August 13, 2008

Mr. Joseph E. Pollock
Site Vice President
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT 2 – NRC INTEGRATED INSPECTION REPORT 05000247/2008003

Dear Mr. Pollock:

On June 30, 2008, 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 July 10, 2008, with Tony 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 seven findings of very low safety significance (Green). Six of these findings were also determined to be violations of NRC requirements. However, because of their very low safety significance, and because the findings were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) 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. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC 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 of 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/ Original Signed By:

Mel Gray, Chief
Projects Branch 2
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000247/2008003
w/ Attachment: Supplemental Information

cc w/encl:
Senior Vice President, Entergy Nuclear Operations
Vice President, Operations, Entergy Nuclear Operations
Vice President, Oversight, Entergy Nuclear Operations
Senior Manager, Nuclear Safety and Licensing, Entergy Nuclear Operations
Senior Vice President and COO, Entergy Nuclear Operations
Assistant General Counsel, Entergy Nuclear Operations
Manager, Licensing, Entergy Nuclear Operations
P. Tonko, President and CEO, New York State Energy Research and Development Authority
C. Donaldson, Esquire, Assistant Attorney General, New York Department of Law
A. Donahue, Mayor, Village of Buchanan
J. G. Testa, Mayor, City of Peekskill
R. Albanese, Four County Coordinator
S. Lousteau, Treasury Department, Entergy Services, Inc.
Chairman, Standing Committee on Energy, NYS Assembly
Chairman, Standing Committee on Environmental Conservation, NYS Assembly
Chairman, Committee on Corporations, Authorities, and Commissions
M. Slobodien, Director, Emergency Planning
P. Eddy, NYS Department of Public Service
Assemblywoman Sandra Galef, NYS Assembly
T. Seckerson, County Clerk, Westchester County Board of Legislators
A. Spano, Westchester County Executive
R. Bondi, Putnam County Executive
C. Vanderhoef, Rockland County Executive
E. A. Diana, Orange County Executive
T. Judson, Central NY Citizens Awareness Network
M. Elie, Citizens Awareness Network
D. Lochbaum, Nuclear Safety Engineer, Union of Concerned Scientists
Public Citizen's Critical Mass Energy Project
M. Mariotte, Nuclear Information & Resources Service
F. Zalcman, Pace Law School, Energy Project
L. Puglisi, Supervisor, Town of Cortlandt
Congressman John Hall
Congresswoman Nita Lowey
Senator Hillary Rodham Clinton
Senator Charles Schumer

G. Shapiro, Senator Clinton's Staff
J. Riccio, Greenpeace
P. Musegaas, Riverkeeper, Inc.
M. Kaplowitz, Chairman of County Environment & Health Committee
A. Reynolds, Environmental Advocates
D. Katz, Executive Director, Citizens Awareness Network
K. Coplan, Pace Environmental Litigation Clinic
M. Jacobs, IPSEC
W. Little, Associate Attorney, NYSDEC
M. J. Greene, Clearwater, Inc.
R. Christman, Manager Training and Development
J. Spath, New York State Energy Research, SLO Designee
A. J. Kremer, New York Affordable Reliable Electricity Alliance (NY AREA)

ADAMS is accessible from the NRC Web Site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/ Original Signed By:

Mel Gray, Chief
Projects Branch 2
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000247/2008003
w/ Attachment: Supplemental Information

Distribution w/encl:
S. Collins, RA
M. Dapas, DRA
S. Williams, RI OEDO
R. Nelson, NRR
M. Kowal, NRR
J. Boska, PM, NRR
J. Hughey, NRR
M. Gray, DRP
B. Bickett, DRP
T. Wingfield, DRP
G. Malone, DRP, Senior Resident Inspector - Indian Point 2
C. Hott, Resident Inspector - Indian Point 2
Region I Docket Room (w/concurrences)
ROPreport Resources (All IRs)

SUNSI Review Complete: __BB___(Reviewer's Initial)

DOCUMENT NAME:G:\DRP\BRANCH2\a - Indian Point 2\Inspection Reports\IP2 IR2008-003\IP2_2008_003 rev8.doc
Adams Accession No. ML082260281

After declaring this document "An Official Agency Record" it **will** be released to the Public

To Receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure **"E"** = Copy with attachment/enclosure **"N"** = No copy

Office	RI/DRP		RI/DRP		RI/DRP	
Name	CHott/BB for		BBickett/BB		MGray/MG	
Date	08/12/08		08/12/08		08/13/08	

U.S. Nuclear Regulatory Commission

Region I

Docket No.:	50-247
License No.:	DPR-26
Report No.:	05000247/2008003
Licensee:	Entergy Nuclear Northeast (Entergy)
Facility:	Indian Point Nuclear Generating Unit 2
Location:	450 Broadway, GSB Buchanan, NY 10511-0249
Dates:	April 1, 2008 through June 30, 2008
Inspectors:	C. Hott, Senior Resident Inspector (Acting), Indian Point 2 M. Marshfield, Senior Resident Inspector (Acting), Indian Point 2 P. Cataldo, Senior Resident Inspector, Indian Point 3 A. Koonce, Resident Inspector, Indian Point 3 S. Smith, Reactor Inspector, Region I A. Patel, Reactor Inspector, Region I R. McKinley, Reactor Inspector, Region I S. Barr, Senior Emergency Preparedness Specialist, Region I J. Noggle, Senior Health Physicist Inspector, Region I H. Gray, Senior Reactor Inspector, Region I J. Richmond, Senior Reactor Inspector, Region I F. Arner, Senior Reactor Inspector, Region I
Approved By:	Mel Gray, Chief Projects Branch 2 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY OF FINDINGS

IR 05000247/2008-003; 04/01/2008 – 06/30/2008; Indian Point Unit 2; Operability Evaluations; Evaluations of Changes, Tests, or Experiments; Plant Modifications; Followup of Events; and Other Activities.

This report covered a three-month period of inspection by resident and region based inspectors. Seven findings of very low significance (Green) were identified, six of which were also determined to be non-cited violations (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 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 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: Initiating Events

- Green. A Green, self-revealing non-cited violation (NCV) of Technical Specification 5.4.1, "Administrative Controls - Procedures," was identified, because Entergy did not implement the requirements of plant startup procedure 2-POP-1.3, "Plant Startup from Zero To 45% Power." Specifically, operators performed a step out of sequence in the plant operating procedure that was not warranted by plant conditions, and resulted in a main turbine runback followed by a manual reactor trip initiated by control room operators. Entergy entered this issue into the corrective action program, initiated procedural enhancements, performed a post-trip evaluation, and a root cause evaluation.

  The inspectors determined that this finding was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone and impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated this finding using the Phase 1 analysis of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined it to be of very low safety significance because it did not contribute to the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would be unavailable.

  The finding had a cross-cutting aspect in the area of human performance because Entergy staff utilized work practices that did not support effective human error prevention techniques by proceeding in the face of uncertainty and unexpected circumstances, when they prematurely positioned the arm/defeat switch contrary to plant procedures and conditions. (H.4(a)) (Section 4OA3)

- Green. A Green, self-revealing finding was identified because Entergy did not implement procedural requirements to evaluate flash photography in the vicinity of sensitive control cabinets. Specifically, Entergy did not implement procedure EN-NS-214, "Camera Controls for Access and Use," and evaluate the potential impact of flash photography on sensitive control circuitry. Radiofrequency interference (RFI) from the digital camera during flash photography resulted in a main boiler feed pump runback which required a subsequent manual reactor trip. Entergy entered the issue into the corrective action process, performed site-wide training regarding the potential impacts of RFI from digital cameras on digital plant equipment and reinforced expectations to site personnel regarding procedural compliance. The inspectors determined that this finding was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone and impacted the objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated this finding using Phase 1 of IMC 0609, Appendix A, “Determining the Significance of Reactor Inspection Findings for At-Power Situations.” The inspectors determined that this finding was of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available.

The inspectors determined that this finding has a cross-cutting aspect in the area of human performance because Entergy did not effectively communicate expectations regarding procedural compliance and personnel did not follow the applicable procedures. (H.4(b)) (Section 4OA3)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” because Entergy personnel did not implement the requirements of procedure SAO-270, “Procurement Program,” for the procurement of safety related temperature control valve (TCV) elements for the emergency diesel generators (EDGs). Specifically, Entergy did not perform a technical evaluation as required for the TCV elements which resulted in the purchase and installation of incorrect TCV elements on the 21 and 22 EDGs between 2002 and 2003.

  The inspectors determined that this finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated this finding using the Phase 1 analysis in IMC 0609, Appendix A, “Determining the Significance of Reactor Inspection Findings for At-Power Situations.” The inspectors determined that this finding was of very low safety significance (Green) because the installation of incorrect TCV elements represented a design deficiency that was confirmed not to result in a loss of operability of the EDGs. Specifically, engineering analysis verified past EDG operability was maintained based on analysis that assumed the highest observed service water temperature over the past three years. Entergy entered this issue into the corrective action program and installed the correct TCV elements in 21 and 22 EDGs. (Section 1R15)

- Green. The inspectors identified a Green NCV of Technical Specification 5.4.1, “Administrative Controls - Procedures,” because Entergy did not implement the requirements of EN-DC-117, “Post Modification Testing and Special Instructions,” to control revisions to the station blackout/Appendix R diesel generator (SBO/App-R DG) post modification test, or to review and approve the test results. Specifically, the SBO/App-R DG post modification test was not sufficient to demonstrate the SBO/App-R DG could perform its intended design functions. As a corrective measure, Entergy subsequently performed additional testing to demonstrate system operability.

The inspectors determined the finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the post modification test deficiencies represented reasonable doubt regarding the operability of the SBO/App-R DG. The inspectors evaluated this finding using the Phase 1 analysis in IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The inspectors determined that this finding was of very low safety significance (Green) because it was not a design or qualification deficiency; it did not represent a loss of system safety function of a single train; and it did not screen as potentially risk significant due to external events.

The finding had a cross-cutting aspect in the area of human performance because Entergy's supervisory and management oversight of work activities was not adequate to ensure testing was properly performed. (H.4(c)) (Section 1R17.1)

- Green. The inspectors identified a Green NCV of Technical Specification 5.4.1, "Administrative Controls - Procedures," because the SBO/App-R DG operating procedure 2-SOP-27.6, "Appendix-R Diesel Generator Operation," was not adequate. Specifically, the procedure could not be performed as written, and was not sufficient to ensure operators could start the SBO/App-R DG, and energize an electrical bus within the required time of one hour. Entergy subsequently revised the procedure to correct the most critical deficiencies, and pre-staged equipment to reduce the time needed to energize a bus. As an interim corrective measure, Entergy relied upon operator training for other deficiencies, pending final corrective actions.

  The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the procedure deficiencies resulted in a reasonable doubt whether the SBO/App-R DG could be started and aligned in a timely and correct manner, as required by design. The inspectors evaluated this finding using the Phase 1 analysis in IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The inspectors determined that this finding was of very low safety significance (Green) because it was not a design or qualification deficiency; it did not represent a loss of system safety function of a single train; and it did not screen as potentially risk significant due to external events.

  The finding had a cross-cutting aspect in the area of human performance because Entergy's procedure for the SBO/App-R DG was not adequate to assure nuclear safety in implementing necessary operator actions for a SBO. (H.2(c)) (Section 1R17.2)

- Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" because Entergy did not adequately analyze, document, or translate seismic considerations for temporary service water hoses installed on the 21 and 23 emergency diesel generator (EDG) heat exchangers during the March 2008 refueling outage. Entergy entered the issue into the corrective action program, evaluated past operability concerns, and added restraints to the temporary service water hoses.

  The inspectors determined that this finding was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of the EDG system during a Seismic Class I design basis event. This finding was evaluated using IMC 0609, Appendix G, Attachment 1, “Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs [Pressurized Water Reactors] and BWRs [Boiling Water Reactors].” The finding was determined to be of very low safety significance (Green) because the finding did not degrade the equipment, instrumentation, training or procedures needed for any shutdown safety function. Entergy performed a subsequent operability evaluation which provided reasonable assurance that the EDGs would have performed the safety function during a design basis seismic event.

The finding had a cross-cutting aspect in the area of human performance because Entergy personnel made non-conservative assumptions regarding the seismic adequacy of the temporary hose modification. Specifically, Entergy personnel did not perform an engineering analysis to validate their assumptions that the temporary service water hoses would not adversely impact the seismic qualification of the EDGs. (H.1(b)) (Section 1R18)

- Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVII, “Quality Assurance Records,” because Entergy did not maintain sufficient records to furnish evidence that a safety-related containment sump modification was performed in accordance with the design documentation. Specifically, nine of 63 work orders completed during the 2R17 refueling outage for the modification were missing data or missing entirely due to being lost, misplaced, or contaminated during implementation of the project. Entergy entered the issue into the corrective action process, evaluated the operability impact of the missing data, and performed visual inspections of accessible safety-related welds during the 2R18 refueling outage.

  The inspectors determined that this finding was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated this finding using the Phase 1 analysis in IMC 0609, Appendix A, “Determining the Significance of Reactor Inspection Findings for At-Power Situations.” The inspectors determined that this finding was of very low safety significance because the finding did not represent a design or qualification deficiency, did not result in a loss of safety function, and did not screen as potentially risk-significant due to external events initiating events. Entergy performed inspections during 2R18 and completed technical evaluations of missing data that provided reasonable assurance of sump operability.

  The finding had a cross-cutting aspect in the area of human performance because Entergy did not appropriately coordinate work activities to communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination was necessary to assure plant and human performance. (H.3(b)) (Section 4OA5)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Indian Point Nuclear Generating (Indian Point) Unit 2 began the inspection period with the plant in a shutdown condition for refueling outage 2R18. Entergy completed the refueling outage on April 20, 2008, when the generator was synchronized to the grid. Shortly after shutting the main generator output breaker, at eight percent reactor power, the main generator and turbine were tripped due to a failed relay on the generator output. Entergy personnel replaced the relay and subsequent re-synchronized the generator to the grid on April 21, 2008. During the subsequent power ascension, while at 39 percent reactor power, operators manually tripped the reactor on lowering steam generator levels due to a main turbine runback that was caused by the combination of a prematurely armed runback circuit with a failed relay contact in the circuit. The failed relay was replaced and the plant reached full reactor power on April 24, 2008. On June 4, 2008, the plant was shutdown and the turbine removed from service for repairs to the turbine generator exciter. The plant was restored to full reactor power on June 5, 2008, and remained at or near full reactor power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 2 samples)

.1 Hot Weather Preparations

a. Inspection Scope

Using procedure OAP-048, “Seasonal Weather Preparation,” and the Updated Final Safety Analysis Report (UFSAR) as a reference, the inspectors reviewed Entergy’s preparations for hot weather and performed walkdowns of plant areas during the week of May 19, 2008. As part of the walkdown, local area temperatures were checked, as well as the operability of ventilation and air conditioning cooling systems, to ensure that the plant was prepared for warm weather conditions. The inspectors also focused on the auxiliary boiler feed pump room ventilation system and the service water chlorination system. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Annual Review of Off-Site and Alternate AC Power System Readiness

a. Inspection Scope

Using procedure IP-SMM-OP-104, “Offsite Power Continuous Monitoring and Notification,” as a reference, during the week of May 19, 2008, the inspectors evaluated the readiness of offsite and alternate AC power systems. The inspectors verified that communication protocols between the transmission system operator and the plant were specified in Entergy’s procedures to ensure appropriate information was being exchanged. The inspectors verified that the procedures addressed measures to monitor and maintain availability and reliability of these systems during adverse weather conditions. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04Q - 4 samples)

.1 Partial System Walkdowns

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 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 (CR) 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 (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action." The documents reviewed during these inspections are listed in the Attachment.

