



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

August 10, 2009

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 3 – NRC INTEGRATED
INSPECTION REPORT 05000286/2009003**

Dear Mr. Pollock:

On June 30, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Indian Point Nuclear Generating Unit 3. The enclosed integrated inspection report documents the inspection results, which were discussed on July 22, 2009, with you 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 two findings of very low safety significance (Green), one of which was also determined to be a violation of NRC requirements. However, because of the very low safety significance, and because the finding was entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV), consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest this NCV, 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 3. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspectors at Indian Point Nuclear Generating Unit 3. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) 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 the Publicly Available Records System (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/

Mel Gray, Chief
Projects Branch 2
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000286/2009003
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
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
Public Citizen's Critical Mass Energy Project
M. Mariotte, Nuclear Information & Resources Service
F. Zalzman, Pace Law School, Energy Project

L. Puglisi, Supervisor, Town of Cortlandt
Congressman John Hall
Congresswoman Nita Lowey
Senator Kirsten E. Gillibrand
Senator Charles Schumer
G. Shapiro, Senator Gillibrand'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
F. Murray, New York State Energy Research
A. J. Kremer, New York Affordable Reliable Electricity Alliance (NY AREA)

available electronically for public inspection in the NRC Public Document Room of the Publicly Available Records System (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/

Mel Gray, Chief
Projects Branch 2
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000286/2009003
w/ Attachment: Supplemental Information

Distribution w/encl: (via E-mail)

S. Collins, RA
M. Dapas, DRA
D. Lew, DRP
J. Clifford, DRP
L. Trocine, RI OEDO
R. Nelson, NRR
N. Salgado, NRR
J. Boska, PM, NRR
J. Hughey, NRR

M. Gray, DRP
B. Bickett, DRP
S. McCarver, DRP
P. Cataldo, SRI, IP3
D. Hochmuth, DRP
D. Bearde, DRP
ROPReportsResources@nrc.gov

SUNSI Review Complete: bab (Reviewer's Initials) Non-Public Designation Category: MD 3.4 Non-Public _____ (A.3 - A.7 or B.1)

DOCUMENT NAME: G:\DRP\BRANCH2\ia - Indian Point 3\Inspection Reports\2009\IP3 2009-003\IP3.2009.003.R3.doc

After declaring this document "An Official Agency Record" it will **will not** be released to the Public.

ML092230096

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	PCataldo/bab for	BBickett/bab	MGraymkg					
DATE	08/06/09	08/10/09	08/10/09					

OFFICIAL RECORD COPY

U.S. Nuclear Regulatory Commission

Region I

Docket No.: 50-286

License No.: DPR-64

Report No.: 05000286/2009003

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating Unit 3

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

Dates: April 1, 2009 through June 30, 2009

Inspectors: P. Cataldo, Senior Resident Inspector, Indian Point 3
A. Koonce, Resident Inspector, Indian Point 3
C. Hott, Resident Inspector, Indian Point 2
G. Hunegs, Senior Resident Inspector, FitzPatrick
D. Johnson, Physical Security Inspector, Region I
S. McCarver, Project Engineer, Region I
J. Noggle, Sr. Health Physicist, Region I
A. Rao, Project Engineer, Region I

Approved By: Mel Gray, Chief
Projects Branch 2
Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY OF FINDINGS	3
REPORT DETAILS.....	5
1. REACTOR SAFETY	5
1R01 Adverse Weather Protection.....	5
1R04 Equipment Alignment	6
1R05 Fire Protection.....	7
1R11 Licensed Operator Requalification Program	9
1R12 Maintenance Effectiveness.....	9
1R13 Maintenance Risk Assessments/Emergent Work Control	10
1R15 Operability Evaluations.....	11
1R18 Plant Modifications	11
1R19 Post-Maintenance Testing.....	12
1R20 Refueling and Outage Activities.....	13
1R22 Surveillance Testing	14
1EP6 Drill Evaluation	14
2. RADIATION SAFETY	15
2PS2 Radioactive Materials Processing and Shipping	15
4. OTHER ACTIVITIES.....	16
4OA1 Performance Indicator Verification.....	16
4OA2 Identification and Resolution of Problems.....	17
4OA3 Event Follow-up	21
4OA5 Other Activities	27
4OA6 Meetings, including Exit.....	27
ATTACHMENT: SUPPLEMENTAL INFORMATION	27
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED AND DISCUSSED	A-2
LIST OF DOCUMENTS REVIEWED.....	A-2
LIST OF ACRONYMS.....	A-7

SUMMARY OF FINDINGS

IR 05000286/2009-003; 04/01/2009 – 06/30/2009; Indian Point Nuclear Generating Unit 3; Event Follow-up.

This report covered a three-month period of inspection by resident and region-based inspectors. Two findings of very low significance (Green) were identified, one of which was also determined to be a non-cited violation (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." The cross-cutting aspect for each finding was determined using IMC 0305, "Operating Reactor Assessment Program." 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," Rev. 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 50.65(a)(4), because Entergy personnel did not adequately assess and manage increased risk associated with planned corrective maintenance. Specifically, Entergy staff did not include in their maintenance risk assessment the increase in shutdown plant risk for the repacking of SP-954A, a non-isolable root isolation from the reactor coolant system associated with the sampling system, during fuel reload operations. The inadequate risk assessment and management of the risk associated with this job resulted in a short duration leak in the RCS.

The inspectors determined this finding affected the Initiating Event cornerstone and was more than minor because the risk assessment did not consider maintenance activities that could increase the likelihood of initiating events. The inspectors determined this finding was of very low safety significance because Entergy staff maintained required mitigation capability in accordance with IMC 0609, Appendix G, Attachment 1, Checklist 4. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance because personnel did not appropriately plan work activities by incorporating appropriate risk insights, job site conditions, contingencies, and abort criteria consistent with nuclear safety. (H.3(a)) (Section 4OA3)

- Green. A self-revealing finding of very low safety significance was identified because Entergy personnel did not have adequate procedures appropriate for maintenance associated with air-operated valves. Specifically, existing Entergy maintenance procedures did not ensure that the 33 steam generator (SG) feedwater regulating valve (FRV) positioner feedback arm connecting linkage hardware was properly secured following maintenance. As a result, on May 15, 2009, this linkage became disconnected which led to SG level oscillations that required a manual reactor trip by control room operators. Entergy personnel repaired the valve positioner feedback arm connecting linkage, identified the

main cause during a post-transient review, performed extent of condition inspections on similar valves susceptible to the same linkage deficiency, and completed a root cause analysis within the corrective action program under condition report (CR)-IP3-2009-02368.

The inspectors determined the finding is more than minor because the finding is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate procedures resulted in the failure of a non-safety-related portion of the 33 SG FRV and resulted in a manual reactor trip. The inspectors evaluated the significance of the finding using IMC 0609, Attachment 4, and determined this finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would be unavailable. Consequently, the finding is of very low safety significance (Green).

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance because Entergy staff did not ensure that complete, accurate and up-to-date procedures were available to perform appropriate maintenance on air-operated valve positioners associated with the 33 SG FRV. (H.2(c))

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Indian Point Unit 3 began the inspection period in a shutdown condition for continuation of refueling outage No. 15 (3R15). The unit achieved initial criticality on April 15, 2009, and reached full power on April 19. Operators manually tripped the Unit 3 reactor May 15 due to a degraded feedwater regulating valve. Operators restored the plant to full power on May 16. Subsequently, problems associated with main boiler feedwater pumps (MBFP) resulted in a downpower to 75% on May 28 and an automatic reactor trip due to steam generator water level control issues. Following repairs to the 31 MBFP, the unit was re-started on May 29 and was stabilized at 55% power to perform repairs to the 32 MBFP. Continuing problems with the MBFP control systems resulted in a subsequent shutdown on May 31 to perform repairs. Subsequently, on June 5, operators returned the plant to 65% power while maintenance staff repaired the 32 MBFP. On June 23, the 32 MBFP was returned to service and operators restored reactor power to 100%. Unit 3 remained at full 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 – 3 samples).1 Hot Weather Preparationsa. Inspection Scope

Using procedure OAP-048, "Seasonal Weather Preparation," Rev. 4, and the Updated Final Safety Analysis Report (UFSAR) as a reference, the inspectors reviewed preparations for hot weather and performed walkdowns of plant areas during the week of June 15, 2009. As part of the walkdown, local area temperatures were checked, as well as the operability of ventilation and air conditioning systems to ensure that the plant was prepared for warm weather conditions. The inspectors focused on the auxiliary boiler feed pump room, control room, and the emergency diesel generator room ventilation systems.

b. Findings

No findings of significance were identified.

