



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

April 28, 2011

Mr. Mark Bezilla  
Site Vice President  
FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant  
P. O. Box 97, 10 Center Road, A-PY-A290  
Perry, OH 44081-0097

**SUBJECT: PERRY NUCLEAR POWER PLANT NRC INTEGRATED INSPECTION  
REPORT 05000440/2011002**

Dear Mr. Bezilla:

On March 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Perry Nuclear Power Plant. The enclosed report documents the inspection findings which were discussed on April 5, 2011, with you and members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, one self-revealed finding of very low safety significance (Green) was identified. The finding was determined to involve a violation of NRC requirements. Additionally, one licensee-identified violation is described in Section 4OA7 of this report. However, because the findings were of very low safety significance and because the issues were entered into your corrective action program, the NRC is treating the findings as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Perry Nuclear Power Plant. In addition, if you disagree with the cross-cutting aspect assigned to 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 III, and the NRC Resident Inspector at the Perry Nuclear Power Plant.

M. Bezilla

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Sincerely,

**/RA/**

Jamnes L. Cameron, Chief  
Branch 6  
Division of Reactor Projects

Docket No. 50-440  
License No. NPF-58

Enclosure: Inspection Report 05000440/2011002  
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-440

License No: NPF-58

Report No: 050000440/2011002

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Perry Nuclear Power Plant, Unit 1

Location: Perry, Ohio

Dates: January 1, 2011, through March 31, 2011

Inspectors: M. Marshfield, Senior Resident Inspector  
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Branch 6  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000440/2011002; 01/01/2011 – 03/31/2011; Radiological Hazard Assessment and Exposure Controls.

This report covers a 3-month period of inspection by resident inspectors and an announced baseline radiation protection inspection by a regional inspector. One green finding, which was a non-cited violation (NCV), was identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 0609 "Significance Determination Process" (SDP). Cross-cutting aspects were determined using IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the SDP does not apply may be "Green," or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### A. Inspector-Identified and Self-Revealed Findings

#### **Cornerstone: Occupational Radiation Safety**

- Green. A finding of very low safety significance and an associated NCV of Technical Specifications (TS) 5.7.2 was self-revealed following the licensee's failure to adequately identify the radiological conditions in the fuel pool cooling and cleanup (FPCC) heat exchanger room prior to a pre-job brief for work in the room and prior to workers entering the room. Specifically, on November 19, 2010, operators involved in tag-out activities for a valve encountered elevated dose rates when they entered an un-surveyed area on the back side of the FPCC heat exchanger. At the time the FPCC room was controlled as a locked high radiation area (HRA). While entering the area one of the operators received an electronic dosimeter (ED) dose rate alarm of 1500 mRem/hr. Follow-up surveys determined that the highest dose rate in the area entered was 2000 mrem/hr. As part of the licensee's corrective actions, lessons learned were shared with the radiation protection (RP) staff to address survey and briefing inadequacies. Additional performance management actions were implemented by the station.

The inspectors determined that the licensee's failure to adequately identify the radiological conditions in the room prior to workers entering the work area was a performance deficiency. The inspectors determined that the finding was more than minor because the inspectors identified Example 6(h) of IMC 0612, Appendix E, as similar to the finding; the workers were not made aware of the radiological conditions before entry into the area on the back side of the FPCC heat exchanger. Additionally, the finding impacted the program and process attribute of the Occupational Radiation Safety Cornerstone by adversely affecting the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation in that workers' entry into areas, without knowledge of the radiological conditions, placed them at increased risk for unnecessary radiation exposure. The finding was determined to be of very low safety significance because the performance deficiency was not an as-low-as-reasonably-achievable (ALARA) planning issue, there was no overexposure, nor substantial potential for an overexposure, and the licensee's ability to assess dose was not compromised. The inspectors determined that the cause of this incident involved a cross-cutting component in the human performance area of work practices in that the work crew proceeded in the face of uncertainty when unexpected circumstances were encountered in the FPCC heat exchanger room. [H.4(a)] (Section 2RS1.1).