The inspectors performed a partial walkdown on the following systems, which represented four inspection samples:

- boric acid transfer pump lineup for reactivity control and coolant inventory during plant shutdown conditions on April 7, 2008;
- component cooling water system when the 21 component cooling water pump was out of service on April 17, 2008;
- 21 and 22 emergency diesel generators (EDGs) when the 23 EDG was out of service for maintenance on May 12, 2008; and
- containment spray system when the 21 containment spray pump was out of service on June 23, 2008.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q – 6 samples)

a. Inspection Scope

The inspectors conducted tours of several fire areas to assess the material condition and operational status of fire protection features. The inspectors verified, consistent with the 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 License Condition 2.K.

The documents reviewed during this inspection are listed in the Attachment. This inspection represented six inspection samples for fire protection tours, and was conducted in the following areas:

- Fire Zone 72A, 75A, 76A, 77A;
- Fire Zone 55;
- Fire Zone 25;
- Fire Zone 8;
- Fire Zone15; and
- Fire Zone 32A.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 sample)

a. Inspection Scope

The inspectors reviewed Indian Point's Unit 2 Individual Plant Examination and the UFSAR concerning internal flooding events. The inspection included a walkdown of accessible areas of the plant, including the cable spreading room and 21 & 22 battery rooms located in the control 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.

1R07 Heat Sink Performance (71111.07A – 1 sample)

a. Inspection Scope

The inspectors evaluated maintenance activities, and reviewed performance data associated with the 24 containment fan cooler unit heat exchanger. The inspectors reviewed applicable design basis information and commitments associated with Entergy's Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," program to validate that Entergy's maintenance activities were adequate to ensure the system could perform its safety function. The inspectors reviewed as-found and as-left results before and following inspection and cleaning activities that were performed during refueling outage 2R18. The inspectors also reviewed previous heat exchanger cleanings and eddy-current testing to ensure the periodicity of maintenance activities were appropriate, and conditions adverse to quality were being identified and corrected. The documents reviewed during this inspection are listed in the Attachment. The inspection represented one inspection sample.

b. Findings

No findings of significance were identified.

1R08 <u>In-service Inspection</u> (71111.08 - 1 sample)

a. <u>Inspection Scope</u>

The inspectors reviewed outage activities during the Unit 2 refuel outage (2R18) that included observations of ultrasonic testing (UT) calibration or component testing in-progress using manual UT techniques. The inspectors' observations included a sample of the studs that bolt the head to the reactor pressure vessel (RPV), the 14" diameter stainless steel residual heat removal (RHR) line 10 pipe welds 3 and 4, and the main steam pipe welds 3-10 and 3-11. The inspectors observed a sample of visual inspections (VT) that included the areas of the containment inner boundary at the containment liner and containment penetrations. The task work orders and test data for several ultrasonic and visually identified indications were reviewed and confirmed by the inspectors to be evaluated by Entergy as part of the in-service inspection process.

The inspectors observed liquid dye penetrant testing (PT) of the stainless steel welds 1A and 1B on the 22 RHR heat exchanger per work order 51318049-01 using the PT procedure ENN-NDE-9.41.

For component replacement work, the inspectors reviewed work orders (WOs) 00136224 and 00136225 for the replacement of valves 236 and 238 in the charging system. The work packages included the requirements for welding and related quality verifications. Additionally, the results of radiographic testing (RT) dated April 3, 2008, were reviewed for six of the circumferential pipe welds made in the replacement of these valves. The inspectors reviewed welding parameters; the radiographs and RT documentation for comparison to the American Society of Mechanical Engineers (ASME) Code fabrication requirements; the sensitivity of the radiographic method as shown by the penetrameter and densitometer measurement; the identification of the radiographer; and acceptance by the RT data reviewers.

The inspectors observed video visual examination, following Electric Power Research Institute (EPRI) guidelines, of the upper RPV head to control rod drive mechanism (CRDM) penetrations. This work, per procedure 2-PT-R203, Rev. 2, using a robot crawler to position a camera to view the circumference of each CRDM for boric acid leakage and the sequence of evaluation of the conditions was inspected. This review included a comparison of the 2008 visual observations with those of the previous (2006) outage. The inspectors included review of CRDMs 20, 22, 26, 30, 39, 46, and 57 in this sample.

In the area of boric acid corrosion control (BACC) activities, the inspectors confirmed the extent of plant boric acid walkdowns during the plant shutdown process and noted that identified problem areas were documented in condition reports for evaluation and resolution.

Steam Generator (SG) tube inspection results from the 2006 2R17 outage provided a basis for not performing eddy current inspection of SG tubes during the 2R18 outage. The inspectors reviewed the SG tube assessment for 2R17 and the documented review of the acceptability of SG operation for two cycles until 2R19.

The extent of oversight of in-service inspection (ISI) activities, including the topics of current ISI oversight and surveillance, were reviewed by the inspectors. This included a review of the outage related quality assurance (QA) surveillance scope per the QA master audit plan for engineering programs. The inspectors reviewed a sample of issue reports shown in Attachment A to confirm that identified problems were being documented for evaluation and proper resolution.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Quarterly Review (71111.11Q – 1 sample)

a. Inspection Scope

On June 30, 2008, the inspectors observed licensed operator simulator training to verify that operator performance was adequate, and the 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 control room supervisor. 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, "Operator 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.

.2 Biennial Review (71111.11B – 1 sample)

a. Inspection Scope

This inspection activity was documented in this report because it was not included in resident inspector integrated inspection report 05000247/2007005.

Between October 24 and December 20, 2007, the inspectors conducted an in-office review of licensee requalification exam results for Unit 2. These results included the annual operating tests and the comprehensive written exams administered in 2007. The inspection assessed whether pass rates were consistent with the guidance of NRC IMC 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

The inspectors verified that:

- Crew failure rate on the dynamic simulator was less than 20%. (Failure rate was 0.0%)

- Individual failure rate on the dynamic simulator test was less than or equal to 20%. (Failure rate was 0.0%)

- Individual failure rate on the walkthrough test (JPMs) was less than or equal to 20%. (Failure rate was 0.0%)
- Individual failure rate on the comprehensive biennial written exam was less than or equal to 20%. (Failure rate was 0.0%)
- More than 75% of the individuals passed all portions of the exam (100% of the individuals passed all portions of the exam).

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q – 1 sample)

a. Inspection Scope

The inspectors reviewed performance-based problems that involved structures, systems, and components (SSCs) to assess the effectiveness of maintenance activities. The review 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 maintenance effectiveness and monitoring activities against the requirements of 10 CFR 50.65. The documents reviewed during this inspection are listed in the Attachment. The following Maintenance Rule sample was reviewed and represented one inspection sample:

- 120 VDC battery system.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 samples)

a. Inspection Scope

The inspectors reviewed scheduled and emergent maintenance activities to verify that the appropriate risk assessments were performed prior to removing equipment from service for maintenance or repair. 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. Documents reviewed during this inspection are listed in the Attachment. The following activities represented six inspection samples:

- 22 battery charger capacitor failure during battery charging following battery testing on April 3, 2008;
- emergent work on the 24 static inverter due to failed control card on April 14, 2008;
- emergent work on 21 and 22 recirculation pump motor splices during extent of condition review for failed electrical splice on 22 containment fan cooler unit motor on April 15, 2008;
- planned work due to 22 auxiliary boiler feed pump testing with 21 safety injection pump and 21 component cooling water pump inoperable on April 18, 2008;
- planned work during 13W93 feeder outage for station blackout diesel modification on April 23, 2008; and
- planned work associated with main generator exciter repairs on June 3, 2008.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 5 samples)

.1 Resident Quarterly Review

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 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 (DBDs). The documents reviewed are listed in the Attachment. The following operability evaluations were reviewed and represented five inspection samples:

- CR IP2-2008-01421, 22 safety injection pump failed to start during testing;
- CR IP2-2008-01675, 22 & 23 emergency diesel generator (EDG) service water temporary modification
- CR IP2-2008-02236, 21 safety injection pump suction void following planned maintenance;
- CR IP2-2008-02406, 21 and 23 component cooling water pump combined seal leakage; and
- CR IP2-2008-02917, station blackout diesel functionality.

b. Findings

No findings of significance were identified.

.2 (Closed) URI 05000247/2007005-004: Impact of Incorrect Jacket Water and Lube Oil Control Elements on EDG Performance.

a. Inspection Scope

The inspectors evaluated an unresolved item (URI) concerning incorrect temperature control valve (TCV) elements installed on the 21 and 22 EDG jacket water and lube oil systems. The original EDG design required 170°F TCV elements in the jacket water system and 180°F TCV elements in the lube oil systems but was modified by a design basis change in 1989 to require 180°F TCV elements in the jacket water systems and 195°F TCV elements in the lube oil systems. Following completion of the EDG upgrades, on October 26, 2002, the original 170°F jacket water TCV elements and 180°F lube oil TCV elements were incorrectly installed on the 22 EDG. The incorrect jacket water and lube oil TCV elements were also installed on the 21 EDG on February 27, 2003. Given the number of upgrades that were made to the EDGs in 1989, Entergy contracted with a vendor to perform an analysis of past operability during the periods of warmest service water temperatures observed over the past three years.

The inspectors performed a review of the 2002-2003 procurement process and the completed work orders that installed the incorrect TCV elements on the EDGs. The inspectors also reviewed the engineering analysis which determined that the EDGs were operable for the highest service water temperature observed over the past three years. The inspectors determined that the engineering analysis was adequate and the 21 and 22 EDG past operability was appropriately characterized. This URI is closed.

b. <u>Findings</u>

<u>Introduction</u>: The inspectors identified a Green, NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” because Entergy personnel did not implement the requirements of procedure SAO-270, “Procurement Program,” for procurement of safety related temperature control valve (TCV) elements for the EDGs. Specifically, Entergy did not perform a technical evaluation as required for the TCV elements which resulted in the purchase and installation of incorrect TCV elements on the 21 and 22 EDGs between 2002 and 2003.

<u>Description</u>: In 1989, the EDG design was modified by DER-1691, “Engineering Evaluation of Increasing Overloading Capacity on the Emergency Diesel Generators,” which specified, in part, that 180°F TCV elements be installed in the jacket water system and 195°F TCV elements be installed in the lube oil system to account for an EDG power up-rate and a 10°F increase in design basis ultimate heat sink temperature. The 180°F and the 195°F control elements assured EDG operability during a 30 minute period at a rating of 2300 kilowatt (kW) and a higher design basis service water temperature of 95°F. The original 170°F and 180°F control elements were designed for a maximum short-term loading of 1950kw and a maximum service water temperature of 85°F.

Following completion of the EDG upgrades, on October 26, 2002, the original 170°F jacket water control elements and 180°F lube oil control elements were incorrectly installed on the 22 EDG under WO 02-33401. The incorrect jacket water and lube oil control elements were also installed on the 21 EDG on February 27, 2003, under WO 01-22824. The inspectors reviewed the controlled equipment database and determined that the database was appropriately updated for the higher rated TCV elements during the period that the incorrect TCV elements were installed.

The inspectors reviewed procedure SAO-270, “Procurement Program,” section 4.7.4, which states, “If identical items are not available then the procurement engineer shall perform a technical evaluation and prepare a Determination of Equivalency (DOE) or modification to accommodate the replacement.” Contrary to this procedure direction, station personnel, for WO-01-22824 and WO 02-33401, ordered TCV elements that were different than the installed TCV elements and contrary to the specified TCV elements in the EDG equipment database. These incorrect TCV elements were subsequently installed in the 21 and 22 EDGs without Entergy performing a technical evaluation, Determination of Equivalency, or modification package. Entergy entered this issue into the corrective action program (CR-IP2-2007-04905 and CR-IP2-2008-00013) and installed the correct 180°F TCV elements in the jacket water system and 195°F TCV elements in the lube oil system for 21 and 22 EDGs.

The inspectors determined that not fully implementing the procurement program procedure and performing an appropriate technical evaluation was a performance deficiency.

Analysis: The inspectors determined that this finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, it was similar to example 5.c listed in IMC 0612, Appendix E, in that nonconforming TCV elements were installed in the 21 and 22 EDGs and the EDGs were subsequently returned to service. The inspectors evaluated this finding using the Phase 1 analysis in IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The inspectors determined that this finding was of very low safety significance (Green) because the installation of incorrect TCV elements represented a design deficiency that was confirmed not to result in a loss of operability of the EDGs. Specifically, the inspectors reviewed an engineering analysis that verified past operability for the EDGs assuming the highest observed service water temperature experienced during the past three years. The inspectors determined that the analysis was adequate and that the EDGs were capable of supplying required electrical loads.

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that, "Activities affecting quality shall be prescribed documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to this, on October 26, 2002, and again on February 27, 2003, Entergy did not follow procurement procedure SAO-270, "Procurement Program," which resulted in incorrect TCV elements being purchased and installed in the 21 and 22 EDG jacket water and lube oil systems. Entergy entered this issue into the corrective action program (CR-IP2-2007-04905 and CR-IP2-2008-00013) and installed the correct 180°F TCV elements in the jacket water system and 195°F TCV elements in the lube oil system for 21 and 22 EDGs. Because this finding is of very low safety significance and has been entered into the CAP, this violation is being treated as an NCV, consistent with Section V1.A of the Enforcement Policy: **NCV 05000247/2008003-01, Failure to Follow Site Procurement Procedure for EDG Temperature Control Valve Elements.**

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (71111.17 - 1 sample)

a. Inspection Scope

The inspectors reviewed a modification which installed a station blackout/Appendix-R diesel generator (SBO/App-R DG) to be utilized as an alternate AC power source during station blackout (SBO) and alternative safe shutdown fire events, in-place of existing gas turbine generators. The modification revised the licensing and design basis to rely on the new SBO/App-R DG for compliance with 10 CFR50.63 (Station Blackout Rule) and 10 CFR50 Appendix-R (App-R, Fire Protection Rule). The inspectors assessed whether the design and licensing bases, and performance capability of the risk significant systems, structures and components had been degraded by the modification. In addition, the 10 CFR 50.59 screen associated with this modification was reviewed to assess whether Entergy's threshold for performing safety evaluations was consistent with 10 CFR 50.59.

The inspectors reviewed the post modification test procedure to determine whether it was adequate to ensure the SBO/App-R DG would function in accordance with design assumptions and regulatory requirements. The inspectors also reviewed the post modification test results to assess whether the SBO/App-R DG could perform its intended design functions and to determine its readiness for operation. The inspectors evaluated design inputs and assumptions in the supporting calculations and analyses to determine whether they were technically appropriate and consistent with the UFSAR and licensing basis. These inputs and assumptions included component safety classification, electrical load ratings, diesel engine cooling and fuel consumption, and manual operator action timelines. The inspectors also reviewed selected procedures, drawings, design basis documents, and UFSAR sections to verify that the affected documents were appropriately updated.