.2 Summer Readiness of Offsite and Alternate AC Power Systemsa. Inspection Scope

The inspectors performed a detailed review of the offsite and alternate AC power system readiness, and performed a walkdown to observe the material condition of the Buchanan switchyard and on-site switchyard areas and components. This review also included an assessment of Entergy operator's response to 345 kV grid disturbances that occurred on

April 24th, April 30th, May 7th, June 9th and June 15th, to verify appropriate interface and protocols exist between Entergy staff and the offsite power transmission system operators, such as process, policies and procedures. The inspectors reviewed completed and outstanding work orders for these power systems and components, assessed the adequacy of corrective actions for identified, degraded conditions, and observed the performance of a monthly, on-site switchyard inspection activity conducted on June 17, 2009. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.3 External Flooding Assessment of Manhole No. 34

a. Inspection Scope

The inspectors evaluated Entergy personnel's actions to mitigate the effects of periodic groundwater coverage of safety-related and augmented quality-related cables located in Manhole 34, as well as the effects of groundwater and rain water that collects in the manhole over time. This review verified whether Entergy had appropriate water mitigation strategies, cable inspection and testing, and cable support inspections, to ensure continued operability and functionality of the associated components that are supplied electrical power by the cables that route through this manhole. In particular, the inspectors reviewed Entergy staff's actions to correct a degraded condition that occurred in 2006, which involved a non-functional support for backup service water (SW) pump No. 38, as detailed in condition report CR-IP3-2006-01662. The inspectors also reviewed Entergy engineers' assessments that concluded the support did not provide a safety function. Additionally, the inspectors entered Manhole 34 to inspect and observe the material condition of the cables and associated cable supports. Documents reviewed during this inspection are located in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

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

a. Inspection Scope

The inspectors performed partial system walkdowns to inspect Entergy operators' performance in maintaining the proper equipment alignment of redundant or diverse trains and components during periods of system train unavailability, and where applicable, following return to service after maintenance. The inspectors reviewed system procedures, the Updated Final Safety Analysis Report (UFSAR), and system drawings to verify that the alignment of the applicable system or component supported its required safety functions. The inspectors also reviewed applicable condition reports

or work orders to ensure that Entergy personnel had identified and properly addressed equipment deficiencies that could potentially impair the capability of the available train. The documents reviewed during this inspection are listed in the Attachment.

The inspectors performed partial walkdowns of the following systems or components, which represented three inspection samples:

- 31 and 32 emergency diesel generators (EDGs) electrical alignment while the 33 EDG was out-of-service for maintenance on May 18, 2009;
- 32 and 33 EDGs while the 31 EDG was out-of-service for 2-year and 4-year planned maintenance activities, and exhaust muffler replacement on June 16-17, 2009; and
- 31 EDG return-to-service following replacement of a failed pre-lube pump on June 17, 2009.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown (71111.04S - 1 sample)

a. Inspection Scope

The inspectors performed a complete system walkdown of accessible portions of the auxiliary feedwater (AFW) system to identify discrepancies between the existing equipment alignment and the required alignment for the current plant conditions. The inspectors reviewed operating procedures, surveillance tests, equipment lineup check-off lists, and the UFSAR, to determine if the AFW system was aligned to perform its required safety functions. The inspectors reviewed a sample of condition reports that were written to address deficiencies associated with the AFW system, and verified that these deficiencies were appropriately evaluated and/or resolved. The documents reviewed during this inspection are listed in the Attachment. The walkdown of the AFW system represented one inspection sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Annual Fire Drill (71111.05A - 1 sample)

a. Inspection Scope

On June 10, 2009, the inspectors observed an unannounced fire brigade drill that utilized on-watch fire brigade members from the shift operations crew. The drill was conducted in accordance with Entergy's preplanned drill scenario that involved a simulated electrical fire with associated hazards in the vicinity of electrical distribution switchgear panel MCC 36A, which is located in the plant auxiliary building, a

radiologically-controlled area. The inspectors evaluated the performance of the fire brigade during the drill, consistent with the pre-planned drill scenario, to verify the following attributes:

- The fire brigade members properly donned protective clothing/turnout gear, which included simulated use of self-contained breather apparatus (SCBA) equipment;
- Fire hose lines were capable of reaching the fire hazard locations, were laid out without flow restrictions, and were simulated being charged with water;
- Brigade members entered the fire area in a controlled manner, and utilized appropriate equipment consistent with they type of fire simulated during the drill;
- Sufficient fire-fighting equipment was brought to the scene by the fire brigade;
- The fire brigade leader's directions during implementation of the pre-fire plans for the designated fire area were thorough, clear and effective;
- Radio communications, as well as face-to-face communications with the plant operators and fire brigade members were efficient and effective;
- Control room personnel followed applicable procedures for response to a fire and identified the appropriate Emergency Action Levels and associated notifications consistent with implementing procedures and site Emergency Plan;
- The drill report contained appropriate post-drill critique comments and identified deficiencies consistent with the objectives and acceptance criteria of the drill; and;
- Appropriate deficiencies were entered into the corrective action program;

Documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Quarterly Fire Area Walkdowns (71111.05Q - 6 samples)

a. Inspection Scope

The inspectors conducted tours of the Unit 3 vapor containment (VC) fire areas to assess the material condition and operational status of applicable fire protection features. The inspectors verified, consistent with the applicable administrative procedures, that: combustible material 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. Additionally, the inspectors verified that outage-related activities conducted inside the VC, which resulted in the placement of numerous, additional equipment and support material throughout the VC, would not impact the adequate implementation of fire protection measures. The inspectors also 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 and was conducted in the areas covered by the following Pre-Fire Plans:

- Pre-Fire Plan No. 301;
- Pre-Fire Plan No. 302; and
- Pre-Fire Plan No. 303.

b. Findings

No findings of significance were identified.

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

Quarterly Resident Inspector Evaluation

a. Inspection Scope

On June 22, 2009, 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 operation procedures. The inspectors assessed the clarity and the 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 reviewed simulator fidelity to verify correlation with the actual plant control room, and to verify that differences in fidelity that could potentially impact training effectiveness were either identified or appropriately dispositioned. 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.

1R12 Maintenance Effectiveness (71111.12 – 2 samples)

a. Inspection Scope

The inspectors reviewed performance-based problems that involved selected structures, systems, and components (SSCs), to assess the effectiveness of maintenance activities and to verify activities were conducted in accordance with site procedures and 10 CFR 50.65 (The Maintenance Rule). The reviews focused on:

- Evaluation of Maintenance Rule scoping and performance criteria;
- Verification that reliability issues were appropriately characterized;
- Verification of proper system and/or component unavailability;

- Verification that Maintenance Rule (a)(1) and (a)(2) classifications were appropriate;
- Verification that system performance parameters were appropriately trended; and
- For SSCs classified as Maintenance Rule (a)(1), that goals and associated corrective actions were adequate and appropriate for the circumstances.