**B. Licensee-Identified Violations**

One violation of very low safety significance that was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and its corrective action tracking number are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

The plant began the inspection period at 100 percent power. With the exception of minor reductions in power to support routine surveillances and rod pattern adjustments, the plant remained at full power until February 11, 2011. On February 11, 2011, the plant began a power coastdown with power slowly lowering as available fuel reactivity decreased near the end of the designed core life. The plant ended the inspection period at 89 percent power.

### 1. REACTOR SAFETY

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

#### 1R04 Equipment Alignment (71111.04Q)

##### a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- control room ventilation and emergency recirculation system A with the B system inoperable;
- Division 2 emergency diesel generator (EDG) with the Division 1 EDG inoperable; and
- annulus exhaust gas treatment system (AEGTS) A with AEGTS B inoperable.

The inspectors selected these systems based on their risk-significance relative to the Reactor Safety Cornerstone at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Safety Analysis Report (USAR), Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers, and entered them into the corrective action program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

These inspections constituted three samples for partial system walkdowns as defined in Inspection Procedure (IP) 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Fire Zones 1DG-1a & 1c; Division 1 & 2 EDG rooms;
- Fire Zones 1AB-1g & 2; Auxiliary Building 574' & 599' corridors;
- Fire Zones 1CC-4a, c-e, g-l; Control Complex 638';
- Fire Zones 1CC-3a & 3c; Division 1 & 2 switchgear rooms; and
- Fire Zones 1DG-1b & 1CC-3b; Division 3 EDG and switchgear rooms.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and implemented adequate compensatory measures for out-of-service, degraded, or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted five quarterly samples for fire protection as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11Q)

a. Inspection Scope

On January 31, 2011, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew

performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the risk-significant control complex chill water B system.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted or could have resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance

effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one sample for quarterly maintenance effectiveness as defined in IP 71111.12-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- reactor water cleanup leak and subsequent system isolation during the week of January 19, 2011;
- control rod drive pump B maintenance while under a high winds advisory on February 14, 2011;
- reactor feed pump turbine A lube oil pump 1 failure on March 16, 2011; and
- emergency service water (ESW) instrument air line damaged during excavation on March 29, 2011.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These maintenance risk assessments and emergent work control activities constituted four samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- ESW pump A motor upper bearing oil temperature;
- reactor core isolation cooling (RCIC) ventilation vibrations;
- drywell penetration operability during testing;
- ESW pump house ventilation fan A out of service for maintenance; and
- high-pressure core spray support snubber with loose clamp hardware.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and USAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted five samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed a temporary modification to the main steam equalizing header drain valve control/position indication. The inspectors compared the temporary configuration changes and associated 10 CFR 50.59 screening and evaluation information against the design basis, USAR, and TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system. The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had been incorporated into the licensee's decision to implement the temporary modification. The inspectors, as applicable, performed field verifications to ensure that the modification was installed as directed; the modifications operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modification did not impact the operability of any interfacing systems. Lastly, the inspectors discussed the temporary modification with operations, engineering, and training personnel to ensure that the individuals were aware of how extended operation with the temporary modification in place could impact overall plant performance. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

This inspection constituted one sample of a temporary modification as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following post-maintenance (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- standby liquid control B suction valve testing after electrical disconnect maintenance work February 9-10, 2011;
- control rod drive pump B post-electrical maintenance testing on February 17, 2011;
- AEGTS B filter bypass testing after filter maintenance on March 9, 2011;
- reactor protection system B relay replacement for scram discharge volume high level and testing on March 16, 2011; and
- exhaust gas charcoal filter testing associated with the fire suppression system on March 25, 2011.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TS, USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with PM tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted five PM testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Refueling Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan and contingency plans for the refueling outage (RFO), scheduled to commence April 18, 2011, to confirm that the licensee had

appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. In addition, the inspectors reviewed the Truck 3 new fuel receipt process for the upcoming outage.