The inspectors walked down the SBO/App-R DG operating procedure to evaluate manual operator action timelines, and to verify the procedure was adequate for transient and abnormal events, consistent with its intended design functions. For the accessible components associated with the modification, the inspectors walked down the system to detect possible abnormal installation conditions. In addition, the inspectors interviewed plant staff, including the responsible design engineers, the system engineer, and licensed senior reactor operators. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

.1 Post Modification Test Deficiencies

Introduction: The inspectors identified a Green NCV of Technical Specification 5.4.1, "Administrative Controls - Procedures," because Entergy did not implement the requirements of EN-DC-117, "Post Modification Testing and Special Instructions," to control revisions to the SBO/App-R DG post modification test, or to review and approve the test results. Specifically, the SBO/App-R DG post modification test, as performed, approved, and documented, was not sufficient to demonstrate the SBO/App-R DG could perform its intended design functions.

Description: An extensive modification replaced existing gas turbines with a single diesel generator as the credited alternate AC power source, for compliance with 10 CFR50.63 (Station Blackout Rule) and 10 CFR50 Appendix-R (App-R, Fire Protection Rule) requirements. As part of the modification, a post modification test was developed and performed to:

- demonstrate SBO/App-R DG operability;

- demonstrate SBO/App-R DG support systems operability; and
- satisfy Technical Requirements Manual (TRM) surveillance requirements.

The inspectors reviewed post modification test 51297433-01. The test was performed between April 10 and 25, 2008. The test was intended to verify support system functions were operable, and to demonstrate, by test, that the diesel engine and generator could perform its intended design functions, satisfied reliability requirements, and satisfy TRM operability requirements. The inspectors interviewed plant personnel present during the testing, including the system engineer, lead electrical design engineer, and the licensed senior reactor operator responsible for the functional testing. The testing included a 24 hour endurance run at 100 percent rated electrical load; two hour run at 120 percent rated electrical load; partial load reject test; 20 separate one-hour cold start runs to verify reliability; and verification the SBO/App-R DG could be started, aligned, and load an electrical bus within one hour, during simulated SBO and postulated alternate safe shutdown fire events.

The inspectors identified examples where the post modification test was insufficient to demonstrate the SBO/App-R DG could perform its intended design functions.

1. Critical operating parameters were not evaluated against established acceptance criteria. This included, at a minimum, lube oil temperature and pressure, jacket water temperature, fuel pump pressure, and battery voltage.

2. Operating parameter trends were not recorded or evaluated to demonstrate the SBO/App-R DG could successfully operate for 72 hours, as required by design.

3. The post modification test was not used in the field during the conduct of functional testing. After two weeks of in-field testing, multiple test results were recorded, based on recollection and personal notes.

4. No independent review and approval of the test results was recorded.

5. The post modification test was informally assessed as equivalent to the required TRM surveillance tests, but did not have equivalent acceptance criteria or test control, such as, generator electrical load and engine start, stop, and loading times; and verification of stable operating temperatures was not recorded.

6. Several test required steps were signed off as UNSAT without documented evaluation or a condition report issued.

7. Two test steps required data entry, but were signed off as SAT without appropriate data entered.

Based on the available test documentation and the method and duration of testing, the inspectors were unable to independently verify whether the SBO/App-R DG could perform its design functions. Therefore, the inspectors concluded there was reasonable doubt whether the SBO/App-R DG was capable of performing its intended design functions.

Entergy entered these issues into the corrective action program and performed prompt operability determinations. Entergy concluded the SBO/App-R DG was operable, based on operator and engineer interviews, control room log reviews, and limited recorded operating data. Subsequently, on June 12, 2008, Entergy performed 2-PT-M110, “Appendix-R DG Functional Test," in accordance with TRM surveillance requirement 3.8B.5 to start and run the SBO/Appendix-R DG for a period of time sufficient to reach stable operating temperatures and demonstrate proper operation of the output breaker. In addition, Entergy developed a more detailed modification test to perform a second 24 hour run. On June 16 to 17, Entergy performed 2-TOP-011, "Appendix-R DG Test," which implemented the second 24 hour run, and provided thorough documentation of critical operating parameters, sufficient to verify the SBO/App-R DG and support systems could perform their intended design functions. NRC inspectors observed both additional tests and determined that test control and test documentation were adequate to provide for post-modification testing.

The inspectors concluded that for the initial operability of a new system, there is no presumption of operability until after an adequate post modification or pre-operational test verifies the as-built configuration satisfies critical design assumptions (e.g., was the design properly implemented). Therefore, a post modification test performs an essential role to establish initial operability, as opposed to a surveillance test, which is used to verify continued operability.

The inspectors verified that Entergy had correctly determined the SBO/App-R DG was required to satisfy the augmented QA program requirements of Regulatory Guide 1.155 Appendix-A, in order to comply with 10 CFR 50.63. As such, Entergy’s QA program required the post modification test to satisfy the following QA program requirements:

- inspections, tests, and administrative controls should be prescribed by documented instructions and procedures;

- program for independent inspection of activities should be established and executed to verify conformance with documented installation and test procedures;

- test program should be established and implemented to ensure that testing is performed and verified by inspection and audit, to demonstrate conformance with design and system readiness requirements; and

- records should be prepared and maintained to furnish evidence that the criteria were met.

Entergy fleet procedure EN-DC-117 established the administrative controls for post modification testing to ensure the applicable QA requirements were satisfied. EN-DC-117 required, in part, test control, documented review and approval of test revisions, independent review and approval of test results, and review and disposition of unsatisfactory test results. Although EN-DC-117 was required to be followed for the SBO/App-R DG post modification test, the inspectors concluded it was not used.

The inspectors determined that placing a new system in-service, without an adequate post modification test to establish initial operability, was a performance deficiency that was reasonably within Entergy’s ability to foresee and prevent. Specifically, Entergy did not ensure that EN-DC-117, an applicable administrative control procedure, was implemented.

Analysis: The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the post modification test deficiencies represented reasonable doubt regarding the operability of the SBO/App-R DG. The inspectors evaluated this finding using the Phase 1 analysis in IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The inspectors determined that this finding was of very low safety significance (Green) because it was not a design or qualification deficiency; it did not represent a loss of system safety function of a single train; and it did not screen as potentially risk significant due to external events. Additionally, Entergy performed subsequent testing that demonstrated operability.

The finding had a cross-cutting aspect in the area of human performance because Entergy's supervisory and management oversight of work activities for the SBO/App-R DG post modification test was not adequate to ensure testing was properly performed. (H.4(c))

Enforcement: Technical Specification 5.4.1., "Administrative Controls - Procedures," requires that written procedures shall be established, implemented, and maintained covering the applicable requirements and recommendations of Regulatory Guide (RG) 1.33, Revision 2, Appendix-A. RG 1.33, in part, requires administrative procedures for procedure adherence and procedure review and approval, and general procedures for control of modification work. EN-DC-117, Revision 0, "Post Modification Testing and Special Instructions" is an Entergy quality related procedure to control post modification testing. EN-DC-117, in part, requires test control, documented review and approval of test procedure revisions, review and approval of test results, and review and disposition of unsatisfactory test results. Contrary to the above, as of June 6, 2008, Entergy did not implement the requirements of EN-DC-117 for the SBO/App-R DG post modification test. Entergy entered this finding in the corrective action program, as CR-IP2-2008-02917. Because the violation was of very low safety significance and was entered into the corrective action program, this violation is being treated as a non-cited violation per Section VI.A of the NRC Enforcement Policy. **(NCV 05000247/2008003-02, Station Blackout/Appendix-R Diesel Generator Post Modification Test Deficiencies)**

.2 Inadequate Operating Procedure

Introduction: The inspectors identified a Green NCV of Technical Specification 5.4.1, "Administrative Controls - Procedures," because the SBO/App-R DG operating procedure 2-SOP-27.6, "Appendix-R Diesel Generator Operation," was not adequate. Specifically, the procedure could not be performed as written, and was not sufficient to ensure operators could start the SBO/App-R DG, and energize an electrical bus within the required time of one hour.

Description: Operating procedure 2-SOP-27.6, Revision 0, "Appendix-R Diesel Generator Operation," was written as part of the SBO/App-R DG modification. This procedure was required to be implemented by emergency operating procedure ECA 0.0, "Loss of All AC Power," and by abnormal operating procedure 2-AOP-SSD-1, "Control Room Inaccessibility, Safe Shutdown Control."

The inspectors reviewed the new operating procedure for the SBO/App-R DG, and performed procedure walkdowns with licensed operators, to assess the adequacy of the new procedure and verify whether the manual operator actions could be performed within one hour, as required by the design and licensing bases. The inspectors identified two examples which demonstrated that the procedure was not adequate.

(1) The inspectors determined a critical step could not be performed as written. The SBO/App-R DG support systems, including fuel oil transfer pump, battery charger, and area cooling fan are powered from a local diesel auxiliary motor control center (MCC). The diesel auxiliary MCC is normally powered from station MCC-22, but can be powered directly from the output of the SBO/App-R DG, by use of a local transfer switch. Since MCC-22 will be de-energized during an SBO event and certain postulated fire events, the diesel auxiliary MCC must be manually transferred from its normal power source (i.e., MCC-22) to its alternate power source (i.e., SBO/App-R DG) in order to power critical diesel support systems. During either an SBO or an alternate safe shutdown fire event, the procedure directed operators to rotate and hold the SBO/App-R DG auxiliaries transfer switch in the “Normal” position, in order to transfer the auxiliaries to the SBO/App-R DG output.

The inspectors identified switch nameplate inconsistencies between the post modification test and the operating procedure. In response, Entergy attempted to verify proper transfer switch operation during the second 24 hour run, by performing the operating procedure instructions, as written. Entergy determined that with the transfer switch in the "Normal" position, the diesel auxiliary power sources aligned to MCC-22, instead of the diesel generator output. Subsequently, Entergy verified by test, that with the switch in the "Standby" position, the diesel auxiliaries aligned to the diesel generator output. Entergy revised the operating procedure to correct this deficiency. In addition, Entergy performed a prompt operability determination and concluded operator training would have been sufficient for operators to troubleshoot and resolve this issue during an actual event. The inspectors determined that this deficiency would have made event response more complicated and placed operators in a knowledge-based operating mode, instead of a rule-based mode.

(2) The inspectors determined that the timeline demonstration methodology was not adequate to ensure operators could energize an electrical bus within the required time. The SBO/App-R DG design and licensing bases required that an electrical bus be energized within 1 hour, during both SBO and alternate safe shutdown fire events. The inspectors identified that Entergy had not performed a timeline verification or validation to ensure the new operating procedure could be performed within 1 hour. Entergy's demonstration had been accomplished by simulation, not by test or actual performance of the new procedure. The post modification test documented a time of 37 minutes to energize an electrical bus during an SBO or fire event, but contained no detail as to how the time was determined. The inspectors identified that the post modification test simulation did not include time allowances to perform expected manual operator actions to locally close 13kV and 6.9 kV circuit breakers, manually open one of two rollup doors (subsequently one door was found to be inoperable), or manually operate the auxiliaries MCC transfer switch (procedure step subsequently found to not work). In addition, the procedures directed the operators to first energize half-bus 3A, then energize Bus 6A from half-bus 3A. The electrical loads needed to mitigate the event were then energized from Bus 6A, not half-bus 3A. However, the inspectors identified that Entergy's simulated timeline stopped when half-bus 3A was energized. Entergy subsequently determined that it could take an additional 10 minutes to energize the correct bus. The inspectors also identified several issues which would have delayed alignment during an actual event. Specifically:

- Necessary tools and personnel protective equipment (PPE) were not pre-staged or referenced in the procedure. The procedure required the use of PPE to manually operate 13kV and 6.9 kV circuit breakers, and a tool (screwdriver) was needed to open local breaker cabinets. Inspectors determined operators would probably have made separate trips, one for PPE and later, one for a tool.

- The procedure directed operators to perform electrical lineups in the control room, but the sequence of procedure steps directed control room operators to unnecessarily wait on local breaker manipulations, before completing the control room lineup to energize a bus.

- Prior to starting the diesel engine, the procedure directed operators to position the diesel engine cooling water throttle valves to a predetermined flow value.

- After the engine was started, but before energizing an electrical bus, the procedure directed operators to adjust the cooling water throttle valves to maintain normal cooling temperatures. The inspectors identified that the procedure did not specify a range or any operational limit for normal cooling temperatures. In addition, the cooling water throttle valves were located on the opposite side of the diesel from the temperature indication. Since this step was required to be performed prior to energizing an electrical bus and the throttle valves had already been positioned to a predetermined value, this step appeared to be an unnecessary delay.

Since the timeline demonstration to energize a bus was simulated, in lieu of an actual demonstration by test, there was a higher level of uncertainty associated with the assumed simulated task completion times. In addition, Entergy's demonstration did not include time allowances for required manual operator actions, did not account for potential delays in lineup or operation of the diesel or breaker sequencing, and did not include the final sequence of breaker manipulations to actually get power to an electrical load. Therefore, considering the unaccounted operator action times, potential procedural delays, and the uncertainty related to the simulations, the inspectors concluded there was reasonable doubt whether the SBO/App-R DG was capable of performing its intended design function to energize an electrical bus within one hour.

In response, Entergy performed prompt operability determinations, which included several additional demonstration walkdowns to more appropriately verify that the SBO/App-R DG operating procedure could energize an electrical bus within 1 hour. In addition, Entergy subsequently revised the procedure and pre-staged equipment to reduce the time needed to energize a bus within one hour. Entergy's most recent operability determination concluded that a bus could be energized within 47 minutes, during an event.

The inspectors determined that an inadequate operating procedure for an alternate AC power source was a performance deficiency that was reasonably within Entergy’s ability to foresee and prevent. Specifically, a procedure step to energize critical diesel auxiliary support systems would not work as written, there was an insufficient demonstration to verify whether an electrical bus could be energized within 1 hour, and procedural electrical lineups were not in accordance with the approved design.

Analysis: The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the procedure deficiencies resulted in a reasonable doubt whether the SBO/App-R DG could be started and aligned in a timely and correct manner, as required by design. The inspectors evaluated this finding using the Phase 1 analysis in IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance (Green) because it was not a design or qualification deficiency; it did not result in an actual loss of safety function of a single equipment train based upon a reasonable expectation that operator training would be adequate to compensate for procedural inadequacies; and it was not potentially risk significant due to external events.