The inspectors also reviewed system health reports, maintenance backlogs, and Maintenance Rule basis documents. The documents reviewed during this inspection are listed in the Attachment. The following Unit 3 systems and/or components were reviewed and represented three inspection samples:

- 31 and 32 Main Boiler Feed Pump deficiencies (3R15 to present); and
- Emergency diesel generators service water temperature control valve stroke time failures (CR IP3-2009-02132);

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments/Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed maintenance activities to verify that the appropriate on-line and shutdown risk assessments were performed prior to removing equipment for work as required by 10 CFR 50.65 (a)(4). When planned work scope or schedules were altered to address emergent or unplanned conditions, the inspectors verified that the plant risk was promptly reassessed and managed. Additionally, the inspectors utilized IMC 0609, Appendix G, during various refueling outage periods, to assist in the evaluation of Entergy's shutdown risk assessments. The documents reviewed during this inspection are listed in the Attachment. The following activities represented five inspection samples:

- Transition to/from shutdown and online risk assessments that occurred on April 12-13, 2009;
- Planned risk for various maintenance activities, including the No. 32 boric acid transfer pump, conducted on May 14, 2009;
- Planned risk during No. 33 emergency diesel generator and Appendix R diesel activities on May 17 to 18, 2009;
- Emergent risk following a fault that occurred on the 138kV cross-connect line between Unit 2 and Unit 3 on May 18, 2009; and
- Planned risk during 138kV crosstie outage and No. 33 EDG maintenance activities on May 18, 2009.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 4 samples)a. Inspection Scope

The inspectors reviewed operability evaluations to assess the acceptability of the evaluations, the use and control of compensatory measures when applicable, and compliance with Technical Specifications. These 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 UFSAR and associated design and licensing basis documents. The documents reviewed are listed in the Attachment. The following operability evaluations were reviewed and represented four inspection samples:

- CR-IP3-2009-01200: 32 emergency diesel generator power factor acceptability during 3-PT-R160B, "Capacity Test."
- CR-IP3-2009-02004: 31A Manhole non-functional cable support and seismic criteria evaluation;
- CR-IP3-2009-01829: 32 Atmospheric Steam Dump drifted fully open while controller in manual; and
- CR-IP3-2009-01245: Bearing degradation identified during maintenance on the 32 AFW pump.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 – 2 samples).1 Setpoint Change of Safety Injection Pump Discharge Relief Valve (SI-855)a. Inspection Scope

The inspectors reviewed the design documentation associated with the increase in the relief setpoint on SI-855, from 1575 psig to 1670 psig. The inspectors reviewed plant design documents and calculations to ensure the increase in setpoint would not adversely impact normal and off-normal plant operations. Specifically, the inspectors verified that the increase in allowed pressure would not adversely affect the Safety Injection pumps and piping during normal plant operations with design allowed check valve leakage as well as emergency operating scenarios. Pre-installation testing of the new relief valve was reviewed along with the post-installation testing.

b. Findings

No findings of significance were identified.

.2 Core Exit Thermocouple H05 Substitution with K03

a. Inspection Scope

The inspectors reviewed the design documentation associated with the substitution of Train "A" degraded core exit thermocouple (CET) H05, with Train "B" CET K03. This substitution of CETs located in Quadrant II of the reactor vessel, essentially removed CET H05 from service, and utilized its existing wiring to ensure CET K03 would be viewable from the safety parameter displays in the control room. The inspectors verified the adequacy of the modification to ensure consistency with the design and licensing bases, including the TS, UFSAR, and associated calculations, procedures, and drawings. This verification included a review of attributes, such as engineering design change program requirements, and proposed procedure changes that ensured CET K03 would be identified as H05 on the applicable control room panel displays.

During implementation of the modification, the inspectors verified that appropriate configuration and testing controls were utilized, which ensured appropriate interface existed between the various activities to ensure continuity of safe plant operations.

Following implementation, the inspectors verified that post-modification testing criteria were adequate and that acceptable results were obtained. Additionally, the inspectors verified that applicable operating and maintenance procedures were appropriately revised consistent with the requirements of the modification.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 – 5 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 plant personnel. The inspectors verified that: test acceptance criteria were clear; tests demonstrated operational readiness and were consistent with design basis documentation; test instrumentation had current calibrations and appropriate range and accuracy for the application; tests were performed as written; and applicable test prerequisites were 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 following post-maintenance activities were reviewed and represented seven inspection samples:

- Repair 32 EDG fuel oil day tank level control valve, DF-LCV-1208A;
- Replace rotating assembly for the 32 boric acid transfer pump;
- 34 reactor coolant pump (RCP) seal injection containment isolation valve (CH-MOV-250D) maintenance activities;

- Replacement of 32 AFW pump cutback controller; and
- Replacement of positioner feedback arm connecting linkage on the 33 SG FRV.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

.1 Refueling Outage No. 15 (partial for outage credited and started in 1st quarter 2009)

a. Inspection Scope

The inspectors observed and/or evaluated the selected outage activities listed below to verify that (1) shutdown risk was considered during schedule preparation and implementation, and high risk significant evolutions such as mid-loop or reduced inventory conditions; (2) defense-in-depth (DID) measures were utilized to mitigate impacts on key safety functions (e.g., reactivity control, electrical power availability, containment integrity, etc.) due to plant configuration control changes and ensure compliance with technical specifications and the operating license throughout the outage period; and (3) risk significant activities were conducted in accordance with procedures and evaluated in a manner appropriate for the circumstances.

- Fuel transfer from the spent fuel pool into the vapor containment, and final core reload activities; Special nuclear material (SNM) accountability, transfer and control;
- Plant/reactor startup and shutdown, and heatup/cooldown activities (in accordance with TS limits);
- Changes in daily plant risk and implementation of DID measures;
- Verified mini-containment integrity and RHR valve maintenance;
- Post-outage boric acid inspection inside the vapor containment to assess effectiveness of unidentified leakage monitoring and compliance with TS, as well as effectiveness of boric acid cleanup of issues identified post-shutdown;
- Open outage constraints (work orders and condition reports) were reviewed to verify appropriate disposition of issues, both technical and/or administratively, to ensure compliance with procedural and/or TS requirements;
- Performed a final vapor containment closeout inspection to ensure debris and equipment were appropriately removed or restrained to mitigate potential impact on reactor and containment sumps; verified compliance with OAP-007, "Containment Entry and Egress," Rev. 15; and
- Verified compliance with TS through verification of Mode change checklists, 3-PT-V053C, "Mode Change Checklist Mode 5 to Mode 4," Rev. 12.

b. Findings

No findings of significance were identified.

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

The inspectors witnessed performance of surveillance tests and/or reviewed test data of selected risk-significant structures, systems, and components, to assess whether test results satisfied Technical Specification, UFSAR, Technical Requirements Manual, and Entergy procedure requirements. The inspectors verified that: test acceptance criteria were sufficiently clear; tests demonstrated operational readiness and were consistent with design basis documentation; test instrumentation had accurate calibrations and appropriate range and accuracy for the application; tests were performed as written; and applicable test prerequisites were satisfied. Following the tests, the inspectors verified that the equipment was capable of performing the required safety functions. The documents reviewed during this inspection are listed in the Attachment. The following surveillance tests were reviewed and represented five inspection samples, one of which includes IST surveillances:

- 3-PT-R003D, "Safety Injection Test," Rev.29, on April 8, 2009;
- 3-PT-R085, "RHR Valves 730 and 731 Disc Integrity Test," Rev 9 (IST);
- 3-PT-V032T, "Pressure Decay Test Of Underground Condensate Piping," Rev. 1, conducted on March 22, 2009;
- SOP-RPC-006A, "Reactor Thermal Power Calculation," Rev. 17, conducted on April 25, 2009; and
- 3-PT-R20A, "Auxiliary Boiler Feed Pump Room Temperature Sensors (TC-1112A, TC-1112S)," Rev. 9, and 3-PT-R20B, "Auxiliary Boiler Feed Pump Room Temperature Sensors (TC-1113A, TC-1113S)," Rev. 8, conducted on May 12 - 13, 2009.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)a. Inspection Scope

The inspectors evaluated an emergency classification conducted on June 22, 2009, during a licensed-operator requalification simulator training session. The inspectors observed an operating crew respond to various, simulated initiating events that ultimately resulted in the simulated implementation of the site emergency plan. In particular, the inspectors verified the adequacy and accuracy of the simulated emergency classification of Site Area Emergency. The inspectors verified this initial classification was appropriately credited as an opportunity toward NRC performance indicator data. The inspectors verified that significant performance deficiencies were appropriately identified and addressed. This evaluation constituted one inspection sample.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety (PS)

2PS2 Radioactive Materials Processing and Shipping (71122.02 - 6 samples)

a. Inspection Scope

During June 22-26, 2009, the inspectors conducted the following activities to verify that Entergy's radioactive material processing and transportation programs complied with the requirements of 10 CFR 20, 61, and 71; and Department of Transportation (DOT) regulations 49 CFR 170-189.

