2: Occupational Radiation Safety

Condition Reports

CR-IP2-2004-2178	CR-IP2-2004-2456	CR-IP2-2004-3343
CR-IP2-2004-3676	CR-IP2-2004-3688	CR-IP2-2004-3823
CR-IP2-2004-4601	CR-IP2-2004-4902	CR-IP2-2004-5179
CR-IP3-2004-1763	CR-IP3-2004-2602	CR-IP3-2004-2933
CR-IP3-2004-3114	CR-IP3-2004-3117	CR-IP3-2004-1712

Section 4OA5: Other Activities

Procedures

3-SOP-CB-002	Containment Entry and Egress, Rev. 33
OAP-007	Containment Entry and Egress, Rev. 0
ECA 1.1	Loss of Emergency Coolant Recirculation, Rev. 13
SOP-SI-002	Refilling the Refueling Water Storage Tank, Rev. 10
E-1	Loss of Reactor or Secondary Coolant, Rev. 17

Engineering Requests

ER 04-3-066 Containment SI Pumps Replacement, Rev. 0

Condition Reports

CR IP3-2004-02569

Miscellaneous

IP3-RPT-VC-03353	Transportation of Failed Coatings in Reticulation and Containment Sumps
NL-03-128	60-day Response to NRC Bulletin 2003-01 Regarding Potential Impact of Debris Blockage of Emergency Sumps

LIST OF ACRONYMS

ABFP	auxiliary boiler feedwater pump
ABFW	auxiliary boiler feedwater system
ALARA	as low as is reasonably achievable
CAP	corrective action program
CEDE	committed effective dose equivalent
CFR	Code of Federal Regulations
COL	check-off list
CR	condition report
DCP	design change package
EDG	emergency diesel generator
EQ	environmental qualification
EP	emergency preparedness
ERO	emergency response organization
FSAR	final safety analysis report
GL	generic letter
HRA	high radiation area
IMC	inspection manual chapter
IP3	Indian Point Nuclear Generating Unit 3
IPEC	Indian Point Energy Center
IPEEE	Individual Plant Examination of External Events
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PAB	primary auxiliary building
PI	performance indicator
PMT	post maintenance test
PWT	post-work test
QA	quality assurance
RCA	radiologically controlled area
RCS	reactor coolant system
RETS	Radiological effluents technical specifications
RMS	radiation monitoring system
RP	radiation protection
RTD	resistance temperature detector
RWP	radiation work permit
RWST	refueling water storage tank
SDP	significance determination process
SE	safety evaluation
SI	safety injection
SOP	system operating procedure
SSC	structure, system, and component
SW	service water
TS	technical specification
URI	unresolved issue

Vac	volt alternate current
VDC	voltage, direct current
WO	work order