The finding had a cross-cutting aspect in the area of human performance because Entergy's procedure for the SBO/App-R DG was not adequate to assure nuclear safety in implementing necessary operator actions for a SBO. (H.2(c))

Enforcement: Technical Specification 5.4.1, "Administrative Controls - Procedures," required that written procedures shall be established, implemented, and maintained to implement the Fire Protection Program. The SBO/App-R DG operating procedure, 2-SOP-27.6, "Appendix-R Diesel Generator Operation," Revision 0, was a procedure required to implement the Fire Protection Program, in selected fire events, as determined by Entergy's alternate safe shutdown fire analysis. Contrary to the above, as of June 6, 2008, operating procedure 2-SOP-27-6, Revision 0, was not adequate to implement the required alternative safe shutdown methodology, in accordance with the Indian Point safe shutdown analysis. Entergy entered this finding into the corrective action program, as CR-IP2-2008-02938. Because the violation was of very low safety significance and was entered into the corrective action program, this violation is being treated as a non-cited violation per Section VI.A of the NRC Enforcement Policy. **(NCV 05000247/2008003-03, Inadequate Operating Procedure for Station Blackout/Appendix-R Diesel Generator)**

1R18 Plant Modifications (71111.18 – 2 samples)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed one temporary plant modification package for the installation of temporary service water return hoses from the 22 and 23 EDGs. The inspectors verified the design bases, licensing bases, and performance capability of the system was not degraded by the temporary modification. The inspectors verified that the temporary hoses adequately provided a discharge path for service water flow from the EDGs as required by plant design and reviewed the temporary modification against the requirements of 10 CFR 50.59. In addition, the inspectors interviewed plant staff, and reviewed issues that had been entered into the corrective action program to determine whether Entergy had been effective in identifying and resolving problems associated with the temporary modification. The documents reviewed are listed in the Attachment. The review of this temporary modification represented one inspection sample.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" because Entergy did not adequately analyze, document, or translate seismic design basis considerations into the design documentation or into the maintenance procedure associated with the installation of temporary service water return line modifications on the 21 and 23 emergency diesel generator (EDG) heat exchangers.

Description: On March 28, 2008, Entergy installed a temporary modification on the 21 EDG in accordance with work order 00143404 and maintenance procedure 2-TAP-002-EDG, "Removal & Installation of Service Water Drain Line on Emergency Diesel Generator Heat Exchangers," Revision 1, in order to facilitate maintenance on the service water return line on the discharge side of the engine heat exchangers. On March 31, Entergy installed a similar temporary modification on the 23 EDG in accordance with work order 00143405 and maintenance procedure 2-TAP-002-EDG. The temporary modifications temporarily replaced safety related service water return piping with non-qualified commercial grade fire hose.

On April 1, 2008, the inspectors evaluated the temporary modifications on the 21 and 23 EDG service water return piping in accordance with Inspection Procedure 71111.18, "Plant Modifications." At the time of the inspection, the plant was in Mode 6 with reactor core fuel offload in progress. The inspectors noted that the fire hoses installed on the discharge side of the 21 and 23 EDGs did not appear to be adequately supported. In addition, the hose on the 23 EDG was routed over the top of engine fuel oil filter differential pressure sensing line instrument tube supports and it was also unrestrained and leaning against a jacket water vent line. Service water was actively flowing through the hose, and the additional dead weight of the hose water was resting on the components mentioned above. The inspectors reviewed maintenance procedure 2-TAP-002-EDG which was used to install the temporary modifications. The inspectors also reviewed the 10 CFR 50.59 screening documentation dated February 1, 2006, which was used as part of the procedure development and approval process. The procedure listed general instructions regarding where to install the temporary fire hose and how to route it out of the diesel enclosure and into a nearby storm drain. Additionally, it did not provide specific instructions or cautions related to routing the hose over or near safety related components needed to assure EDG functionality. The procedure directed that the hose be secured to structural members using tie-wraps or other mechanical means, but it did not specify where to install these restraints. Entergy's 10 CFR 50.59 screened the activity out of 10 CFR 50.59 and provided a justification that briefly stated that the installation would not adversely impact cooling for the EDGs. The temporary modification package did not identify seismic design requirements as a consideration; however, the inspectors observed that the service water return piping was seismically designed for the EDG cooling function.

In response to inspector questions in this regard, on April 2, 2008, Entergy personnel added additional temporary restraints, modified some of the existing temporary restraints, and entered the issue into the corrective action program under condition report (CR)-IP2-2008-01675. Entergy performed a subsequent operability evaluation of the as found condition as documented in CR-IP2-2008-01675 which provided reasonable assurance that the EDGs would have performed the safety function during a design basis seismic event. In addition, several CRs related to this finding were entered into the corrective action program including CR-IP2-2008-01618, 01619, 01775, and 01777.

The inspectors interviewed Entergy personnel involved with the development of the temporary modification procedure. The inspectors also reviewed documentation associated with a previous temporary modification, TA-04-2-151, that was used to develop the procedure. Entergy personnel has previously documented that the temporary hoses were adequate from a pressure retaining standpoint and would not adversely affect the ability to cool the EDG; however, there was no documentation to address seismic capability nor did the documentation describe specific and adequate compensatory measures (i.e. hose restraints and routing) to ensure operability during a design basis seismic event.

The inspectors determined that Entergy did not adequately control and assure seismic design basis requirements while implementing the temporary modifications on the 21 and 23 EDG service water return lines.

Analysis: This finding was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of the EDG system during a postulated Seismic Class I design basis event. Specifically, seismic design considerations for the EDG were not adequately analyzed, documented, or translated into the design documentation or into the associated temporary modification installation procedure. Entergy performed additional engineering calculations to verify that the modification would not adversely affect the EDGs during a design basis seismic event. In addition, temporary restraints were added or modified after the finding was identified to resolve seismic concerns.

The inspectors evaluated the significance of this finding using IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs [Pressurized Water Reactors] and BWRs [Boiling Water Reactors]." The inspectors determined that Checklist 4 was applicable because the unit was in refueling with reactor coolant system level greater than 23 feet. The finding was determined to be of very low safety significance (Green) because the finding did not degrade the equipment, instrumentation, training or procedures needed for any shutdown safety function. Even though this deficiency initially raised questions regarding the operability of the EDGs due to seismic concerns, Entergy performed a subsequent operability evaluation which provided reasonable assurance that the EDGs would have performed the safety function during a design basis seismic event.

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because Entergy personnel made non-conservative assumptions regarding the seismic adequacy of the design and did not validate engineering analysis assumptions. (H.1(b))

Enforcement: 10 CFR 50 Appendix B Criterion III, "Design Control," states that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Contrary to the above, on March 28 and March 31, 2008, Entergy removed qualified service water return piping from the 21 and 23 EDG heat exchangers and replaced it with non-qualified commercial grade fire hose to facilitate maintenance without performing or documenting an adequate seismic engineering evaluation. Because this issue was of very low safety significance and was entered into Entergy's corrective action program (CR-IP2-2008-01675), this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000247/2008003-04, Inadequate Seismic Design Control Associated with a Temporary Modification to Emergency Diesel Generator Service Water Return Piping**.

.2 Permanent Modifications

a. Inspection Scope

The inspectors reviewed modification documents associated with the replacement and design change for the supply circuit breaker in the 23 power panel supplying 23 static inverter. The inspectors reviewed the installation and testing of the new breaker in accordance with modification EC 0000007215, "Replace Existing 100A Breaker with 150A Breaker in Circuit 13 of 125VDC Power Panel 23." The inspectors also reviewed applicable regulatory requirements and industry standards to ensure the protection scheme complied with those standards and requirements and reviewed the permanent modification against the requirements of 10 CFR 50.59. The documents reviewed are listed in the Attachment. The review of this permanent modification represented one inspection sample.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 – 9 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 that: test acceptance criteria were clear, the test demonstrated operational readiness and were consistent with design basis documentation; test instrumentation had current calibrations, and appropriate range and accuracy for the application; and the tests were performed as written, with applicable prerequisites satisfied. Upon completion of the tests, 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 50, Appendix B, Criterion XI, "Test Control." The documents reviewed are listed in the Attachment. The following post-maintenance activities were reviewed and represented nine inspection samples:

- Work Order (WO) 00147172, containment relief valve PCV-1191 following corrective maintenance;
- WO 00121475, 23 battery charger following corrective maintenance;
- WO 00147349, 10 kVA static inverter 24 following corrective maintenance.
- WO 51303518, 23 battery acceptance testing following battery replacement;
- WO 51287182, excess letdown heat exchanger leak test following relief valve replacement;
- WO 00147906, 21 component cooling water pump following seal repair;
- WO 51311499, residual heat removal system suction valve 731 following maintenance;
- WO 51657655, 21 emergency diesel generator following planned maintenance; and
- WO 00137029, 21 charging pump following block replacement.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20 – 1 sample)

a. Inspection Scope

The inspectors reviewed the schedule and risk assessment documents associated with the Indian Point Unit 2 refueling outage 2R18, to confirm that Entergy appropriately considered risk, industry operating experience, and previous site-specific problems in developing and implementing a plan that ensured maintenance of defense-in-depth for safety functions. Prior to the refueling outage, the inspectors reviewed Entergy's outage risk assessment to identify risk-significant equipment configurations and to determine whether planned risk management actions were adequate. The inspectors observed the Unit 3 shutdown and cooldown on March 25, 2008, to verify that cooldown rates met TS requirements. Inspectors also evaluated conditions within containment for indications of unidentified leakage and damaged equipment. The inspectors verified that Entergy managed the outage risk commensurate with the outage plan. Inspectors periodically observed refueling activities from the refueling bridge in containment and the spent fuel pool (SFP) to verify refueling gates and seals were properly installed and to determine whether foreign material exclusion boundaries were established around the reactor cavity. Core offload and reload activities were periodically observed from the control room and refueling bridge to verify whether operators adequately controlled fuel movements in accordance with procedures.

The inspectors verified that tagged equipment was properly controlled and equipment configured to safely support maintenance work. Equipment work areas were periodically observed to determine whether foreign material exclusion boundaries were adequate. During control room tours, the inspectors verified that operators maintained adequate reactor coolant system level and temperature and that indications were within the expected range for the operating mode.

The inspectors determined whether offsite and onsite electrical power sources were maintained in accordance with TS requirements and consistent with the outage risk assessment. Periodic walkdowns of portions of the onsite electrical buses and the emergency diesel generators were conducted during risk-significant electrical configurations. The inspectors verified through routine plant status activities that the decay heat removal safety function was maintained with appropriate redundancy as required by TS and consistent with Entergy's outage risk assessment. During core offload conditions, the inspectors periodically determined whether the spent fuel pool cooling system was performing in accordance with applicable system operating procedures and consistent with Entergy's risk assessment for the refueling outage. Equipment and procedures to mitigate a potential loss of spent fuel cooling condition were reviewed by the inspectors to ensure they were available and ready for use.

Reactor coolant system inventory controls and contingency plans were reviewed by the inspectors to determine whether they met TS requirements and provided for adequate coolant inventory control. The inspectors reviewed procedures and observed portions of activities in the control room when the unit was in the reduced inventory mode of operation, including mid-loop operations for vacuum refill of the reactor coolant system. Water level and core temperature measurement instrumentation was reviewed by the inspectors to ensure they were installed and operational. Calculations that provided time to core boil information were also reviewed for reactor coolant system reduced inventory conditions as well as for the spent fuel pool during higher heat loads.

Containment status and procedural controls were reviewed by the inspectors during fuel offload and reload activities to verify that TS requirements and procedure requirements were met for containment. Specifically, the inspectors verified that during fuel movement activities, personnel, materials, and equipment were staged to close containment penetrations as assumed in the licensing basis. The inspectors observed plant heat up and start up activities including the approach to criticality. In addition, the inspectors observed the main generator synchronization to the electrical grid, and initial power ascension. The documents reviewed during this inspection are listed in the Attachment. The combined inspection activities described above represent one inspection program sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 – 6 samples)

a. Inspection Scope

The inspectors observed performance of portions of surveillance tests and/or reviewed test data for selected risk-significant SSCs 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 accurate calibration, and appropriate range and accuracy for the application; and tests were performed as written, with applicable prerequisites satisfied. Following the tests, 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 six inspection samples:

- 2-PT-R084B, “22 Emergency Diesel Generator 8 Hour Load Test,” Revision 13;
- 2-PT-R016, “Recirculation Pumps,” Revision 20;
- 2-PT-R027C-DS005, “SJAE Exhaust to V.C. Valves PCV-1229 and PCV-1230,” Revision 11 [Containment Isolation Valves];
- 2-PT-Q029C, “23 Safety Injection Pump,” Revision 19 [In-Service Test];
- 0-SOP-LEAKRATE-001, “RCS Leakrate Surveillance, Evaluation and Leak Identification,” Revision 0; and
- 2-PT-M110, “Appendix R Functional Test,” Revision 1.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness (EP)

1EP2 Alert and Notification System (ANS) Evaluation (711114.02 - 1 sample)

a. Inspection Scope

Region-based specialist inspectors continued to conduct inspections of the existing Indian Point Energy Center alert and notification system (ANS) and also reviewed testing of the new siren system. Inspection activities were conducted onsite throughout the quarter between April 1 and June 30, 2008. 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 19, 2007.

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

- Observed a full volume sounding for acoustical testing (April 15, 2008)
- Observed an after hours full volume sounding (June 23, 2008)

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. The inspectors reviewed the results from the quarterly test conducted on June 4, 2008.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)

a. Inspection Scope

The inspectors observed an emergency preparedness training drill conducted on May 14, 2008. The inspectors used the guidance in NRC Inspection Procedure 71114.06, “Drill Evaluation,” to perform this inspection. The inspectors observed the drill and critiques that were conducted from participating facilities onsite, specifically the Unit 2 plant simulator and the emergency operations facility. The inspectors focused on identification of weaknesses and deficiencies in classification and notification timeliness, quality and accountability of essential personnel during the drill. The inspectors observed Entergy’s critique and compared Entergy’s self-identified issues with the observations from the inspectors’ review to ensure that performance issues were properly identified. This drill evaluation represented one inspection sample.

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)

a. Inspection Scope

During April 7-11, 2008, the inspectors conducted the following activities to verify that Entergy 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, site technical specifications, and Entergy's procedures.

(1) Radiation work permits (RWPs) were reviewed that provide access to exposure significant areas of the plant including high radiation areas. Specified electronic personal dosimeter alarm set points were reviewed with respect to current radiological condition applicability and workers were queried to verify their understanding of plant procedures governing alarm response and knowledge of radiological conditions in their work area.

(2) There were no radiation work permits for airborne radioactivity areas with the potential for individual worker internal exposures of >50 mrem CEDE.

(3) During April 7-11, 2008, the following radiologically significant work activities were reviewed with respect to the radiological work requirements:

- refueling activities;
- reactor cavity drain down and reactor vessel head reinstallation;
- containment sump modification;
- 24 reactor coolant pump motor replacement activities; and
- scaffold and shielding installation and removal activities inside containment.

(4) During observation of the work activities listed in (3) above, the adequacy of surveys, job coverage and contamination controls were reviewed.

(5) There were no significant dose gradients requiring relocation of dosimetry for the radiologically significant work activities listed in (3) above.

(6) During observation of the work activities listed in (3) above, radiation worker performance was evaluated with respect to the specific radiation protection work requirements and their knowledge of the radiological conditions in their work areas.

(7) During observation of the work activities listed in (3) above, radiation protection technician work performance was evaluated with respect to their knowledge of the radiological conditions, the specific radiation protection work requirements and radiation protection procedures.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 - 3 samples)

a. Inspection Scope

During April 7-11, 2008, the inspectors 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 ALARA program was reviewed against the criteria contained in 10 CFR 20.1101(b) and Entergy's procedures.

(1) The following highest exposure work activities for the spring 2008 Unit 2 refueling outage were selected for review:

- refueling activities;
- reactor cavity drain down and reactor vessel head reinstallation;
- containment sump modification;
- 24 reactor coolant pump motor replacement activities; and
- scaffold and shielding installation and removal activities inside containment.

(2) With respect to the work activities listed in (1) above, these job sites were observed to evaluate if surveys and ALARA controls were implemented as planned.