- (1) The inspectors reviewed the solid radioactive waste system description in the UFSAR, the 2008 radiological effluent release report for information on the types and amounts of radioactive waste disposed, and the scope of the audit program to verify that it meets the requirements of 10 CFR 20.1101.
- (2) The inspectors walked-down the liquid and solid radioactive waste processing systems to verify and assess that the current system configuration and operation agree with the descriptions contained in the UFSAR and in the Process Control Program (PCP); and reviewed the status of any radioactive waste process equipment that is not operational and/or is abandoned in place; verified that the changes were reviewed and documented in accordance with 10 CFR 50.59, as appropriate. The inspectors reviewed the current processes for transferring and dewatering of radioactive waste resin and sludge discharges into shipping/disposal containers to determine if appropriate waste stream mixing and/or sampling procedures and methodology for waste concentration averaging provide representative samples of the waste product for the purposes of waste classification as specified in 10CFR61.55 for waste disposal.
- (3) The inspectors reviewed the radio-chemical sample analysis results for each of the radioactive waste streams, reviewed the use of scaling factors and calculations with respect to these radioactive waste streams to account for difficult-to-measure radionuclides, verified that the program assures compliance with 10 CFR 61.55 and 10 CFR 61.56 as required by Appendix G of 10 CFR Part 20, and verified that the waste stream composition data accounts for changing operational parameters and thus remains valid between the annual or biennial sample analysis update.
- (4) On June 24-25, 2009, Entergy technicians prepared, packaged, and completed shipment No. 09-109 that contained spent filters in a Type A cask for shipment to a waste processor. The inspectors observed Entergy's shipment preparations that included: packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifests, shipping papers provided to the driver, and verification of shipment readiness.

(5) The inspectors sampled the records of the following non-excepted package shipments to a waste processor, or other entities as applicable, and reviewed these records for compliance with NRC and DOT requirements:

- 08-055, Spent fuel pool demineralizers shipment on April 7, 2008;
- 08-093, Hudson River silt shipment on May 15, 2008;
- 08-170, Sodium hydroxide shipment on September 4, 2008;
- 08-200, Unit 1 debris shipment on November 4, 2008
- 08-223, Fuel sipping equipment shipment to Westinghouse on December 15, 2008;
- 09-068, Dry active waste shipment on April 15, 2009;
- 09-100, Unit 1 pool sludge shipment on June 10, 2009;
- 09-102, Unit 2 primary resin shipment on June 17, 2009;
- 09-103, Unit 3 bead resin shipment on June 17, 2009; and
- 09-109, Spent filter shipment on June 25, 2009.

(6) The inspectors reviewed Entergy's Licensee Event Reports, Special Reports, audits, State agency reports, and self-assessments related to the radioactive material and transportation programs performed since the last inspection and determined that identified problems are entered into the corrective action program for resolution. The inspectors also reviewed corrective action reports written against the radioactive material and shipping programs since the previous inspection.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

Resident Inspector Baseline Inspection (71151 – 2 samples)

a. Inspection Scope

The inspectors reviewed the performance indicator data listed below, which is associated with the Barrier Integrity and Mitigating Systems cornerstones, respectively. The inspectors used Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 5, and applicable Entergy procedures to verify individual performance indicator accuracy and completeness. The documents reviewed during this inspection are listed in the Attachment.

- Reactor Coolant System Specific Activity (April 2008 to March 2009)
- Safety System Functional Failure (April 2008 to March 2009)

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 – 3 samples)

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

a. Inspection Scope

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

In accordance with the baseline inspection procedures, 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 personnel's threshold for problem identification, the adequacy of the cause analysis, extent of condition reviews, operability determinations, and the timeliness of the associated corrective actions. The condition reports reviewed during this inspection are listed in the applicable inspection sections.

b. Findings

No findings of significance were identified.

.2 Public Radiation Safety Cornerstone

a. Inspection Scope

The inspectors screened 33 corrective action condition reports initiated between January 2008 and June 2009 and associated with the radiological waste transportation program.

b. Findings

No findings of significance were identified.

.3 Focused Review of Corrective Actions Related to the Installation and Project Management of the New Alert and Notification System (ANS) (71152 – 1 sample)

a. Inspection Scope

The inspectors reviewed Entergy personnel's actions in response to condition reports (CRs) generated as a result of issues associated with the installation and project management of the new alert and notification system (ANS) for the Indian Point Energy Center. The inspectors also reviewed Entergy procedures on project management and

external stakeholder communications. In addition, the inspectors interviewed applicable members of Entergy's staff including a lead project manager and licensing staff. The focus of this inspection was to verify that the corrective actions, reviewed during the December 2008 Enforcement Follow-up Inspection (Inspection Procedure 92702, NRC Inspection Report 50-247/286, 2008503, dated January 27, 2009, ADAMS Accession No. ML090280267), were being completed in a thorough and timely manner.

b. Findings

No findings of significance were identified. The inspectors reviewed CRs documenting issues related to the installation and project management of the new ANS placed into service for the Indian Point Energy Center in 2008. Entergy staff has taken appropriate corrective actions, or has corrective actions planned to address each issue that was identified. For example, inspectors verified that responsible personnel have taken corrective actions, or have corrective actions planned to revise their project management process, require greater senior management oversight for projects, and develop a new procedure for interactions with external stakeholders.

.4 Semi-Annual Trend Review: Human Performance - Error Prevention Techniques (71152 – 1 sample)

a. Inspection Scope

In July 2009, inspectors reviewed Entergy staff's progress in implementing corrective actions identified in 2008 to address Human Performance issues as outlined in Entergy's Human Performance Improvement Plan with a focus on specific efforts since January 2009. The inspectors evaluated staff performance improvement plans and actions using inspection guidance in Inspection Procedure 71152, "Identification and Resolution of Problems." Specifically, the inspectors assessed Entergy's progress in addressing human performance by evaluating whether Entergy's internal milestones were being monitored and consistently met and whether adjustments in approach were made when necessary. This inspection focused on the actions implemented since January 2009.

The inspectors conducted a review of the applicable condition reports (CRs), corrective action assignments (CAs), focused self-assessments, Quality Assurance group assessments, and causal evaluations for human performance events and errors. The inspectors also reviewed Entergy internal performance indicators related to their performance improvement plan, and reviewed a sample of revised procedures in order to assess the adequacy of the performance plan and effectiveness of corrective actions.

b. Findings and Observations

No findings of significance were identified.

In late December 2008, NRC inspectors independently reviewed the causal evaluation and corrective actions focused on an emerging trend, identified by Entergy personnel, and associated with human performance errors. Entergy staff and managers identified several events, attributable to human performance errors that occurred at Indian Point (both units) in 2008, which resulted in personal injury and/or equipment failures. The

inspectors determined that Entergy managers recognized this adverse trend in human performance, and developed a Human Performance Program to address the causes of the events, and to assist in the prevention or mitigation of future occurrences. The inspectors noted that the Human Performance Program included actions to understand the causes of human performance errors, to reduce these human performance errors in the future, and to monitor future performance.

The inspectors determined Entergy staff and managers developed station-wide communication tools, training plans, and adjusted the site business plan to address these common causes of human performance errors. New communication tools developed included Safety and Human Performance Stand Downs and periodic human performance bulletins. The Safety and Human Performance Stand Downs were used to develop a forum to reinforce site human performance expectations and discuss recent human performance error events. Entergy managers also scheduled future stand downs to coincide with major evolutions on site in 2009, such as the Unit 3 refueling outage.