These inspection efforts constituted elements of a RFO sample as defined in IP 71111.20-05 which will be counted at the conclusion of RFO-13.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- low-pressure core spray pump and valve operability testing during the week of January 5, 2010 (IST);
- Reactor Core Isolation Cooling (RCIC) pump and valve operability testing during the week of February 1, 2010 (routine);
- residual heat removal C pump and valve operability testing during the week of February 7, 2011 (routine);
- control room ventilation A heat removal testing during the week of March 7, 2011 (routine); and
- division 3 diesel generator operability testing during the week of March 14, 2011 (routine).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges, and the calibration frequency were in accordance with TS, USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy;
- applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability;
- tests were performed in accordance with the test procedures and other applicable procedures;
- jumpers and lifted leads were controlled and restored where used;

- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers Code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four samples for routine surveillance testing and one sample for inservice testing as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on February 23, 2011, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the site Technical Support Center and Simulator Control Room to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

## 2. RADIATION SAFETY

### Cornerstone: Public Radiation Safety, Occupational Radiation Safety

#### 2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted a partial sample as defined in IP 71124.01-05.

#### .1 Radiological Hazards Control and Work Coverage (02.05)

##### a. Inspection Scope

The inspectors evaluated the adequacy of radiological controls, such as required surveys, RP job coverage, and contamination controls. The inspectors evaluated the licensee's use of electronic personal dosimeters in high noise areas as high radiation area (HRA) monitoring devices.

The inspectors examined the posting and controls for selected HRAs to verify conformance with the occupational performance indicator (PI).

##### b. Findings

Introduction: A finding of very low safety significance (Green) and an associated Non-Cited Violation (NCV) of TS 5.7.2 was self-revealed following worker entry into the fuel pool cooling and cleanup (FPCC) heat exchanger room. At the time of entry, the FPCC heat exchanger room was being controlled as a locked HRA. The licensee failed to adequately identify the radiological conditions in the room to allow workers to be accurately briefed on the radiological conditions prior to entering their work area.

Description: On November 19, 2010, operators involved in tag-out activities for valve 1G410549A, encountered elevated dose rates when they entered an un-surveyed area on the back side of the FPCC heat exchanger. Two operators were authorized to enter the room and were briefed on the radiological conditions for the front side of the heat exchanger. A radiation protection (RP) technician was staged in the room labyrinth to control HRA access. On the way to the valve one of the operators noticed water on the floor. He exited the area because he was not briefed on water conditions. Back at the labyrinth both operators were granted permission by the RP technician to access the valve from the back side of the FPCC heat exchanger. This area of the room was where then-current dose rates had not been identified and the operators were not briefed on the radiological conditions. While traversing the area one of the operators received an electronic dosimetry (ED) dose rate alarm of 1500 mRem/hr. Upon receipt of the ED alarm, the workers exited the area. Follow-up surveys determined that the highest dose rate in the area entered was 2000 mrem/hr. The radiological information conveyed to the workers through the pre-job briefing by the RP staff was inadequate because it was based on incomplete survey information. As part of the licensee's corrective actions, lessons learned were shared with the RP staff to address survey and briefing inadequacies. Additional performance management actions were implemented by the station.

Analysis: The inspectors determined that entry made into a locked HRA without first adequately identifying the radiological conditions was a performance deficiency. The

inspectors determined that the cause of the performance deficiency was reasonably within the licensee's ability to foresee and correct, and should have been prevented.

The finding was not subject to traditional enforcement since the incident did not have a significant safety consequence, did not impact the NRC's ability to perform its regulatory function, and was not willful.