(3) With respect to the work activities listed in (1) above, radiation worker and radiation protection technician performance was observed during the performance of these work activities to demonstrate the ALARA principles.

The inspectors reviewed 11 condition reports associated with the radiation protection program that were initiated between December 2007 and March 2008. The inspector verified that problems identified by these condition reports were properly characterized in the licensee'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.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification (71151 – 3 samples)

a. Inspection Scope

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

Initiating Events Cornerstone

- Unplanned Scrams with Complications per 7000 Critical Hours (April 2007 to March 2008)

Mitigating Systems Cornerstone

- Safety System Functional Failures (April 2007 to March 2008)

- Mitigating Systems Performance Index – Emergency Alternating Current Power System (April 2007 to March 2008)

The inspectors reviewed data and plant records from April 2007 to March 2008. The records included performance indicator data summary reports, licensee event reports, operator narrative logs, 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 (71152 – 1 sample)

.1 Routine Problem Identification & Resolution 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, and attending condition report 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 further follow-up and review. The inspectors assessed Entergy's threshold for problem identification, adequacy of the causal analysis, extent of condition reviews, and operability determinations, and timeliness of the associated corrective actions. The condition reports reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified

.2 PI&R Annual Sample Review: 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 of the corrective action program, such as trend reports, performance indicators, major equipment problem lists, maintenance rule assessments, and maintenance or corrective action program backlogs.

The inspectors reviewed Entergy's corrective action program database for the fourth quarter of 2007 and the first quarter of 2008 to assess the total number and significance of condition reports (CRs) written in various subject areas, such as individual department-generated CRs, or for particular equipment, such as EDGs, to identify notable trends, if applicable. The inspectors also reviewed Entergy's corrective action program quarterly trend reports and nuclear oversight quarterly reports for the fourth quarter of 2007 and the first quarter of 2008, to ensure Entergy was appropriately evaluating and trending adverse conditions.

b. Assessment and Observations

No findings of significance were identified.

The inspectors determined that Entergy was appropriately identifying and evaluating trends from identified adverse conditions and other available data.

4OA3 Event Follow-up (71153 - 3 samples)

.1 Unit 2 Manual Turbine Trip due to Failed Main Generator Negative Sequence Relay - April 20, 2008

a. Inspection Scope

The inspectors observed control room personnel response to a manual main turbine trip on April 20, 2008 after receiving an unexpected negative sequence alarm on the main generator during plant startup following the 2R18 refueling outage. The inspectors observed Entergy's post-turbine-trip response in the control room to verify that plant equipment response was as expected, and to ensure that operating procedures were being appropriately implemented. The inspectors attended post-turbine-trip review meetings, and discussed the event and corrective actions with plant management. Entergy performed a root cause for the event and determined that the relay, which was installed during the 2R18 refueling outage, was incorrectly labeled at the manufacturer's factory. Specifically, the ABB relay was labeled as a 3499A08A11 relay, whereas the part that was actually installed was wired as a 3499A08A09 relay. Both relays are identical in construction with the exception of internal wiring to accommodate different circuit grounding characteristics. These internal wiring differences caused the relay to fail when it was energized on April 20, 2008. Entergy contacted the manufacturer, performed an extent-of-condition review, replaced the failed relay with a 3499A08A11 relay that was verified to be a 3499A08A11 relay, and continued with plant startup. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Unit 2 Turbine Runback and Reactor Trip - April 21, 2008

a. Inspection Scope

On April 21, 2008, the inspectors observed operator actions following a manual reactor trip that was warranted due to plant conditions following an inadvertent main turbine runback. The inspectors discussed the trip with various Entergy staff to verify appropriate actions were taken following the event and to assess immediate corrective actions. In particular, the inspectors reviewed the sequence of events report and plant parameter trends to verify that operator actions were appropriate and in accordance with plant procedures, and that plant system responses were appropriate for the circumstances. The inspectors reviewed the post-transient evaluation report, and assessed the initial corrective actions implemented prior to unit restart. The inspectors also reviewed the initial licensee notification to the NRC regarding this event to ensure applicable regulatory requirements were satisfied.

b. Findings

Introduction: A Green, self-revealing NCV of Technical Specification 5.4.1, “Administrative Controls - Procedures,” was identified because Entergy personnel did not implement the requirements of plant startup procedure 2-POP-1.3, "Plant Startup from Zero to 45% Power," Revision 76. Specifically, operators performed a step out of sequence in the plant operating procedure that was not warranted by plant conditions, and resulted in a main turbine runback followed by a manual reactor trip initiated by control room operators.

Description: On April 21, 2008, during plant startup activities, an unanticipated turbine runback occurred from approximately 35 percent reactor power that resulted in fluctuations of steam generator water levels, and subsequently required an initiation of a manual reactor trip by the control room operators.

Following a review of the post-transient evaluation report, discussions with Entergy personnel, and information contained in condition report (CR)-IP2-2008-02334, the inspectors noted the following:

(1) Control room operators prematurely positioned the main boiler feed pump (MBFP) turbine runback arm/defeat switch, which was not warranted by plant conditions and contrary to plant startup procedure 2-POP-1.3, "Plant Startup From Zero To 45% Power," Revision 76. Additionally, this mis-positioning was under the direction and supervision of a senior licensed individual;

(2) The 22 MBFP speed was less than 3300 RPM immediately prior to the transient, which was an expected plant condition based on the progression of the plant startup, e.g., based on power level and plant procedures; and

(3) An unanticipated failure occurred in a bistable/relay module associated with the MBFP turbine runback circuitry. This bistable failure caused an erroneous (100 percent power) signal to the turbine runback circuitry while the plant was operating at 35 percent reactor power.

The inspectors noted that the transient occurred because the main turbine runback logic was satisfied by the combination of three conditions and/or inputs discussed above, or in general terms, was caused by a combination of an (1) Entergy human performance error, (2) an expected plant condition, and (3) an unanticipated equipment failure.

The inspectors identified a performance deficiency in that Entergy did not follow plant startup procedures. Specifically, the premature placement of the MBFP turbine runback arm/defeat switch into the "arm" position, coincident with a failure of an associated bistable/relay in the circuit, resulted in a plant transient. This issue was reasonably within Entergy’s ability to foresee and prevent, because the requirements that governed the positioning of the turbine runback arm/defeat switch are contained in their procedures.

Analysis: The finding was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone and impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions. Specifically, the placement of the turbine runback circuit arm/defeat switch into the "arm" position before plant conditions warranted, and contrary to procedural direction, coupled with an unanticipated equipment failure resulted in the turbine runback circuitry logic to be satisfied, and resulted in the plant transient. The inspectors evaluated this finding using Phase 1 of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined it to be of very low safety significance (Green) because it did not contribute to the likelihood of both a reactor trip and the likelihood that mitigation equipment or functions would be unavailable.

The finding had a cross-cutting aspect in the area of human performance because Entergy staff utilized work practices that did not support human error prevention techniques by proceeding in the face of uncertainty and unexpected circumstances, when they prematurely positioned the arm/defeat switch contrary to plant procedures and plant conditions. (H.4(a))

Enforcement: Technical Specification 5.4.1, "Administrative Controls - Procedures," requires that written procedures shall be established, implemented, and maintained covering the applicable requirements and recommendations of Regulatory Guide (RG) 1.33, Revision 2, Appendix-A. RG 1.33, in part, requires administrative procedures for plant start-up operations. 2-POP-1.3, "Plant Startup From Zero To 45% Power," is an Entergy procedure required for plant start-up operations. Contrary to the above, on April 21, 2008, operators did not properly implement plant start-up procedure 2-POP-1.3, Step 4.63.1, and mis-positioned a control room switch that contributed to an unnecessary plant transient following an unrelated circuit failure. Entergy entered this issue into the corrective action program as CR-IP2-2008-02334, initiated procedural enhancements, performed a post-trip evaluation, and a root cause evaluation. Because this issue was of very low safety significance and it was entered into Entergy's corrective action program, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. **NCV 05000247/2008003-05, Failure to Follow Plant Start-Up Procedure Regarding MBFP Turbine Runback Arm/Defeat Switch.**

.3 (Closed) Licensee Event Report (LER) 05000247/2008001-00, Manual Reactor Trip Due to Decreasing Steam Generator Levels Caused by Loss of Feedwater Flow as a Result of Feedwater Pump Speed Control Malfunction

a. Inspection Scope

On March 23, 2008, control room operators manually initiated a reactor trip from 98 percent reactor power in response to decreasing steam generator levels resulting from 22 MBFP runback and subsequent main turbine runback. Following the reactor trip, all control rods inserted and all safety systems functioned as designed. Entergy determined the cause of the MBFP runback was due to radiofrequency interference (RFI) from a digital camera that was being used to perform flash photography on 22 MBFP control circuitry located inside a control room cabinet. Entergy entered this issue into their corrective action program (CR IP2-2008-01333), and proceeded with plant cooldown for the planned 2R18 refueling outage which was scheduled to begin March 26, 2008. The inspectors' evaluation of initial operator response and follow-up actions was documented in Section 4OA3 of inspection report 05000247/2008002.

The inspectors reviewed LER 0500247/2008001-00, Entergy's causal analysis, and the associated corrective actions. The inspectors identified one self-revealing finding but no violations of NRC requirements were identified. This LER is closed.

b. Findings

Introduction: A Green, self-revealing finding was identified because Entergy did not implement the procedural requirements to evaluate flash photography in the vicinity of sensitive control cabinets. Specifically, Entergy did not implement procedure EN-NS-214, "Camera Controls for Access and Use," Revision 4, and evaluate the potential impact of flash photography on sensitive control circuitry.

Description: On March 23, 2008, Indian Point Unit 2 was making preparations for the upcoming 2R18 refueling outage with reactor coolant system boron at minimum and the reactor at 98 percent power in coastdown. At approximately 2200, Entergy personnel entered the control room to take flash photography of the 22 MBFP control circuitry located in a control room cabinet in support of 2R18 outage work order 51311785. Entergy personnel had taken three pictures from successively closer distances and the fourth picture was approximately 18 to 24 inches from the control circuitry. At 2216, coinciding with the fourth picture, control room operators noted 22 MBFP speed rapidly decreasing to 2400 rpm. A main turbine runback immediately followed in response to 22 MBFP speed being less than 3300 rpm. Operators responded to the load reduction on 22 MBFP in accordance with AOP-FW-1, "Loss of Main Feedwater," and manually initiated a reactor trip. Entergy entered the issue into the corrective action program (CR-IP2-2008-01333) and performed a root cause determination for the event.

Entergy determined that the root cause for the event was a lack of knowledge among site personnel that a digital camera is a source of RFI which, when within a critical range, can cause adverse effects on digital equipment. Entergy determined that station personnel were aware of the potential adverse effects of flash photography on light sensitive equipment such as diodes, but were not aware that a digital camera was also a source of electromagnetic energy beyond the normal light spectrum. Specifically, most cameras use a capacitor network that charges and discharges rapidly to produce a flash, which not only results in the emission of a flash of light, but also results in emitted RFI from the capacitor itself. Entergy concluded, after the event, that the affected MBFP control circuitry did not contain any light sensitive components and was therefore impacted by RFI emission from internal camera components, which was not expected by station personnel.

The inspectors determined that Entergy had a process in place prior to the event to evaluate the potential impact of flash photography on sensitive plant equipment but did not follow the process. Entergy procedure EN-NS-214, "Camera Controls for Access and Use," Revision 4, Attachment 9.1 states, in part, that, "Flash photography inside electronic cabinets or computers and in rooms with open electronic cabinets or computers, without having a system engineer evaluation is not permitted." Contrary to EN-NS-214, on March 23, 2008, a work planner performed flash photography inside a control room cabinet for the 22 MBFP control system without obtaining an engineering evaluation.

The inspectors determined that this event was reasonably within Entergy's ability to foresee and prevent because an Entergy procedure directed that personnel evaluate the use of cameras. This evaluation would reasonably be expected to identify that the digital camera emitted RFI because the digital camera is a Class B rated RFI emitter by the

Federal Communications Commission as stated in the camera user's manual. Although Class B devices are qualified for residential use and do not typically cause interference in most applications, the user's manual states, "This equipment generates, uses, and can radiate radio frequency energy."

Analysis: The finding was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone and impacted the objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated this finding using Phase 1 of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined it to be of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Specifically, 21 and 22 MBFPs were available after the reactor trip to inject water into the steam generators and could have been operated locally through manual operation of speed control air valves. In addition, AFW pumps and condensate pumps were available to inject water into the steam generators.

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because Entergy did not effectively communicate expectations regarding procedural compliance and personnel did not follow the applicable procedure. (H.4(b)).

Enforcement: No violation of regulatory requirements occurred. The inspectors determined that the finding did not represent a violation because the EN-NS-214 procedure was not a safety-related procedure, or a procedure that was required by the site quality assurance program manual. **(FIN 05000247/2008003-06, Failure to Follow Procedure Resulted in MBFP Runback and Subsequent Manual Reactor Trip)**

4OA5 Other Activities

.1 Temporary Instruction 2515/166 – Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02)

a. Inspection Scope

The inspectors performed an inspection in accordance with Temporary Instruction (TI) 2515/166, Pressurized Water Reactor Containment Sump Blockage, Revision 1. The TI was developed to support the NRC review of licensee activities in response to NRC Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors." Specifically, the inspectors verified that the implementation of the modifications and procedure changes were consistent with the actions committed to in Entergy's supplemental response letter, NL-08-025, to GL 2004-02, dated February 28, 2008. The supplemental response provided the remaining information regarding the completed and proposed actions and methodologies used at Indian Point Units 2 and 3 to resolve the issues in the GL.

Additionally, the inspectors reviewed the technical specifications (TS) and the Updated Final Safety Analysis Report (UFSAR), to verify that required changes to the TS had been approved by the NRC and that the UFSAR had been or was in the process of being updated to reflect the plant changes. Portions of the TI were performed during the 2006 refueling outage to verify the containment sump modifications were consistent with

Entergy's design change package; the results of those inspections were documented in NRC Inspection Report 05000247/2006003. The TI requires documentation of specific questions in an inspection report. The questions and responses are included in Attachment B to this report.

b. Findings

No findings of significance were identified.

.2 Temporary Instruction 2515/172 - RCS Dissimilar Metal Butt Welds

a. Inspection Scope

Temporary Instruction (TI) 2515/172 provides for confirmation that owners of pressurized-water reactors (PWRs) have implemented the industry guidelines of the Materials Reliability Program (MRP) -139 regarding nondestructive examination and evaluation of certain dissimilar metal butt welds in reactor coolant systems containing Alloy 600/82/182. The TI requires documentation of specific questions in an inspection report. The questions and responses are included in Attachment C to this report.