The inspectors noted that Entergy staff developed a Human Performance Simulator and Work Management Academy to provide training on human performance traps, human performance tools, and to improve work planning and execution. The Human Performance Simulator focuses on reinforcing the proper threshold for identifying error traps and the effective use human performance tools to accomplish tasks. Operations and maintenance departments have completed this training, and it will now be included as annual refresher training for their department personnel. The Work Management Academy was required for all supervisory personnel and reinforced Entergy's work management model and procedures. Entergy staff and managers also developed its Thought Improvement Process (TIP) Initiative to encourage employees to provide constructive feedback to improve the site's human performance.

The inspectors also noted that Entergy staff and managers established commitments to monitor future human performance at Indian Point. In particular, human performance indicators and self-assessment results would be used to monitor the effectiveness of the current programs and for evaluation of future trends in human performance. The inspectors concluded that Entergy managers took action to address the site's emerging adverse human performance trend. The programs established within Entergy's Human Performance program were determined to be reasonable to address the recent human performance.

During the July 2009 semi-annual trend review, inspectors determined that Entergy staff continued to make progress in implementing their corrective action plans to address human performance issues related to error prevention and to make adjustments to those actions based on the results of self-assessments, performance indicators, and benchmarking. For example, based on observations of supplemental workers during the recent Unit 3 refueling outage, actions were being developed to provide additional oversight of supplemental workers. The inspectors also noted that, in accordance with previous corrective actions, Entergy staff and managers had:

- Continued to use the Human Performance Simulator to train various departments, and to check and adjust development of dynamic learning activities in the simulator;

- Implemented a standard schedule for site wide stand downs during outage and non-outage periods;
- Revised pre-job briefing procedures to include signature accountability,
- Implemented a task/job observation program aligned with the work control process and Most Error Likely Task-focused crew assessments;
- Assigned experienced mechanics, technicians, and operators to procedure groups;
- Reinforced critical procedure steps through the use of special markings, briefs, and feedback;
- Filled key personnel vacancies previously identified as necessary to strengthen the organization's effectiveness in preventing human error;
- Improved adherence to online and outage work management milestones;
- Improved effectiveness of work package walk downs and feedback;
- Established weekly work package quality meetings.

Additionally, the inspectors noted that Entergy has developed additional performance indicators to assist in monitoring progress in addressing human errors, and is planning to conduct annual Human Performance training to first-line supervisors and above.

The recent trend in human performance related to error prevention indicated that corrective actions, to date, have not resulted in a decrease in the human error rate trend, primarily due to issues that occurred during the Unit 3 refueling outage.

Notwithstanding, the inspectors concluded that station management has adjusted its actions/focus as a result of its evaluation of additional performance information, especially from the outage. The programs and actions established within Entergy's Human Performance program were determined to be reasonable to address the recent human performance issues related to error prevention.

.5 Focused Review of Corrective Actions for 31 Emergency Diesel Generator Fuel Oil Control Valve Maintenance Issues (71152 – 1 sample)

a. Inspection Scope

The inspectors reviewed Entergy's corrective actions to address inadequate maintenance associated with the 31 emergency diesel generator (EDG) detailed under condition report CR-IP3-2008-02508, dated October 9, 2008. The inspectors evaluated the apparent cause evaluation to ensure the identified causes and corrective actions were adequate and appropriate for the circumstances, as well as commensurate with the safety significance applicable to the highly risk significant EDGs.

b. Findings and Observations

No findings of significance were identified.

However, the inspectors identified the apparent cause evaluation (ACE) did not address a work control issue. Specifically, the inspectors concluded the evaluation team did not fully consider that Entergy personnel planned and performed this maintenance under the minor maintenance work control process contrary to Entergy work control procedures.

The inspectors determined that the Entergy work control procedures, detailed in EN-WM-100, "Work Request (WR) Generation, Screening and Classification," and EN-WM-105, "Planning," identify that detailed work instructions are required for those work activities that are risk significant and require entry into limiting conditions for operation. In accordance with these procedures, more detailed work instructions should have been generated to ensure the work activity associated with the 31 EDG was appropriate for the circumstances. In particular, contrary to the above procedures, the minor maintenance work package did not contain adequate instructions regarding the operation and maintenance of the fuel oil pressure control valve (PCV), PCV 1247, for the 31 EDG. The instructions did not provide for details regarding the gasket replacement and its effect on the PCV internal settings. As a result, maintenance workers were not cognizant of PCV internal setting changes during the gasket replacement which, ultimately, resulted in the 31 EDG not being able to provide appropriate fuel oil pressure to meet surveillance and operational requirements during the post-maintenance testing, and required a premature shutdown of the EDG, as well as accrual of additional out-of-service hours.

The inspectors determined that the performance of maintenance on the 31 EDG, using a minor maintenance work package contrary to established work control procedures was a violation. However, because the equipment issue was identified by Entergy personnel prior to the completion of the overall maintenance window, the inspectors determined that in accordance with IMC 0612, Appendix E (Section 5), the performance issue is considered a "work-in progress" issue that is of minor significance. As a result, this failure to comply with Entergy work control procedures constitutes a violation of minor significance that is not subject to enforcement action in accordance with the NRC's Enforcement Policy. Entergy personnel entered this issue in the corrective action program (CR-IP3-2009-02958).

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

.1 Unintended RCS leak initiated on April 1, 2009, during fuel load with RCS at >90 ft

a. Inspection Scope

The inspectors evaluated Entergy staff's response to an unintended RCS leak initiated when supplemental maintenance workers commenced work to replace the packing in valve SP-954A, a sampling system root stop isolation valve from the 31 RCS hot leg. Specifically, the inspectors reviewed Entergy staff's response to the event and reviewed the conditions that led to the event to evaluate if additional inspection was required, and to ensure that Entergy personnel properly classified the event. The inspectors verified Entergy's corrective actions were appropriate in response to the event. This issue was initially entered into Entergy's corrective action program as CR-IP3-2009-01550 with a follow up entry as CR-IP3-2009-03003.

b. Findings

Introduction: The inspectors identified a NCV of very low safety significance (Green) of 10 CFR 50.65(a)(4) because Entergy personnel did not adequately assess and manage the risk associated with planned corrective maintenance. Specifically, Entergy personnel did not include the increase in shutdown plant risk in its risk assessment and use appropriate mitigating strategies while repacking SP-954A during fuel reload operations.

Description: On April 1, 2009, Indian Point Unit 3 was in a shutdown condition for refueling outage 3R15. The plant was in Mode 6, "Refueling," with reactor core reload in progress, and the refueling cavity was flooded to approximately 93', as required to support fuel movements.

The inspectors noted that maintenance personnel were assigned to perform work order (WO) 51483809, Task 1, "Packing Leak Noted During PT-R131, RCS Integrity Test, SP-954A Packing Leak During PT-R131 RCS Integrity Test," with a site radiological protection (RP) technician providing radiological support. To replace the valve's packing, the WO directed the workers to remove the valve's bonnet and internals. This valve is a root stop isolation valve for a sample system line from the 31 reactor coolant system (RCS) loop, and is not isolable from the RCS.

Upon removal of the valve's bonnet, the maintenance and RP technician noticed an unexpected amount of water coming from the inside of the valve. The maintenance and RP technician promptly replaced the valve bonnet in order to stop the leak, which was later estimated at approximately one liter of RCS water. The inspectors determined that this condition represented an uncontrolled leak in the RCS and noted that no individual was contaminated as a result.

During the review of this condition, the inspectors noted that the repacking of SP-954A was originally scheduled to be conducted by Entergy personnel on March 27, 2009, while the RCS was in a drained-down condition, with refueling cavity/RCS water level at 61' 8", with no fuel in the reactor vessel. The inspectors noted that SP-954A is physically located at the mid-level position on the 31 RCS hot leg, which is approximately at the 62' elevation. Due to work backlogs, this maintenance item was transferred to supplemental personnel for completion on March 29, 2009. However, it was identified that the work activity required the installation of scaffolding to perform the maintenance, which further delayed the work until April 1, 2009. Since this work item did not have the proper logic ties in the outage schedule to the original, drained-down and defueled condition, the subsequent delays in the actual start of this work activity resulted in the work being performed after the reactor cavity was re-flooded to support fuel reload.