The inspectors reviewed the guidance in Inspection Manual Chapter (IMC) 0612, Appendix E, Examples of Minor Issues, and identified Example 6(h) as similar to the performance issue. The inspectors determined that the finding was more than minor. Although both operators were authorized to enter the room to conduct tag-out activities, the workers were not made aware of the correct radiological conditions because the actual area entered behind the FPCC heat exchanger was not recently surveyed. Additionally, the finding impacted the program and process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that, workers' entry into an HRA without knowledge of the radiological conditions placed them at increased risk for unnecessary radiation exposure. The finding was assessed using IMC 0609 Appendix C "Occupational Radiation Safety Significance Determination Process" and was determined to be of very low safety significance (Green) because the finding was not an as-low-as-reasonably-achievable (ALARA) planning issue, there were no overexposures nor substantial potential for overexposures given the highest dose rate present in the room and the scope of work, and the licensee's ability to assess dose was not compromised.

The licensee failed to adequately establish the radiological conditions for the work activity within the HRA; therefore, workers were not made aware of the actual conditions. Consequently, the inspectors determined that the cause of this incident involved a cross-cutting component in the human performance area for work practices in that the work crew proceeded in the face of uncertainty when unexpected circumstances were encountered in the FPCC heat exchanger room. [H.4(a)].

Enforcement: Technical Specification 5.7.2 states, in part, that entry into HRAs and locked HRAs is made after the dose rate levels in the area have been established and personnel are made aware of them. Contrary to the above, on November 19, 2010, workers were allowed to enter a locked HRA without being aware of the radiological conditions of the areas entered because the conditions were not adequately identified for the work activity. Since the failure to comply with this TS was of very low safety significance and was entered in the licensee's CAP as CR 10-86072, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000440/20011002-01).

2RS5 Radiation Monitoring Instrumentation (71124.05)

This inspection constituted one complete sample as defined in IP 71124.05-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant Updated Safety Analysis Report (USAR) to identify radiation instruments associated with monitoring area radiological conditions including airborne radioactivity, process streams, effluents, materials/articles, and workers. Additionally, the inspectors reviewed the instrumentation and the associated TS requirements for post-accident monitoring instrumentation including instruments used for remote emergency assessment.

The inspectors reviewed a listing of in-service survey instrumentation including air samplers and small article monitors, along with instruments used to detect and analyze workers' external contamination. Additionally, the inspectors reviewed personnel contamination monitors and portal monitors including whole-body counters to detect workers' internal contamination. The inspectors reviewed this list to assess whether an adequate number and type of instruments are available to support operations.

The inspectors reviewed licensee and third-party evaluation reports of the radiation monitoring program since the last inspection. These reports were reviewed for insights into the licensee's program and to aid in selecting areas for review ("smart sampling").

The inspectors reviewed procedures that govern instrument source checks and calibrations, focusing on instruments used for monitoring transient high radiological conditions, including instruments used for underwater surveys. The inspectors reviewed the calibration and source check procedures for adequacy and as an aid to smart sampling.

The inspectors reviewed the area radiation monitor alarm setpoint values and setpoint bases as provided in the site TS and USAR.

The inspectors reviewed effluent monitor alarm setpoint bases and the calculation methods provided in the site Offsite Dose Calculation Manual (ODCM).

b. Findings

No findings were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down effluent radiation monitoring systems, including at least one liquid and one airborne system. Focus was placed on flow measurement devices and all accessible point-of-discharge liquid and gaseous effluent monitors of the selected systems. The inspectors assessed whether the effluent/process monitor configurations align with ODCM descriptions and observed monitors for degradation and out-of-service tags.

The inspectors selected portable survey instruments in use or available for issuance and assessed calibration and source check stickers for currency as well as instrument material condition and operability.

The inspectors observed licensee staff performance as the staff demonstrated source checks for various types of portable survey instruments. The inspectors assessed whether high-range instruments are source checked on all appropriate scales.

The inspectors walked down area radiation monitors and continuous air monitors to determine whether they are appropriately positioned relative to the radiation sources or areas they were intended to monitor. Selectively, the inspectors compared monitor response (via local or remote control room indications) with actual area conditions for consistency.

The inspectors selected personnel contamination monitors, portal monitors, and small article monitors and evaluated whether the periodic source checks were performed in accordance with the manufacturer's recommendations and licensee procedures.

b. Findings

No findings were identified.