In summary, Indian Point Unit 2 has MRP-139 applicable Alloy 600/82/182 RCS welds in only the hot and cold leg pipe to vessel nozzle connections. The Unit 2 welds were examined volumetrically by ultrasonic measurement from the inside weld diameter and on the inner surface by eddy current inspection in the 2006 refueling outage. No indication of cracking was found on any of these welds.

b. Findings

No findings of significance were identified

.3 (Closed) URI 05000247/2007002-004: Containment Sump Modification Missing Weld Data

a. Inspection Scope

The inspectors evaluated an unresolved item (URI) associated with retention of weld data sheets for the Indian Point Unit 2 containment and recirculation sump upgrade. Specifically, the inspectors reviewed Entergy's actions in response to CR-IP2-2007-00699, which was generated on February 8, 2007, after additional missing weld information was identified that had not been evaluated by Entergy's reconstitution engineering team during the March 2006 refueling outage (2R17). Entergy's follow-up actions included a review of all containment sump work packages and visual inspections during the April 2008 refueling outage (2R18) of accessible safety-related welds that were missing data. Based on the documented visual inspections by Entergy, walkdowns of the sump by the inspectors during the 2R18 outage, and a review of technical justifications for missing data, NRC inspectors determined that there was reasonable assurance of sump operability notwithstanding inadequate retention of required documentation by Entergy for the sump modification. This URI is closed.

b. Findings

Introduction: The inspectors identified a Green, NCV of 10 CFR 50, Appendix B, Criterion XVII, "Quality Assurance Records," because Entergy did not maintain sufficient records to furnish evidence that a safety-related vapor containment (VC) sump modification was performed in accordance with the design documentation. Specifically, nine of 63 work orders completed during the 2R17 outage for the modification were lost, misplaced, or contaminated during implementation of the project.

Description: During the 2R17 outage, Entergy completed a partial modification to install upgraded sump strainers within the vapor containment (VC) building in response to Generic Safety Issue 191, which was associated with debris-induced clogging of pressurized water reactor sumps. The sump modification consisted of 63 total work orders performed during the 2R17 outage under ER-04-2234. Prior to restart from the outage, Entergy identified that some completed work packages, weld data sheets, and weld maps were lost, misplaced, or contaminated during implementation of the project. Entergy subsequently generated CR-IP2-2006-02923 and identified that nine work packages were missing some or all of the required data. These work packages were:

IP2-05-26842 – VC water management during modification
IP2-05-26846 – Replace VC Sump Pumps
IP2-05-26847 – Install VC Sump Strainers
IP2-05-26848 – Install IR Sump Strainers
IP2-05-26849 – Reroute IR and VC Sump Piping
IP2-05-26850 – Install Flow Barriers
IP2-05-26851 – Modify 46' Access Gates
IP2-06-12247 – Install Fuel Transfer Canal Drain Barrier
IP2-06-19414 – Modify Weld Channel Tubing

Following the identification of work orders with missing data, Entergy formed a multi-disciplined reconstitution team consisting of personnel from project management, maintenance support, engineering, and maintenance inspection to determine if the sump was operable despite the missing data from nine of the 63 work orders. Entergy determined that the sump was operable based on reconstituted data where possible, and by technical justification where the data could not be reconstituted. This effort was completed prior to plant restart from the refueling outage.

In January 2007, following NRC questions, Entergy initiated an independent review by off-site personnel into work packages associated with the strainer modification to validate the corrective actions associated with CR-IP2-2006-02923. During this review, the independent team identified additional missing data in five of the work packages listed above that was not addressed by the reconstitution team. These work packages were IP2-05-26846, IP2-05-26847, IP2-05-26848, IP2-05-26849, and IP2-05-26850. The independent review identified examples of missing data such as welder identifications, weld material information, weld certification information, visual inspections, and non-destructive examinations (NDE). The independent review was completed on February 8, 2007 and Entergy initiated CR IP2-2007-00699.

Entergy evaluated the results of the independent review documented in CR-IP2-2007-00699, and determined that the previous data reconstitution team had not documented technical justification for the full scope of the missing data identified during the 2R17 outage. As a result, Entergy performed a subsequent review of all 63 completed work packages associated with the sump modification, created a document that provides technical justification for the missing data, attached the document to CR-IP2-2007-00699, and completed visual inspections during the 2R18 outage in April 2008 of accessible safety related sump welds that were missing data under work order 51322675. Entergy determined through interviews and visual inspections that the sump modification project was implemented by qualified personnel and in accordance with the planned design and ASME code requirements.

The inspectors determined that Entergy did not maintain sufficient records to furnish evidence that a safety-related vapor containment (VC) sump modification was performed in accordance with the design documentation. However, based on the documented visual inspections by Entergy, walkdowns of the sump by the inspectors during the 2R18 outage, and a review of technical justifications for missing data, NRC inspectors determined that there was reasonable assurance of sump operability despite Entergy's failure to retain the required documentation for the sump modification.

Analysis: The inspectors determined that traditional enforcement did not apply because the full scope of missing information did not have the potential for impacting the NRC's ability to perform its regulatory function nor were there willful aspects identified. The finding was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the safety related function of the sump is ensured via records that demonstrate quality maintenance and design activities were performed in accordance with standards. In addition, the finding was similar to the more-than-minor example 1.b, listed in IMC 0612, Appendix E, in that required records for the containment sump modification were not retrievable.

The inspectors evaluated this finding using Phase 1 of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined it to be of very low safety significance (Green) because the finding did not represent a design or qualification deficiency, did not result in a loss of safety function, and did not screen as potentially risk-significant due to external initiating events. Entergy determined through interviews and visual inspections that the sump modification project was implemented by qualified personnel and in accordance with the planned design and code requirements. In addition, technical evaluations of missing data provided reasonable assurance of continued sump operability.

The finding had a cross-cutting aspect in the area of human performance because Entergy did not appropriately coordinate work activities to communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination was necessary to assure plant and human performance. (H.3(b))

Enforcement: 10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance Records," requires that, "Sufficient records shall be maintained to furnish evidence of activities affecting quality." Contrary to this, Entergy did not retain sufficient records, following completion of the containment sump modification work performed during the March 2006 (2R17) refuel outage, to furnish evidence of the quality related modification. The inspectors also determined that once this issue was identified and addressed within Entergy's corrective action process under CR-IP2-2006-02923, following NRC questions, additional examples of failing to meet Criterion XVII were identified for the sump modification because additional missing data was identified which had to be evaluated. Entergy entered this issue into the corrective action program (CR-IP2-2007-00699), performed a subsequent review of all 63 completed work packages associated with the 2R17 sump modification, created a document that provides technical justification for all missing data, attached the document to CR-IP2-2007-00699, and completed visual inspections during the April 2008 (2R18) refueling outage of all accessible safety related sump welds that were missing data. Because this finding is of very low safety significance and has been entered into Entergy's corrective action program, this violation is being treated as an NCV, consistent with Section V1.A of the Enforcement Policy: **NCV 05000247/2008003-07, Failure to Maintain Quality Records for Containment Sump Modification.**

.4 Indian Point Energy Center Safety Culture Assessment

a. Inspection Scope

The inspectors observed the conduct of the Independent Safety Culture Assessment as requested by the NRC in the 2007 Annual Assessment Letter to Entergy dated March 3, 2008 (ML080610015). The inspectors confirmed that the Independent Safety Culture Assessment was being conducted as Entergy described in the responses to the NRC dated March 30, 2008 and May 30, 2008 (ML081760346 and ML 081760374). The inspectors noted that the Independent Safety Culture Assessment team conducted individual interviews of 59 Entergy employees, conducted approximately eight focus group interviews of teams of Entergy employees, and observed day to day meetings and interactions between employees. The inspectors observed and conducted discussions with members of the safety culture assessment team to understand the scope and methodology that would be used to conduct the assessment. All 13 Safety Culture Attributes as described in NRC Regulatory Issue Summary 2006-13 were being evaluated by the team.

b. Findings

No findings of significance were identified.

.5 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of Indian Point Units 2 and 3 conducted in September 2007. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of Entergy 's performance and to determine if safety significant issues were identified that would require further NRC review or follow-up.

b. Findings

No findings of significance were identified

4OA6 Meetings

Exit Meeting Summary

On July 10, 2008, the inspectors presented the inspection results to Tony Vitale and other Entergy staff members, who acknowledged the inspection results presented. Entergy did not identify any material as proprietary.

ATTACHMENT A: SUPPLEMENTAL INFORMATION
ATTACHMENT B: TI 2515/166 Documentation Questions for Indian Point Unit 2
ATTACHMENT C: TI 2515/172 Documentation Questions for Indian Point Units 2 and 3

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

J. Pollock, Site Vice President
A. Vitale, General Manager, Plant Operations
P. Conroy, Director of Nuclear Safety Assurance
B. Christman, Manager of Training and Development
R. Hansler, Reactor Engineering Superintendent
T. Jones, Licensing Supervisor
S. Manzione, Component Engineering Supervisor
B. McCarthy, Indian Point Unit 2 Assistant Operations Manager
T. Orlando, Director of Engineering
B. Sullivan, Emergency Planning Manager
P. Studley, Site Operations 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
R. Burroni, Design Engineering Manager
M. Burney, Licensing Engineer
V. Cambigianis, Manager Mechanical Design Engineering
T. Cole, Project Manager
T. McCaffrey, Manager Electrical Design Engineering
W. Runion, Manager IPEC Projects

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000247/2008003-01	NCV	Failure to Follow Site Procurement Procedure for EDG Temperature Control Valve Elements (Section 1R15)
05000247/2008003-02	NCV	Station Blackout/Appendix-R Diesel Generator Post Modification Test Deficiencies (Section 1R17)
05000247/2008003-03	NCV	Inadequate Operating Procedure for Station Blackout/Appendix-R Diesel Generator (Section 1R17)
05000247/2008003-04	NCV	Inadequate Seismic Design Control Associated with a Temporary Modification to Emergency Diesel Generator Service Water Return Piping (Section 1R18)
05000247/2008003-05	NCV	Failure to Follow Plant Start-Up Procedure Regarding MBFP Turbine Runback Arm/Defeat Switch (Section 4OA3)

05000247/2008003-06	FIN	Failure to Follow Camera Controls Procedure Resulting in RFI Induced MBFP Runback and Subsequent Manual Reactor Trip (Section 4OA3)
05000247/2008003-07	NCV	Failure to Maintain Quality Records for Containment Sump Modification (Section 4OA5)

Closed

05000247/2007002-04	URI	Containment Sump Modification Missing Weld Data (Section 4OA5)
05000247/2007005-04	URI	Impact of Incorrect Jacket Water and Lube Oil Control Elements on EDG Performance (Section 1R15)
05000247/2008001-00	LER	Manual Reactor Trip Due to Decreasing Steam Generator Levels Caused by Loss of Feedwater Flow as a Result of Feedwater Pump Speed Control Malfunction (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
OAP-008, "Severe Weather Preparations," Rev. 4
OAP-48, "Seasonal Weather Preparation," Rev. 4
IP-SMM-OP-104, "Offsite Power Continuous Monitoring and Notification," Rev. 7
SO16-4-5, "Buchannan Substation Voltage Monitoring and Notification Procedure" dated 6/18/07

Section 1R04: Equipment Alignment

Procedure
2-COL-4.1.1, "Component Cooling System," Rev. 21
2-COL-3.1, "Chemical and Volume Control System," Rev. 38
2-COL-10.2.1, "Containment Spray System," Rev. 18
2-SOP-10.2.1, "Containment Spray System Operation," Rev. 14
2-COL-27.3.1, "Diesel Generators," Rev. 25

Condition Report

IP2-2007-00795	IP2-2007-02408	IP2-2007-02431	IP2-2007-01340
IP2-2007-02677	IP2-2007-04182	IP2-2008-01097	IP2-2008-01097
IP2-2008-01129	IP2-2008-01251	IP2-2008-03152	IP2-2008-02184
IP2-2008-02200			

Drawings9321-2720
227781
9321-2736
9321-2737

208168
235309
9321-2735
235296

Section 1R05: Fire Protection

Procedures
ENN-DC-161, "Transient Combustible Program," Rev. 1
0-PT-Q001, "Alternate Safe Shutdown Equipment Inventory and Inspection," Rev. 1
SMM-DC-901, "IPEC Fire Protection Program," Rev. 2
2-SOP-29.6, "Fire Protection System Operation," Rev. 22
2-COL-29.6, "Fire Protection System," Rev. 22
2-ONOP-FP-001, "Plant Fires," Rev. 3

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

Section 1R06: Flood Protection Measures

Miscellaneous
Individual Plant Examination of External Events for Indian Point Unit No. 2, December 1995

1R07: Heat Sink Performance

Procedures
SEP-SW-001, "IPEC Generic Letter 89-13 Service Water Program," Rev. 1
2-HX-005-FCU, "Containment Fan Cooler Unit Cooling Coils Maintenance," Rev. 0

Work Orders
51231625
51311253
51311444
IP2-06-21753
IP2-02-33020

Condition Report
IP2-2007-4142 IP2-2007-04447

1R08: Inservice Inspection Activities

Procedures
ENN-NDE-9.07, "Straight Beam Ultrasonic Examination of Bolts and Studs," Rev. 1
ENN-NDE-9.23, "Ultrasonic Examination of Austenitic Piping Welds (Sect XI)," Rev. 1
ENN-NDE-9.04, "Ultrasonic Examination of Ferritic Piping Welds (ASME Sect XI)," Rev. 2
ENN-NDE-10.03, "VT-3 (Visual) Examination of IWE Interfaces," Rev. 2
2-PT-R203, "Visual Examination of Reactor Vessel Head Penetrations and Head Surface Leakage," Rev. 2

Condition Reports
CR-IP2-2008-01425 CR-IP2-2008-01632

Work Order
51318178-01

Drawings
IPP-76, Calibration Block IPP-76, Reactor Vessel Closure Head Stud, Rev. 1
B206669-8, Sheet 1, ISI Isometric of the RHR 14” diameter line 10
9321-F-1153-9, A200 093, Containment Liner Insulation
322097-00, Replacement of Removed Liner Insulation, Rev. 2
9321-F-1280-15, A200 168, Containment Liner Details

Miscellaneous
Table 4.1-1, Risk informed ISI Component Scheduling
Letter, NRC to M. A. Balduzzi, dated 1/29/08 for the Relief Request RR-05 for IP Unit 2 on the use of Risk-Informed Inservice Inspection during the 4th ISI interval and the attached NRC Safety Evaluation.
Letter, Entergy to NRC, dated 1/26/07 on Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds for IP Units 2 and 3. (NL-07-019).
Letter, NRC to M. R. Kansler, dated 8/18/05 on the Response to NRC Bulletin 2004-01.
Entergy Memo dated 12/19/2007, PEP-ROC-2007-022 documenting that SG tube inspections results of 2RFO 17 (2006) show operational acceptability until 2RFO 19
IP U2 RPV Examination Summary dated 5/5/2006, IP-RPT-06-00099.R00.
RCS MDMP Deviation Form dated 3/28/2008 for MRP-139, Section 6.10.2 requirements for a visual exam of the Hot Leg Nozzle DM welds of IP Unit 2.
ASME Section XI
ASME Section XI, Subsection IWE

Section 1R11: Licensed Operator Requalification Program

Procedures
OAP-033, “Conduct of Operations Simulator Training, Evaluations, and Debriefs,” Rev. 4
OAP-032, “Operations Training Program,” Rev. 9
IP-SMM-TQ-114, “Continuing Training and Requalification Examinations for Licensed Personnel,” Rev. 7

Miscellaneous
Lesson Plan LRQ-SES-04, “Loss of 480V Bus, Failure of RCP#1 Seal, Turbine Trip Failure, Loss of Secondary Heat Sink”