Entergy personnel utilize procedure IP-SMM-OU-104, "Shutdown Risk Assessment" to ensure requirements of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants" are met during plant shutdown conditions. IP-SMM-OU-104 requires the Outage Risk Assessment Team (ORAT) to review the outage schedule prior to shutdown to assess the sequencing of events and document any errors within the schedule. Additionally, the ORAT is required to document their review and all

resolutions to errors that had been identified within the schedule in a condition report prior to the commencement of the outage. In the 3R15 Refueling Outage Schedule Risk Assessment Report, the ORAT identifies that a drain-down to 61' 8" was to occur on March 27, 2009, to support work activities associated with the 31 reactor coolant pump (RCP), and did not describe work to be performed on SP-954A. Furthermore, the ORAT review of the outage schedule did not identify that the proper logic ties, which would have prevented the valve repack work from drifting out of the appropriate drain down window, were not in place for WO 51483809.

The inspectors reviewed Entergy staff's root cause analysis (RCA) of the event, which detailed two root causes and three contributing causes associated. Specifically, the root causes were determined to be: (1) Failure to Comply With (Tag out) Procedural Requirements, and (2) Inadequate Tag Out to Ensure Worker Protection. The contributing causes were determined to be: (1) Inadequate Commitment to Outage Preparation, (2) Missed Opportunity in Scheduling Work, and (3) Missed Opportunity to Identify Inappropriate Plant Conditions for Scope of Work During Pre-job Briefs. Consistent with these contributing causes, the inspectors determined that Entergy personnel did not identify their failure to properly assess and manage the risk associated with the SP-954A valve work prior to outage 3R15, and during opportunities within the outage process that occurred following the originally-scheduled start date of March 27th, e.g., (1) work backlog that transferred the activity to supplemental personnel, (2) the delay to build scaffolding, and (3) the actual day the work started.

Analysis: The inspectors determined there was a performance deficiency because Entergy staff did not completely and accurately assess and manage the increase in plant risk resulting from planned maintenance activities.

The inspectors determined that this finding affected the Initiating Event cornerstone and was more than minor because Entergy staff's risk assessment did not consider maintenance activities that could increase the likelihood of initiating events. The inspectors determined the significance of this finding using IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined this finding was of very low safety significance (Green) because Entergy personnel maintained required mitigation capability in accordance with IMC 0609 Appendix G, Attachment 1, Checklist 4.

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, because Entergy personnel did not appropriately plan work activities by incorporating appropriate risk insights, job site conditions, contingencies, and abort criteria consistent with nuclear safety. (H.3(a))

Enforcement: 10 CFR 50.65(a)(4), requires, in part, that licensees assess and manage the increase in risk that may result from proposed maintenance activities. Contrary to the above, prior to and during the 3R15 refueling outage, Entergy personnel did not adequately assess and manage the increase in risk associated with the packing replacement on SP-954A, the 31 RCS hot leg sample root isolation valve, which is unisolable from the RCS. Specifically, Entergy personnel did not identify the full impact the SP-954A work had on nuclear safety, i.e., a possible unmonitored/uncontrolled leak in the RCS, and take appropriate actions to control the maintenance. Because this

violation is of very low safety significance and has been entered into the Entergy's corrective action program as CR-IP3-2009-03003, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000286/2009003-01: Failure to assess and manage the increase in risk prior to the performance of maintenance on valve that was unisolable from the reactor coolant system)**

.2 Manual Reactor Trip on May 15, 2009 (3FO9A)

a. Inspection Scope

The inspectors evaluated the response of control room personnel following the manual reactor trip that was initiated due to steam generator water levels that approached automatic reactor trip setpoints. The inspectors reviewed plant computer data, which included the sequence of events report and plant parameter traces, and discussed the event with plant personnel, to verify that plant equipment responded as expected, and to ensure that operating procedures were appropriately implemented. The inspectors verified that Entergy's post-trip review group (PTRG) correctly identified the cause(s) of the trip to ensure appropriate corrective actions were implemented prior to restart. This event and the PTRG report were entered into Entergy's corrective action program as CR IP3-2009-02368. The inspectors reviewed the following NRC Operating Experience information for applicability: Review of Operating Experience Smart Sample: OpESS FY2009-02, "A Negative Trend and Recurring Events Involving Feedwater Systems."

b. Findings

Introduction: The inspectors identified a self-revealing finding of very low safety significance (Green) because Entergy personnel did not have adequate procedures for the circumstances for maintenance associated with air-operated valves. Specifically, existing Entergy maintenance procedures did not ensure that the 33 steam generator (SG) feedwater regulating valve (FRV) positioner feedback arm connecting linkage hardware were properly secured following maintenance. As a result, on May 15, 2009, this linkage became disconnected which led to SG level oscillations that required a manual reactor trip by control room operators.

Description: On May 15, 2009, Unit 3 control room operators responded to SG water level deviation alarms and took manual control of the FRV as required by procedures. When operators did not observe a response in main feedwater flow or SG water level, operators manually tripped the reactor prior to automatic reactor protection setpoints being reached. Subsequently, Entergy personnel identified that feedback linkage (threaded rod between swivel-joints) between the valve actuator and the valve positioner for FCV-437 had disconnected, and that a locking nut on the threaded rod portion had backed off, which was an unexpected condition. A post-transient review team was initiated, as well as a root cause evaluation, to determine the cause of the event. In addition, Entergy personnel performed an initial extent-of-condition review to determine the condition of other valve positioners that may present similar operability or functionality concerns. The inspectors noted that Entergy personnel completed the post-transient review, performed repairs on the 33 FRV, as well as the 31 FRV, due to

concerns regarding the conduct of maintenance on both valves during the recent refueling outage that ended in April 2009.

The inspectors reviewed the root cause analysis (RCA), which was conducted under condition report CR-IP3-2009-02368. The inspectors noted that Entergy personnel had determined the cause of the event to be inadequate procedure directions and written instructions, with one of the contributing causes attributed to ineffective use of human performance tools. Specifically, the governing maintenance procedure for the FRVs, 0-VLV-416-AOV, did not have appropriate guidance for the proper installation and tightening of locknuts for the feedback linkage. Additionally, the RCA identified that the FRV diagnostic testing procedure, 0-VLV-404-AOV, which followed the performance of the overhaul and maintenance of the valve during the most-recent refueling outage, required a specific "inspection" be performed under the calibration/post-maintenance section of this procedure. In Attachment 5, the technician is required to inspect the feedback linkage to ensure jam nuts on the threaded rod are tight. The RCA detailed that this "inspection" provided an opportunity for confusion because it did not explicitly define the inspection attribute of "tight." The RCA also detailed a missed opportunity in that the technician did not observe that the upper jam nut on the threaded rod of the feedback linkage was missing.

While the inspectors determined that this lockwasher was most likely not installed during original installation during the preceding refueling outage in 2007, the inspectors concluded that it should have been identified during the most recent 2009 outage, because the remaining FRVs on both units have lockwashers installed on both ends of the threaded rods. Moreover, operating experience located within the governing procedures, which are also required to be discussed during pre-job briefs, identify the different failure mechanisms of air-operated valves in high vibration environments. Some of these failures address the proper tightening and installation of jam nuts or appropriate locking mechanisms to prevent similar occurrences, which in turn, should have sensitized the technicians to these issues to ensure jam nuts encountered during these maintenance opportunities were appropriately tightened.

The inspectors also noted that the maintenance and diagnostic procedures were reviewed under the Procedure Upgrade Project (PUP). This project was instituted by Entergy personnel in response to identified deficiencies in procedures that manifested into inspection findings in previous assessment periods, and a classification of a substantive cross-cutting issue that warranted Entergy's establishment of the PUP to improve the quality of procedures at both Units No. 2 and 3.

Analysis: The inspectors determined there was a performance deficiency because Entergy did not have adequate maintenance procedures to ensure for positive locking of connecting hardware for air-operated valve positioner feedback linkages. The inspectors concluded the finding is more than minor because the finding was associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate procedures resulted in the failure of a non-safety-related portion of FCV-437, the 33 steam generator main feedwater regulating valve, and resulted in a manual reactor trip due to steam generator water levels that

approached automatic reactor trip protection actuation setpoints. The inspectors evaluated the finding using IMC 0609, Attachment 4, "Initial Screening and Characterization of Findings," and determined the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Consequently, the finding is of very low safety significance (Green).