.3 Calibration and Testing Program (02.03)

(1) Process and Effluent Monitors

a. Inspection Scope

The inspectors selected effluent monitor instruments (such as gaseous and liquid) and evaluated whether channel calibration and functional tests were performed consistent with radiological effluent TS/ODCM. The inspectors assessed whether: (a) the licensee calibrated its monitors with National Institute of Standards and Technology traceable sources; (b) the primary calibrations adequately represented the plant nuclide mix; (c) when secondary calibration sources were used, the sources were verified by the primary calibration; and (d) the licensee's channel calibrations encompassed the instrument's alarm set-points.

The inspectors assessed whether the effluent monitor alarm setpoints are established as provided in the ODCM and station procedures.

For changes to effluent monitor setpoints, the inspectors evaluated the basis for changes to ensure that an adequate justification exists.

b. Findings

No findings were identified.

(2) Laboratory Instrumentation

a. Inspection Scope

The inspectors assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicate that the frequency of the calibrations is adequate and there were no indications of degraded instrument performance.

The inspectors assessed whether appropriate corrective actions were implemented in response to indications of degraded instrument performance.

b. Findings

No findings were identified.

(3) Whole Body Counter

a. Inspection Scope

The inspectors reviewed the methods and sources used to perform whole body count functional checks before daily use of the instrument and assessed whether check sources were appropriate and align with the plant's isotopic mix.

The inspectors reviewed whole body count calibration records since the last inspection and evaluated whether calibration sources were representative of the plant's source term and that appropriate calibration phantoms were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

b. Findings

No findings were identified.

(4) Post-Accident Monitoring Instrumentation

a. Inspection Scope

Inspectors selected drywell and containment high-range monitors and reviewed the calibration documentation since the last inspection.

The inspectors assessed whether an electronic calibration was completed for all range decades above 10 rem/hour and whether at least one decade at or below 10 rem/hour was calibrated using an appropriate radiation source. The inspectors assessed whether calibration acceptance criteria are reasonable, accounting for the large measuring range and the intended purpose of the instruments.

The inspectors selected two effluent/process monitors that are relied on by the licensee in its emergency operating procedures as a basis for triggering emergency action levels and subsequent emergency classifications, or to make protective action recommendations during an accident. The inspectors evaluated the calibration and availability of these instruments.

The inspectors reviewed the licensee's capability to collect high-range, post-accident iodine effluent samples.

As available, the inspectors observed electronic and radiation calibration of these instruments to verify conformity with the licensee's calibration and test protocols.

b. Findings

No findings were identified.

(5) Portal Monitors, Personnel Contamination Monitors, and Small Article Monitors

a. Inspection Scope

For each type of these instruments used onsite, the inspectors assessed whether the alarm setpoint values are reasonable under the circumstances to ensure that licensed material is not released from the site.

The inspectors reviewed the calibration documentation for each instrument selected and discussed the calibration methods with the licensee to determine consistency with the manufacturer's recommendations.

b. Findings

No findings were identified.

(6) Portable Survey Instruments, Area Radiation Monitors, Electronic Dosimetry, and Air Samplers/Continuous Air Monitors

a. Inspection Scope

The inspectors reviewed calibration documentation for at least one of each type of instrument. For portable survey instruments and area radiation monitors, the inspectors reviewed detector measurement geometry and calibration methods and had the licensee demonstrate use of its instrument calibrator as applicable. The inspectors conducted comparison of instrument readings versus an NRC survey instrument if problems were suspected.

As available, the inspectors selected portable survey instruments that did not meet acceptance criteria during calibration or source checks to assess whether the licensee had taken appropriate corrective action for instruments found significantly out of calibration (greater than 50 percent). The inspectors evaluated whether the licensee had evaluated the possible consequences of instrument use since the last successful calibration or source check.

b. Findings

No findings were identified.

(7) Instrument Calibrator

a. Inspection Scope

As applicable, the inspectors reviewed the current output values for the licensee's portable survey and area radiation monitor instrument calibrator unit(s). The inspectors assessed whether the licensee periodically measures calibrator output over the range of the instruments used through measurements by ion chamber/electrometer.