Section 1R12: Maintenance Effectiveness

Procedures
EN-DC-203, "Maintenance Rule Program," Rev. 0
EN-DC-204, "Maintenance Scope and Basis," Rev. 0
EN-DC-205, “Maintenance Rule Monitoring," Rev. 0
EN-DC-324, “Preventive Maintenance Process,” Rev. 3
EN-LI-102, "Corrective Action Process," Rev. 10
ENN-DC-171, “Maintenance Rule Monitoring,” Rev. 2
2-BAT-001-ELC, "Replacement of Battery Cells," Rev. 0
2-PT-R076C, “Station Battery 23 Load Test,” Rev. 8
2-PT-A035A, “21 Station Battery Intercell Resistance Check,” Rev. 3

Work Orders
51303518

51311236
51321920

Miscellaneous
"IPEC Units 2 & 3 Maintenance Rule Basis Document, 125V DC Power System," Rev. 0
"Unit 2 DC Power System Health Report," 2007 4th Quarter
"Unit 2 125V DC Power System Performance Monitoring Plan," Issued 12/10/2003
"Unit 2 125V DC Power System Unavailability Report," Printed 4/8/2008

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
EN-WM-101, "On-Line Work Management Process," Rev. 1
IP-SMM-WM-100, "Work Control Process," Rev. 5
SPO-SD-09, "On-line Risk Assessment Process," Rev. 0
IP-SMM-WM-101, "On-Line Risk Assessment," Rev. 2
EN-MA-125, "Troubleshooting Control of Maintenance Activities," Rev. 3
2-PT-R076B, "Station Battery 22 Load Test," Rev. 12
2-IC-PC-I-E-Batt Charger-22," Rev. 1
2-SOP-27.6, "Unit 2 Appendix R Diesel Generator Operation," Rev. 1
2-PT-M110, "Appendix R DG Functional Test," Rev. 1

Condition Reports
IP2-2008-01701
IP2-2008-02917

Work Orders
00145718

Drawings
025D13801-0B3, "Schematic for 250-Amp Battery Charger, 125 VDC," 01/14/2003

Section 1R15: Operability Evaluations

Procedures
EN-OP-104, "Operability Determinations," Rev. 2
IP-SMM-AD-102, "IPEC Implementing Procedure Preparation, Review and Approval," Rev. 4
OAP-026, "Determination of Operability," Rev. 0
EN-LI-102, "Corrective Action Process," Rev. 8
SAO-525, "Control and Maintenance of Work Control System Equipment Information," Rev. 1
SAO-270, "Procurement Program," Rev. 6
EN-DC-149, "Vendor Document Review," Rev. 1

Calculation
Fairbanks Morse report DE-35211, "Entergy Nuclear Operations, Inc. Indian Point Units 2 and 3 Heat Balance Analysis," dated April 10, 2008

Condition Reports

IP2-2008-01675	IP2-2008-01775	IP2-2008-01777	IP2-2008-02459
IP2-2008-02548	IP2-2008-00013	IP2-2008-02184	IP2-2008-02200
IP2-2008-02406			

Miscellaneous

DER 1703, “Indian Point Emergency Diesel Generator Flow Test,” dated September 19, 1991

Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

Modification Packages
EC 5000033794, IP2 Station Blackout and Appendix-R Diesel Generator Set, Rev. 1
ECN 5980, EC 5000033794 Revise TRM, Technical Specification Basis, and UFSAR
ECN 7385, EC 5000033794 Post MOD Test Plan Change

Calculations and Analysis
FEX-00143, Load Flow Analysis of the Electrical Distribution System, Rev. 1
FEX-00160, Evaluation of Alternative Safe Shutdown Power Supplies, Rev. 2
IP-CALC-04-01580, Diesel Generator Exhaust Pipe Stress & Supports Design Analysis, Rev. 1
IP-CALC-04-01589, Load Flow Analysis of the Electrical Distribution System Supplied from the 13.8kV Distribution System, Rev. 0
IP-RPT-05-00071, Appendix-R Safe Shutdown Analysis Report, Rev. 1
IP2-RPT-03-00015, Fire Hazards Analysis Report, Rev. 3
IPEC-SPEC-04-00015, SBO and Appendix-R Medium Voltage Switchgear, Rev. 0
SGX-00017, Non-Safety Related 480V MCC Coordination Calculation for MCC’s 21, 22, 23, 25, 25A, 28, 28A, 210 & 211, Rev. 1

Condition Reports (* denotes NRC identified during this inspection)

CR-IP2-2000-09869	CR-IP2-2008-01761	CR-IP2-2008-02884
CR-IP2-2008-00551	CR-IP2-2008-01869	CR-IP2-2008-02917
CR-IP2-2008-01241	CR-IP2-2008-02032	CR-IP2-2008-02938
CR-IP2-2008-01286	CR-IP2-2008-02068	CR-IP2-2008-03057
CR-IP2-2008-01449	CR-IP2-2008-02364	CR-IP2-2008-03070*
CR-IP2-2008-01699	CR-IP2-2008-02754	

Drawings
9321-F-33853, Unit 3 Electrical Distribution and Transmission System, Rev. 17
A250907, Unit 2 Electrical Distribution and Transmission System, Rev. 21

Procedures
0-OAP-008, Severe Weather Preparations, Rev. 4
0-OAP-024, Operations Testing, Rev. 3
0-CY-1500, Chemistry Sampling Locations, Rev. 11
0-CY-2510, Closed Cooling Water Chemistry Specifications and Frequencies, Rev. 6
2-AOI 27.1.9.2, Providing Appendix-R Power from Unit 3, Rev. 1
2-AOP-SSD-1, Control Room Inaccessibility Safe Shutdown Control, Rev. 12
2-ECA-0.0, Loss of All AC Power, Rev. 2
2-GRAPH-TC-29, City Water Storage Tank Level, Rev. 2
2-OSP-27.6, Appendix-R Diesel Generator Operation, Rev. 0
2-PT-M110, Appendix-R DG Functional Test, Rev. 1
2-PT-W023, Appendix-R Diesel Support Systems Inspection, Rev. 0
2-PT-Y043, Appendix-R Diesel Generator Rated Load and Over-speed Test, Rev. 0
2-SOP-27.6, Appendix-R Diesel Generator Operation, Rev. 0
2-SOP-27.6, Appendix-R Diesel Generator Operation, Rev. 1
2-TOP-011, Appendix-R DG Test, Rev. 0
EN-DC-115, Engineering Change Development, Rev. 5
EN-DC-117, Post Modification Testing and Special Instructions, Rev. 0

EN-DC-167, Classification of Structures, Systems, and Components, Rev. 1
EN-WM-100, Work Request Generation, Screening, and Classification, Rev. 3
EN-WM-101, On-line Work Management Process, Rev. 3
EN-WM-102, Work Implementation and Closeout, Rev. 2
EN-WM-105, Work Planning, Rev. 3
IP-SMM-WM-100, Work Management Process, Rev. 7

Surveillance and Modifications Acceptance Tests
2-PT-M110, Appendix-R DG Functional Test, performed on 6/12/08
2-SOP-27.6, Appendix-R Diesel Generator Operation, performed on 6/15/08
2-TOP-011, Appendix-R DG Test, performed on 6/16-17/08
2-XFR-007-ELC, SBO/APPR Diesel Generator Dry Type Transformers Preventative Maintenance, performed on 1/9/08
502448-01, Perform Inspection and Testing Services on Vacuum Breakers and Dry Type Transformers, performed on 2/25/08
51297433-01, EC 5000033794 Post Modification Test, performed April 2008
Metropower Generator Field Test, performed on 4/19/08

Work Orders
00155804-01
51297433-01
51297430-88

Self-Assessments and Audits
LO-IP3LO-2008-00103, IPEC Focused Self Assessment Report: Plant Modifications and 50.59 Evaluations, dated 6/2/08

Miscellaneous
DRN 08-02521, Temporary Procedure Change to 2-SOP-27.6 Rev. 1
Entergy Quality Assurance Program Manual, Rev. 18
Quality Assurance Program Manual, Rev. 18
NUMARC 87-01, Guidelines and Technical Basis for Station Blackout, Rev. 1
NUREG 1776, Regulatory Effectiveness of the Station Blackout Rule, August 2003
Regulatory Guide 1.33, Quality Assurance Program Requirements, Rev. 2
Regulatory Guide 1.155, Station Blackout, Reissued August 1988
TRM Section 3.8B, SBO/Appendix-R Diesel Generator and Electrical Distribution System, Rev.

Section 1R18: Plant Modifications

Procedures
IP-SMM-AD-102, “IPEC Procedure Review and Approval Form,” Rev. 5
EN-LI-100, “Process Applicability Determination,” Rev. 4
EN-DC-136, “Temporary Modifications,” Rev. 3
2-TAP-002-EDG, “Removal & Installation of Service Water Drain Line on Emergency Diesel Generator Heat Exchangers,” Rev. 1

Condition Reports
IP2-2008-01618 IP2-2008-01619 IP2-2008-01675 IP2-2008-01775
IP2-2008-01777

Work Orders
00143404
00143405

Drawings
014D13785, “Schematic of 10KVA Inverter for Instrument Bus 23 and 24,” Rev. 1

Miscellaneous
EC 5000034092, “Replace Obsolete Westinghouse Type HFB Breakers in 23 DC Power Panel,” approved 10/24/2007
EC 0000007215, “Replace Existing 100A Breaker with 150A Breaker in Circuit 13 of 125VDC Power Panel 23,” Approved 04/12/2008
Material Authorization NPG-8-2119-03
TA-04-2-151, “Re-route of 22 EDG SW Cooling Flow to Storm Drain,” Revision 0
Completed ENN-LI-100 Attachment 9.1, “50.59 Process Applicability Determination for 2-TAP-002-EDG,” dated 01/27/2006
Completed ENN-LI-101 Attachment 9.1, “50.59 Screen Control Form for 2-TAP-002-EDG,” dated 02/01/2006

Section 1R19: Post-Maintenance Testing

Procedures
CUP-B-002-A, “Falk Type T10/T20 Steelflex Coupling”, Rev. 8
2-PT-Q030A, “21 Component Cooling Water Pump”, Rev. 17
2-PT-M021A, “Emergency Diesel Generator 21 Load Test,” Rev. 16
2-PT-Q033A, “21 Charging Pump,” Rev. 13
PT-V24, “In-Service Valve Test,” Rev. 8
2-PT-V069, “Valve Stroke Timing Test,” Rev. 2
2-PT-R080, “RHR Valves 730, 731 Interlocks,” Rev. 7
2-SOP-4.1.1, “Component Cooling Filling and Draining,” Rev. 7

Condition Reports

IP2-2008-02067	IP2-2008-01976	IP2-2008-02459	IP2-2008-02442
IP2-2008-02389	IP2-2008-02200	IP2-2008-02184	IP2-2008-02452

Work Orders
00146916
00121475
00127422
00147906
IP2-03-17241
00137029
51657655
51311499
51311394
51311225

Drawings
014D13785, “Schematic of 10KVA Inverter for Instrument Bus 23 and 24,” Rev. 1
D252353, “Excess Letdown Heat Exchanger Loop,” Rev. 1

Miscellaneous
Engineering Change Markup EC-5000034088, “Schematic of 10KVA Inverter for Instrument Bus 23 and 24,” Rev. 0

Section 1R20: Refueling and Outage Activities

Procedures
0-REF-400-GEN, “New Fuel Receipt and Inspection,” Rev. 3
IP-SMM-OU-104, “Shutdown Risk Assessment,” Rev. 4
2-POP-3.1, “Plant Shutdown from 45% Power,” Rev. 53
2-PT-R156, “RCS Boric Acid Leakage and Corrosion Inspection,” Rev. 1
2-POP-3.3, “Plant Cooldown – Hot to Cold Shutdown,” Rev. 72
2-SOP-4.1.2, “Residual Heat Removal System,” Rev. 61
2-SOP-4.1.2, “Component Cooling System Operation,” Rev. 34
OAP-007, “Containment Entry and Egress,” Rev. 14
0-NF-203, “Internal Transfer of Fuel Assemblies and Inserts,” Rev. 5
2-REF-002-GEN, Section 3.4, “Reactor Vessel Head Installation,” Rev. 2
2-POP-1.1, “Plant Heatup from Cold Shutdown Condition,” Rev. 80
2-SOP-3.3, “Pressurizer Bubble,” Rev. 36
0-NF-212, “Estimated Critical Position,” Rev. 3
2-POP-1.2, “Reactor Startup,” Rev. 53
2-POP-1.3, “Plant Startup from Zero to 45% Power,” Rev. 76
2-AOP-TURB-1, “Main Turbine Trip without a Reactor Trip,” Rev. 4
2-POP-2.1, “Operation greater than 45% Power,” Rev. 51

Condition Reports

IP2-2008-01967	IP2-2008-01421	IP2-2008-01482	IP2-2008-00763
IP2-2008-01489	IP2-2008-01591	IP2-2008-01473	IP2-2008-01387
IP2-2008-01240	IP2-2008-01734	IP2-2008-02236	

Drawings
A228352
A208377
9321-3130

Section 1R22: Surveillance Testing

Procedures
2-PT-84B, “22 Emergency Diesel Generator 8 Hour Load Test,” Rev. 13
2-PT-R027C-DS005, “SJAE Exhaust to V.C. Valves PCV-1229 and PCV-1230”, Rev. 11
2-PT-R027C, “WCPPS Local Leak Rate”, Rev. 11
2-COL-27.3.1, “Diesel Generators”, Rev. 25
2-SOP-27.3.1.1, “21 Emergency Diesel Generator Manual Operation,” Rev. 13
2-SOP-27.3.1.3, “22 Emergency Diesel Generator Manual Operation,” Rev. 13
2-PT-Q029C, “23 Safety Injection Pump,” Rev. 19

Work Order
51311015
51570060

Condition Reports

IP2-2008-01482	IP2-2008-01537	IP2-2008-01421

Section 1EP6: Drill Evaluation

Miscellaneous
Entergy Indian Point No. 2 Nuclear Power Plant Training Drill 2008-2, dated May 14, 2008

Condition Report
IP2-2008-02640

Section 2OS1: Access Control to Radiologically Significant Areas

Condition Reports

IP2-2007-4816	IP2-2007-5022	IP2-2007-5299
IP2-2008-0053	IP2-2008-0059	IP2-2008-0127
IP2-2008-0211	IP2-2008-1193	IP2-2008-1445
IP2-2008-1463	IP2-2008-1823	

Section 4OA1: Performance Indicator Verification

Procedures
EN-EP-201, "Performance Indicators," Rev. 6
EN-LI-114, “Performance Indicator Process,” Rev. 2
NEI 99-02, “Regulatory Assessment Performance Indicator Guideline,” Rev. 5

Section 4OA2: Identification and Resolution of Problems

Procedures
EN-LI-102, “Corrective Action Process,” Rev. 12
EN-LI-121, “Entergy Trending Process,” Rev. 7
EN-LI-100, “Process Applicability Determination,” Rev. 4

Condition Reports
IP2-2008-00414 IP2-2008-00183 IP3-2006-01568

Miscellaneous
IPEC quarterly trend report – first quarter 2008
IPEC quarterly trend report – fourth quarter 2007

Section 4OA3: Event Followup

Condition Reports

IP2-2002-08021	IP2-2002-08164	IP2-2003-01651	IP2-2008-01333
IP2-2008-01651	IP2-2008-01332	IP2-2008-01335	IP2-2008-01336
IP2-2008-01337	IP2-2008-01350	IP2-2008-01384	IP2-2008-01414
IP2-2008-01390			