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance because Entergy personnel did not ensure that complete, accurate and up-to-date procedures were available to perform appropriate maintenance on air-operated valve positioners associated with the 33 SG FRV. (H.2(c)).

Enforcement: Enforcement action does not apply because the performance deficiency was related to non-safety related equipment and procedures and did not involve a violation of regulatory requirements. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, this issue is being treated as a FIN. **FIN 05000286/2009003-02: Inadequate maintenance procedures on FRVs resulted in a manual reactor trip.**

.3 Automatic Reactor Trip on May 28, 2009 (3FO9B)

a. Inspection Scope

The inspectors evaluated the response of control room personnel following the automatic reactor trip that occurred following the down power to 65% in response to increasing vibrations on the 32 main boiler feed pump on May 25, 2009. The inspectors reviewed plant computer data, evaluated plant parameter traces, and discussed the event with plant personnel, to verify that plant equipment responded as expected, and to ensure that operating procedures were appropriately implemented. The inspectors verified that Entergy's post-trip review group (PTRG) correctly identified the cause(s) of the trip to facilitate corrective actions prior to restart. This event and the PTRG report were entered into Entergy's corrective action program as CR IP3-2009-02494. Corrective actions included repair to both the 31 and 32 main boiler feed pumps as well as a Root Cause Analysis (RCA) to determine the cause(s) of the feed pump failures, due July 9, 2009.

b. Findings

No findings of significance were identified.

.4 Pressurizer Pressure Low Pressure and Instrument Failure Condition on June 10, 2009

a. Inspection Scope

The inspectors evaluated the response of control room personnel following the receipt of a low pressurizer pressure alarm, along with minor turbine power and load oscillations that were observed on June 10, 2009. The inspectors reviewed plant computer data, evaluated plant parameter traces, discussed the condition with plant personnel, and verified that plant equipment responded as expected. The inspectors reviewed 3-AOP-INST-1, "Instrument/Controller Failures," Rev. 5, to verify that required actions were

completed. The inspectors also reviewed the details of this condition as documented in the corrective action program under condition report CR-IP3-2009-02680.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that these activities were consistent with Entergy security procedures and applicable regulatory requirements. Although these observations did not constitute additional inspection samples, the inspections were considered an integral part of the normal, resident inspector plant status reviews during implementation of the baseline inspection program.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

Exit Meeting Summary

On July 22, 2009, the inspectors presented the inspection results to Mr. Joseph Pollock and other Entergy staff members, who acknowledged the inspection results. While some proprietary items were reviewed and returned during the inspection, no proprietary information is presented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

J. Pollock, Site Vice President
A. Vitale, General Manager, Plant Operations
K. Davison, Assistant General Manager, Plant Operations
P. Conroy, Director, Nuclear Safety Assurance
D. Gagnon, Manager, Security
R. Walpole, Manager, Licensing
B. Beckman, Manager, Maintenance
J. Dinelli, Assistant Operations Manager, Unit 3
V. Myers, Supervisor, Mechanical Design Engineering
T. Orlando, Engineering Director
R. Burrioni, Manager Programs, Components and Engineering
D. Loope, Manager, Radiation Protection
S. Verrochi, Manager System Engineering
F. Inzirillo, Manager, Quality Assurance
N. Azevedo, Supervisor, Code Programs
T. Morzello, Maintenance Supervisor
G. Dahl, Licensing Engineer
H. Anderson, Licensing Engineer
D. Smith, ALARA Specialist
G. Hocking, Supervisor, Radiation Protection Support
R. Blaine, Supervisor, Radiation Protection Operations
S. Sandike, Specialist, Effluent & Environmental Monitoring
P. Donahue, Specialist, Effluent & Environmental Monitoring
R. Mages, ALARA Specialist
N. Papayia, QA
B. Allen, Code Programs
R. Walpole, Manager, Licensing
M. Burney, Licensing

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Open and Closed

05000286/2009003-01	NCV	Failure to assess and manage the increase in risk prior to the performance of maintenance on valve that was unisolable from the reactor coolant system. (Section 4OA3.1)
05000286/2009003-02	FIN	Inadequate maintenance procedures on FRVs resulted in a manual reactor trip. (Section 4OA3.2)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

Engineering Guide ENN-EP-G-004, Switchyard and Large Power Transformer Preventive Maintenance Guidelines, Rev. 0
 3-SOP-EL-005, Operation of On-Site Power Sources, Rev. 38
 IP-SMM-OP-104, Offsite Power Continuous Monitoring and Notification, Rev. 8
 0-MS-412, Inspection and Cleaning of Bus Bars, Contacts, Ground Connections, Wiring and Insulators, Rev. 0

Work Orders

52186394-01 00116598 186960 00132918 00177978 00189376
 51690233-01 51694953-01 00172295

Condition Reports (CR-IP3-)

2008-01498 2009-02261 2009-02241 2009-01347 2009-01606 2009-02799
 2009-02666 2009-02749 2005-02634

Work Requests

00131842

Drawings

9321-F-31153, Conduit Details Manhole 34, Rev. 8

Section 1R04: Equipment Alignment

Procedures

SOP-FW-004, Auxiliary Feedwater System Operation, Rev. 24
 3-COL-EL-005, Diesel Generators, Rev. 34

Work Orders

51675356 00131842

Section 1R05: Fire Protection

Procedures

EN-DC-161, Control of Combustibles, Rev. 3
IP-SMM-DC-901, IPEC Fire Protection Program, Rev. 6

Other

EN-DC-189, Fire Drills, Rev. 1
Fire Brigade Drill Report dated June 10, 2009

Section 1R11: Licensed Operator Regualification

Procedures

EOP-E-0, Reactor Trip or Safety Injection
FR-H.1, Response to Loss of Heat Sink

Other

13SX-LOR-SES003, Miscellaneous Equipment Failures and Events, Rev. 0

Section 1R12: Maintenance Effectiveness

Procedures

3-PT-Q016, EDG and Containment Temperature SW Valves SWN-1176 & 1176A and SWN-TCV-1104 & 1105, Rev. 20

Condition Reports (CR-IP3-)

2009-00730 2009-01936 2009-01999 2009-02578

Maintenance Rule Monitoring Documents

EN-DC-143, System Health Reports, Rev. 8
EN-DC-159, System Monitoring Program, Rev. 3
EN-DC-167, Classification of Structures, Systems, and Components, Rev. 2
EN-DC-203, Maintenance Rule Program, Rev. 1
EN-DC-204, Maintenance Scope and Basis, Rev. 1
EN-DC-205, Maintenance Rule Monitoring, Rev. 2
EN-DC-206, Maintenance Rule (a)(1) Process, Rev. 1
SED-AD-22, Condition Monitoring of Maintenance Rule Structures, Rev. 4

Miscellaneous

Maintenance Rule Basis Document - Main Feedwater System

Work Orders

51559321 00191318 51484856 00196649 5202207 00138837
00187790 00171345 51559321 00154220 00166500

Section 1R13: Maintenance Risk Assessment and Emergent Work Control

Procedures

IP-SMM-WM-101, On-Line Risk Assessment, Rev. 3
Work Week Managers Operator's Risk Reports
3R15 Refueling Outage Schedule Risk Assessment Report, Amended Feb. 2009

IP-SMM-OU-104, Attachment 9.1, Shiftly Outage Shutdown Safety Assessment, Rev. 5

Section 1R15: Operability Evaluations

Procedures

EN-OP-104, Operability Determinations, Rev. 3
Indian Point Unit 3 Updated Final Safety Analysis Report, Rev. 2
3-SOP-ESP-001, Local Equipment Operation and Contingency Actions, Rev. 19
0-TUR-403-AFP, Worthington Auxiliary Boiler Feed Pump Turbine Preventive Maintenance,
Rev. 3

Condition Reports (CR-IP3-)