The inspectors assessed whether the measuring devices had been calibrated by a facility using National Institute of Standards and Technology traceable sources and whether corrective factors for these measuring devices were properly applied by the licensee in its output verification.

b. Findings

No findings were identified.

(8) Calibration and Check Sources

a. Inspection Scope

The inspectors reviewed the licensee's 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term to assess whether calibration sources used were representative of the types and energies of radiation encountered in the plant.

b. Findings

No findings were identified.

.4 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation.

b. Findings

No findings were identified.

#### 4. OTHER ACTIVITIES

##### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection**

#### 4OA1 Performance Indicator Verification (71151)

##### .1 Unplanned Scrams per 7000 Critical Hours

###### a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours performance indicator (PI) for the period from the first quarter 2010 through the fourth quarter 2010. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC inspection reports (IRs) for the period of first quarter 2010 through the fourth quarter 2010 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams per 7000 critical hours sample as defined in IP 71151-05.

###### b. Findings

No findings were identified.

##### .2 Unplanned Scrams with Complications

###### a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI for the period from first quarter 2010 through the fourth quarter 2010. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC IRs for the period of first quarter 2010 through the fourth quarter 2010 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams with complications sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours PI for the period from the first quarter 2010 through the fourth quarter 2010. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports, and NRC IRs for the period of first quarter 2010 through the fourth quarter 2010 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned transients per 7000 critical hours sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals and associated data for the Occupational Radiological Occurrences PI for the period from the first quarter 2010 through the fourth quarter 2010. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if indicator-related data was adequately assessed and reported. In assessing the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with RP staff, the scope, and breadth of its data review, and the results of those reviews. The inspectors independently reviewed electronic dosimetry dose rate and accumulated dose alarm reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences.

This inspection constituted one occupational radiological occurrences sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.5 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specifications (RETS)/ODCM Radiological Effluent Occurrences PI for the period of July 2010 through January 2011. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates between July 2010 and January 2011 to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose.

This inspection constituted one RETS/ODCM radiological effluent occurrences sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline IPs discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily CR packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Semiannual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 40A2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of June 1, 2010, through December 31, 2010, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal CAP such as in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and maintenance rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy. One trend not previously identified by the license was identified by this review. The license wrote CR 11-89697, concerning the trend identified in failing to complete required 50.59 reviews of clearances in place for an extended period of time within the required 90-day window. The corrective actions were completed on March 31, 2011.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Findings

No findings were identified.

.4 Selected Issue Follow-up Inspection: Unplanned Reactor Water Cleanup Isolation

a. Inspection Scope

The inspectors selected CR 11-88386, "Clearance Error Leads to Additional Reactor Water Cleanup (RWCU) Leakage during Valve Disassembly," for in-depth review.

The inspectors verified the following attributes during their review of the licensee's corrective actions for the above action request and other related action requests:

- complete and accurate identification of the problem in a timely manner, commensurate with its safety significance and ease of discovery;
- consideration of the extent of condition, generic implications, common cause and previous occurrences;
- classification and prioritization of the resolution of the problem, commensurate with safety significance;
- identification of the root and contributing causes of the problem; and
- identification of corrective actions, which were appropriately focused to correct the problem.

The inspectors discussed the corrective actions and associated action request evaluations with licensee personnel.

This review constituted one of two in-depth problem identification and resolution samples as defined in IP 71152-05.

a. Findings

No findings were identified.

.5 Selected Issue Follow-up Inspection: Primary Containment Isolation Valve Operations to Support Surveillance Tests and Appropriate Use of Technical Specification Notes

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item which identified an incorrect usage of notes applicable to TS similar to the events documented previously in an NCV in the 2010004 integrated IR. The inspectors conducted extensive interviews of operations personnel and reviewed the licensee's response to this issue for thoroughness and extent-of-condition corrective actions.