Procedures

2-AOP-FW-1, “Loss of Main Feedwater,” Rev. 9
2-E-0, “Reactor Trip or Safety Injection,” Rev. 0
2-ES-0.1, “Reactor Trip Response,” Rev. 0
IP-SMM-OP-105, "Post Transient Evaluation," Rev. 5
EN-OP-102, "Protective and Caution Tagging," Rev. 9
2-POP-1.3, Plant Startup from Zero To 45% Power," Rev. 76

NRC Form 361, "Reactor Plant Event Notification Worksheet," EN# 44153, dated 4/21/2008
EN-OP-115, "Conduct of Operations," Rev. 5
OAP-019, "Component Verification and System Status Control," Rev. 4
2-COL-21.1.1, "Main Feedwater Discharge," Rev. 16
EN-NS-214, “Camera Controls for Access and Use,” Rev. 4
IP-SMM-MA-102, “Site Communications,” Rev. 0

Miscellaneous
LER 2008-001

Section 4OA5: Other Activities

Procedures
2-ES-1.3, “Transfer to Cold Leg Recirculation,” Rev. 43
2-ES-1.1, “SI Termination,” Rev. 1
2-E-3, “Steam Generator Tube Rupture,” Rev. 0
2-ECA-1.1, “Loss of Emergency Coolant Recirculation,” Rev. 0
2-ECA-3.1, “SGTR with Loss of Reactor Coolant-sub Cooled Recovery Discovered,” Rev. 0
2-PT-R16, “Recirculation Pumps,” Rev. 18
OAP-007, “Containment Entry and Egress,” Rev. 13 and 15
EN-DC-115, “Design Control,” Rev. 5
IP-SMM-MA-118, “Foreign Material Exclusion,” Rev. 1

Condition Reports
IP2-2006-02923 IP2-2007-00699

Work Order
51322675
IP2-07-13149

Miscellaneous
NRC Docket No. 50-247, Technical Specification Change Request No. 253, Facility Operating License Change Regarding the Containment Buffering Agent from TSP to Sodium Tetraborate Decahydrate NaTB
Entergy Letter NL-08-015, Proposed Change to the Updated Final Safety Analysis Report Regarding the Emergency Core Cooling System and Component Cooling Water System Single Passive Analysis and Recirculation Phase Backup Capability, dated 3/13/2008
Entergy Letter NL-08-025, Supplemental Response to NRC Generic Letter 2004-02, “Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors,” dated 2/28/2008
Entergy Letter NL-08-054, Request for Extension of Completion for Indian Point Units 2 and 3 Corrective Actions Required by Generic Letter 2004-02, “Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors”, dated 3/28/2008
NRC Letter, Indian Point Nuclear Generating Unit Nos. 2 and 3 – Approval of Revised Extension Request for Corrective Actions Required by Generic Letter 2004-02, dated 4/10/2008
Inspection Report 05000247/2006003, Indian Point Unit 2 – NRC Integrated Inspection Report

LIST OF ACRONYMS

2R17	Unit 2 Refueling Outage 17
2R18	Unit 2 Refueling Outage 18
AC	Alternating Current
ADAMS	Agency-wide Document and Management System
ALARA	As Low As Reasonably Achievable
ANS	Alert and Notification System
ASME	American Society of Mechanical Engineers
BACC	boric acid corrosion control
CAP	corrective action program
CFR	Code of Federal Regulations
CR	condition report
DBD	design basis documents
ECCS	emergency core cooling system
EDG	emergency diesel generator
EDO	Executive Director of Operations
ENTERGY	Entergy Nuclear Northeast
EP	Emergency Preparedness
EPRI	Electric Power Research Institute
FSAR	final safety analysis report
JPM	job performance measure
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
ISI	in-service inspection
IST	in-service testing
IPEC	Indian Point Energy Center
LOCA	loss of coolant accident
kV	kilovolt
MBFP	main boiler feed pump
MCC	motor control center
NCV	non-cited violation
NDE	non-destructive examination
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
OA	Other Activities
OS	Occupational Radiation Safety
PARS	Publicly Available Records System
PI	performance indicator
PPE	personnel protective equipment
PT	penetrant testing
PWR	Pressurized-Water Reactor
RFI	radiofrequency interference
RFO	refueling outage
RHR	residual heat removal
RHRSW	residual heat removal service water
RP	Radiation Protection
RPM	radiation protection manager
RT	radiographic Test
RWP	radiation work permit
SBO/App-R DG	station blackout/Appendix-R diesel generator
SDP	significance determination process
SFP	spent fuel pool

SG	steam generator
SJAE	steam jet air ejector
SSC	structures, systems, or components
SWP	service water pump
TCV	temperature control valve
TS	Technical Specification
UFSAR	Updated Final Safety Evaluation Report
URI	unresolved item
UT	ultrasonic testing
VC	vapor containment
VDC	volts direct current
VT	visual inspection
WO	work order

ATTACHMENT B

Temporary Instruction (TI) 2515/166 Documentation Questions for Indian Point Unit 2

Evaluation of Inspection Requirements

The TI requires the inspectors to evaluate and answer the following questions:

1. Did the licensee implement the plant modifications and procedure changes committed to in their generic letter (GL) 2004-02 response?

   The inspectors verified that Entergy implemented the plant modifications and procedure changes committed to in their GL 2004-02 responses. This inspection verified the implementation of the containment sump extension strainer modification that completed the vapor containment sump strainer installation, the containment sump buffering agent replacement, and installation of screens on crane wall penetrations. The inspectors noted that Entergy had not finalized the downstream effects evaluation or completed their analysis of the effects of chemical precipitants on the strainer head loss at the time of this inspection. Entergy plans to provide a final supplemental response within 90 days of adopting their final Generic Safety Inspection (GSI) 191 resolution, which would include the resolution of downstream effects and chemical precipitant issues.

   The inspectors reviewed a sample of Unit 2 Emergency Operating Procedures to verify that the procedures were revised as appropriate to reflect the modification work implemented as part of the GSI 191 resolution. The inspectors noted that for the Unit 2 work performed during refuel outage 2R18, Entergy had identified and were in the process of revising procedures impacted by the additional modification work. Additionally, the inspectors determined that the procedures developed for Unit 2 to control potential debris generation sources were updated and provided administrative controls to ensure that LOCA debris source terms affecting ECCS recirculation sump performance remain bounded by existing analyses.

2. Has the licensee updated its licensing basis to reflect the corrective actions taken in response to GL 2004-02?

   The inspectors verified that Entergy had either updated, or was in the process of updating, the licensing basis to reflect the actions taken in response to GL 2004-02. Specifically, the inspectors verified that changes to the facility or procedures as described in the UFSAR that were identified in the licensee's GL 2004-02 responses were reviewed and documented in accordance with 10 CFR 50.59. The inspectors also verified that changes to the technical specifications had been approved by the NRC, and that required changes to the UFSAR, describing the changes to the plant, were in the process of being updated.

Based on the inspectors' review of the hardware modifications, and procedure and licensing bases changes, the inspection requirements of TI 2515/166 are complete and TI 2515/166 is closed. In a letter dated April 10, 2008, NRR approved Entergy's request to extend the completion date for the remaining analyses and licensing activities required for GL 2004-02 compliance until October 31, 2008. As of this inspection, the remaining activities include completion of the chemical effects analysis, completion of the downstream effects analysis, revision to the debris transport analysis, and revision to the net positive suction head available analysis. In addition, Entergy has requested NRC approval of a proposed change to the UFSAR regarding the ECCS and component cooling water system (CCWS) single passive failure analyses and the recirculation phase backup capacity, which was submitted on March 13, 2008. Finally, Entergy is required to respond to the open items from the December 2007 NRR audit of GSI-191 activities at Indian Point Units 2 and 3. Any additional modifications required due to the ongoing analyses noted above may be inspected at a future date if required.

The TI-2515/166 inspection results, as well as any results of sampling audits of licensee actions will be reviewed by the NRC staff (Office of Nuclear Reactor Regulation-NRR) as input, along with the Generic Letter (GL) 2004-02 responses to support closure of GL 2004-02 and Generic Safety Issue (GSI)-191, "Assessment of Debris Accumulation on Pressurized-Water Reactor (PWR) Sump Performance." The NRC will notify Entergy by letter of the results of the overall assessment as to whether GSI-191 and GL 2004-02 have been satisfactorily addressed at Indian Point Unit 2. Completion of TI-2515/166 does not necessarily indicate that Entergy has finished all testing and analyses needed to demonstrate the adequacy of their modifications and procedure changes. As noted above, Entergy has obtained approval of a plant-specific extension that allows for completion of testing and analyses. Entergy will confirm completion of all corrective actions to the NRC in a final response letter to GL 2004-02. As part of the process described above to ensure satisfactory resolution of GL 2004-02 and GSI-191, the NRC will track all such yet-to-be-performed items identified in the TI-2515/166 inspection reports to completion and may choose to inspect implementation of some or all of them.

ATTACHMENT C

Temporary Instruction (TI) 172 Documentation Questions for Indian Point Units 2 and 3

TI 2515/172 provides for confirmation that owners of pressurized-water reactors (PWRs) have implemented the industry guidelines of the Materials Reliability Program (MRP) -139 regarding nondestructive examination and evaluation of certain dissimilar metal welds in reactor coolant systems containing nickel based Alloys 600/82/182. The TI requires documentation of specific questions in an inspection report.

In summary, the Indian Point (IP) Units 2 and 3 have MRP-139 applicable Alloy 600/82/182 RCS welds in only the four hot and four cold leg pipe to reactor pressure vessel nozzle connections for each plant. The Unit 2 welds were examined volumetrically by ultrasonic measurement from the inside weld diameter and on the inner surface by eddy current inspection in the 2006 refueling outage. The Unit 3 welds were visually examined from the outside surface during the 2007 refueling outage. No indication of cracking was found on any of these welds. The Unit 3 welds are scheduled for ultrasonic and eddy current inspection during the next Unit 3 refueling outage.

a. For MRP-139 baseline inspections:

Qa1. Have the baseline inspections been performed or are they scheduled to be performed in accordance with MRP-139 guidance?

A. Yes. For Unit 2, ultrasonic (UT) volumetric examination was done from the inside weld diameter and eddy current (ET) examination was done of the inside weld surface area on the four cold leg and four hot leg piping to vessel nozzle welds during the 2006 refuel outage (RFO). For Unit 3, during the Spring 2007 RFO the external surfaces of these eight welds were visually inspected for surface cracking and leakage. The Unit 3 welds are scheduled for UT and ET examinations during the next RFO.

Qa2. Is the licensee planning to take any deviations from the MRP-139 baseline inspection requirements of MRP-139? If so, what deviations are planned and what is the general basis for the deviation? If inspectors determine that a licensee is planning to deviate from any MRP-139 baseline inspection requirements, NRR should be informed by email as soon as possible.

A. Yes, the Unit 2 Spring 2006 RFO examinations were a deviation from the required outer surface visual examination. The volumetric (UT) and surface (ET) examinations of the internal surface where cracking, if present, would have initiated were considered an enhancement to the requirements.

b. For each examination inspected, was the activity:

Qb1. Performed in accordance with the examination guidelines in MRP-139 Section 5.1 for unmitigated welds or mechanical stress improved welds and consistent with NRC staff relief request authorization for weld overlaid welds?

A. Neither mechanical stress relief nor weld overlays were done. For Unit 2, the guidelines in MRP-139, Section 5.1 for unmitigated welds were credited by the supplemental use of surface examination by eddy current to compensate for the UT coverage being less than 90%. The UT and ET examinations were done on the nozzle inside diameter at the dissimilar metal weld location. For Unit 3, the outside surfaces of the welds were visually examined in 2007.

Qb2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

A. The UT was done in accordance with a qualified PDI procedure by qualified individuals. The eddy current examinations were done in accordance with procedure WDI-STD-146, Rev 5. A review of the qualifications of the individuals performing the ET was part of the prejob preparations.

Qb3. Performed such that deficiencies were identified, dispositioned, and resolved?

A. No material deficiencies were identified. The UT coverage condition was resolved by the Level III data reviewer.

c. <u>For each weld overlay inspected, was the activity:</u>

Qc1. Performed in accordance with ASME Code welding requirements and consistent with NRC staff relief requests authorizations? Has the licensee submitted a relief request and obtained NRR staff authorization to install the weld overlays?

A. Not Applicable. (Weld overlay was not applied.)

Qc2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

A. Not Applicable.

Qc3. Performed such that deficiencies were identified, dispositioned, and resolved?

A. Not Applicable.

d. <u>For each mechanical stress improvement (SI) used by the licensee during the outage, was the activity performed in accordance with a documented qualification report for stress improvement processes and in accordance with demonstrated procedures? Specifically:</u>

Qd1. Are the nozzle, weld, safe end, and pipe configurations, as applicable, consistent with the configuration addressed in the SI qualification report?

A. Not Applicable. (Mechanical stress improvement was not used.)

Qd2. Does the SI qualification report address the location radial loading is applied, the applied load, and the effect that plastic deformation of the pipe configuration may have on the ability to conduct volumetric examinations?

A. Not Applicable.

Qd3. Do the licensee's inspection procedure records document that a volumetric examination per the ASME Code, Section XI, Appendix VIII was performed prior to and after the application of the SI?

A. Not Applicable.

Qd4. Does the SI qualification report address limiting flaw sizes that may be found during pre-SI and post-SI inspections and that any flaws identified during the volumetric examination are to be within the limiting flaw sizes established by the SI qualification report.

A. Not Applicable.

Qd5. Performed such that deficiencies were identified, dispositioned, and resolved?

A. Not Applicable.

e. <u>For the in-service inspection program</u>:

Qe1. Has the licensee prepared an MRP-139 in-service inspection (ISI) program? If not, briefly summarize the licensee's basis for not having a documented program and when the licensee plans to complete preparation of the program.

A. For Unit 2, the MRP-139 ISI program is included in the Risk-Informed ISI program that was approved by letter dated 1/29/2008, NRC TAC NO. MD4700. The corresponding eight dissimilar metal butt welds in Unit 3 which were visually inspected during the spring 2007 RFO are scheduled for volumetric (UT) examination in the next RFO.

Qe2. In the MRP-139 ISI program, are the welds appropriately categorized in accordance with MRP-139? If any welds are not appropriately categorized, briefly explain the discrepancies.

A. Yes, the eight dissimilar welds in each unit are appropriately categorized in accordance with MRP-139.

Qe3. In the MRP-139 ISI program, are the ISI frequencies, which may differ between the first and second 10-year intervals after the MRP-139 baseline inspection, consistent with the ISI frequencies called for by MRP-139?

A. Not Applicable. There are no dissimilar welds other than those discussed above. However, the extent and method of examination of the eight welds after the next RFO at Unit 3 beyond the normal ISI program requirement needs to be determined.

Qe4. If any welds are categorized as H or I, briefly explain the licensee's basis for the categorization and the licensee's plans for addressing potential PWSCC.

A. Not Applicable. There are no welds categorized as H or I at IP Units 2 or 3.

Qe5. If the licensee is planning to take deviations from the ISI "requirements" of MRP-139, what are the deviations and what are the general bases for the deviations? Was the NEI 03-08 process for filing deviations followed?

A. No additional ISI deviations are planned.