2009-01829

Other Documents

WO 00190284-01 167459-01 51559347-05/12/13 00167459-03

Section 1R18: Plant Modifications

Procedures

3-NF-321, Incore Thermocouple Wide Range RTD and Narrow Range RTD Measurement,
Rev. 0
SOP-RCS-015, Operation of the Inadequate Core Cooling Monitor System, Rev. 7 and 8

Drawings (9321-F-)

95273 95283 95293 36853

Condition Reports

CR-IP3-2009-01893

Other

Engineering Change EC-14450, Core Exit Thermocouple CE-T-49 (H05) Substitution

Work Orders

51559602-01 51692338-01 51692339-01

Section 1R19: Post-Maintenance Testing

Procedures

EN-MA-101, Conduct of Maintenance, Rev. 6
EN-WM-102, Work Implementation and Closeout, Rev. 2
EN-WM-105, Planning, Rev. 5
0-VLV-431-PAC, Valve Repacking With or Without Live Loading, Rev. 1

Condition Reports (CR-IP3-)

2009-01903

Work Orders

00190295 00161170 00191706 52022852

Section 1R20: Refueling and Outage Activities

Procedures

0-VLV-413-MOV, Motor Operated Valve Minor Preventive Maintenance, Rev. 4
3-PT-R035G, Leakage Test for SI_MOV-885A Valve Container (Mini Containment), Rev. 3
3-POP-1.3, Plant Startup From Zero to 45% Power, Rev. 54
3-POP-2.1, Operation at Greater Than 45% Power, Rev. 53
3-POP-3.3, Plant Cooldown - Hot To Cold Shutdown, Rev. 49
3-POP-4.1, Operation at Cold Shutdown, Rev. 28
3-SOP-RHR-001, Residual Heat Removal System Operation, Rev. 40
3-SOP-CVCS-003, Reactor Coolant System Boron Concentration Control, Rev. 36
3-POP-3.2, Plant Recovery From Trip, Hot Standby, Rev. 0
3-POP-1.2, Reactor Startup, Rev. 50
3-SOP-FW-001, Main Feedwater System Operation, Rev. 51

Miscellaneous

WO 51560024

Section 1R22: Surveillance Activities

Miscellaneous

Calculation IP-CALC-08-00111 (Engineering Change EC-9070)
Exelon Certificate of Calibration No. 0010523170 (Fluke No. IP3 IC-1547)
Drawing 9321-H-56293, Aux. Feedwater Building Temp. Switch Support details, Rev. 0
Drawing 9321-LL-31313, Schematic Diagram Miscellaneous Solenoid Valves, Rev. 4
Drawing 9321-LL-31343, Schematic Diagram Supervisory Annunciator, Rev. 22

Work Orders

51550367 51483627 51688528 51687447

Section 2PS2: Radioactive Material Processing and Transportation

Procedures

Process Control Program, EN-RW-106, Rev. 1
Radioactive Shipping Procedure, EN-RW-102, Rev. 6
14-170 and 8-120 Cask/Liner Handling Procedure, VY-OPF 2511, Rev. 42

Section 4OA1: Performance Indicator Verification

Procedures

EN-LI-114, Performance Indicator Process, Rev. 4
EN-LI-114, Attachment 2, NRC Performance Indicator Technique Sheet, Rev. 2, for First
Quarter 2008 thru Fourth Quarter 2008 for selected Performance Indicators
EN-LI-106, Attachment 9.4, NRC Submittal Review, Rev. 3
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5
EN-LI-144, Performance Indicator Process, Rev.3, Attachment 9.2

Other

NRC Performance Indicator Technique/Data Sheets

Condition Reports (CR-IP3-)
2009-0690 2009-2868

Section 40A2: Identification and Resolution of Problems

Procedures

EN-DC-114, Project Management, Rev. 9
 EN-HU-104, Engineering Task Risk and Rigor, Rev. 2
 EN-LI-102, Corrective Action Process, Rev. 13
 EN-LI-106, NRC Correspondence, Rev. 4
 IP-SMM-LI-123, Coordination of the New York State Public Service Commission Regulatory Requirements, Rev. 1
 EN-HU-101, Human Performance Program, Rev. 6
 EN-HU-102, Human Performance Tools, Rev. 5
 EN-HU-105, Human Performance – Managed Defenses, Rev. 6
 3-PT-Q98A, Steam Line Pressure Functional Test – Channel 1, Rev. 4

Condition Reports

CR-IP2-2008-00389	CR-IP2-2009-01236	CR-IP2-2009-01237	CR-IP2-2009-01239
CR-IP2-2009-01240	CR-IP2-2009-01533	CR-IP2-2009-01924	
IP3-LO-2008-00151	IP3-LO-2008-00173	IP3-2009-01170	IP3-2009-02494
IP3-2009-01550	IP3-2009-01903	IP2-2009-02397	

Work Orders

00196415-29	51794754-01	51796053-01	51794751-01
-------------	-------------	-------------	-------------

Miscellaneous

IMD-APL-09-001, 2008-2009 Maintenance Department Performance Improvement Plan Change Management Notice – Job/Task Focused Coaching and Observation Program
 2009 YTD Human Performance Report
 3R15 Human Performance Report

Performance Indicators

IPEC Personnel Error Rate
 IPEC Human Performance Cycle Event Rate
 IPEC Contact Time (Human Performance)
 IPEC Non-Consequential Precursor Error Rate
 IPEC Coaching Contact Time (Radiation Protection)

LIST OF ACRONYMS

ADAMS	Agency Wide Document Management System
ALARA	As Low As is Reasonably Achievable
AMSAC	ATWS Mitigation Actuation Circuit
ANS	Alert and Notification System
ATWS	Anticipated Transient without SCRAM
AOPs	Abnormal Operating Procedure
CAP	Corrective Action Program
CB	Control Building
CCW	Component Cooling Water
CEDE	Cumulative Effective Dose Equivalent
CFR	Code of Federal Regulations
CR	Condition Report
CRDM	Control Rod Drive Mechanism
CS	Containment Spray
DAW	Dry Active Waste
DEC	Department of Environmental Conservation
DID	Defense In Depth
DOT	U.S. Department of Transportation
ECCS	Emergency Core Cooling System
ECT	Eddy Current Testing
EDG	Emergency Diesel Generator
EDO	Executive Director of Operations
EOPs	Emergency Operating Procedures
EPRI	Electric Power Research Institute
ET	Eddy Current (Inservice Inspection Program nomenclature)
FCU	Containment Fan Cooler Unit
FSAR	Final Safety Analysis Report
FSB	Fuel Storage Building
GL	NRC Generic Letter
HRA	High Radiation Area
I&C	Instrumentation and Controls
IST	Inservice Testing
LCO	Limiting Condition for Operation
LDE	Lens (Eye) Does Equivalent
LHRA	Locked High Radiation Area
LER	Licensee Event Report
mRem	Millirem
MS	Main Steam
MW	Monitoring Well
NCV	non-cited violation
NEI	Nuclear Energy Institute
NIST	National Institute of Science and Technology
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
ODCM	Offsite Dose Calculation Manual
PAB	Primary Auxiliary Building
PARS	Publicly Available Records
PCP	Process Control Program
PI	Performance Indicator

PI&R	Problem Identification and Resolution
POP	Plant Operating Procedures
PM	Preventive Maintenance
PRA	Probabilistic Risk Assessments
PWR	Pressurized-Water Reactor
QA	Quality Assurance
RCA	Radiological Controlled Area
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RMS	Radiation Monitoring Systems
RP	Radiation Protection
RWP	Radiation Work Permit
RWST	Reactor Water Storage Tank
SCBA	Self-Contained Breathing Apparatus
SDE	Shallow Dose Equivalent
SDP	Significance Determination Process
SFP	Spent Fuel Pool
SG	Steam Generator
SI	Safety Injection
SSC	Structures, Systems, and Components
SW	Service Water
SWP	Service Water Pump
TEDE	Total Effective Dose Equivalent
TI	Temporary Instruction
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing
VC	Vapor Containment
VHRA	Very High Radiation Area
VT	Visual Inspection (Inservice Inspection Program nomenclature)