This review constituted the second of two in-depth problem identification and resolution samples as defined in IP 71152-05.

b. Observations and Assessments

The inspectors identified during the interviews that plant licensed operators were using TS action statement exception notes to avoid entry into the actual TS actions. The licensee operations staff identified that the appropriate note, which should have been identified by the procedure and the operators as the logic for not entering the action statement, was contained in the surveillance requirements for primary containment isolation valves. This is the second observation of this type in a short period of time. Since this performance deficiency was determined to be minor in nature, this observation will document the failure of licensed operators to properly apply TS to plant procedures. The licensee documented this deficiency in CR 11-89501 and is working on the corrective actions to ensure that the extent of this condition is corrected throughout the plant's procedures. Additionally the licensee is taking corrective actions to ensure that licensed operators understand the proper usage of TS notes and the appropriate applications in daily use.

c. Findings

No findings were identified.

40A3 Follow-up of Events and Notices of Enforcement Discretion (71153)

Feedwater Temperature Reduction

a. Inspection Scope

The inspectors reviewed and observed the licensee's evolution to remove second stage moisture separator reheaters from service and partially bypass the final feedwater heaters in order to reduce feedwater temperature. Towards the end of a fuel cycle, the reactor will enter a coastdown period where reactor power will slowly lower due to burn-up of available fuel. Reducing feedwater temperature raises reactor output to recover some losses and maintain maximum output. Documents reviewed associated with the evolution activities are listed in the Attachment to this report.

This inspection activity constituted one sample as defined in IP 71153-05.

b. Findings

No findings were identified.

40A5 Other Activities

(Closed) Unresolved Item 05000440/2010005-04 Seismic Stability of Standby Liquid Control Test Tank

a. Inspection Scope

This Unresolved Item (URI) is associated with a review of the seismic stability of the standby liquid control tank when filled with liquid and primarily involved an analysis conducted by the licensee of the support structures for the tank. The analysis of the tank was completed by the licensee in the previous quarter but several follow up

questions by the NRC were not completed until this quarter. The tank was determined to be seismically stable and would remain functional during a design basis earthquake. The performance deficiency of not having a calculation to demonstrate structural adequacy when initially questioned by the NRC was determined to be a minor issue. This URI is closed and no further actions are required.

b. Findings

No findings were identified.

40A6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to the Site Vice President, Mr. Mark Bezilla, and other members of licensee management on April 5, 2011. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meeting

An interim exit meeting was conducted for the radiological hazard assessment and exposure control program, radiation monitoring instrumentation program, and occupational and public PI verification with Mr. R. Coad and other licensee staff on January 28, 2011. The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

40A7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- Title 10 CFR Part 20.1801, "Security of Stored Material" requires that the licensee shall secure from unauthorized removal or access licensed materials that are stored in controlled or unrestricted areas. Contrary to the above, on December 7, 2009, it was identified that a mixed gamma standard for the station's whole body counter could not be located in the warehouse. The mixed gamma source was a total of 5.055 micro-curies. The issue was documented in the licensee's CAP as CR 09-68673. Corrective actions included changes to plant supply chain procedures associated with the receipt and traceability of radioactive material.

The loss of control of radioactive material (radioactive sources) is a performance deficiency as defined in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening." The inspectors determined that the finding was more than minor because it impacted the program and process attribute of the public radiation safety cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of public health and safety from exposure to radiation, in that, radioactive material was released into the public domain. The finding was reviewed for significance in accordance with IMC 0609 Appendix D "Public Radiation Safety

Significance Determination Process” and determined to be of very low safety significance because it involved a radioactive material control, did not involve radioactive material transportation, and the dose impact to a member of the public was less than 5 mrem.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

M. Bezilla, Vice President Nuclear  
K. Krueger, Plant General Manager  
R. Coad, Regulatory Compliance Manager  
D. Evans, Work and Outage Management Director  
J. Grabnar, Site Engineering Director  
H. Hanson, Performance Improvement Director  
T. Jardine, Operations Manager  
P. McNulty, Radiation Protection Manager  
A. Mueller, Training Manager  
M. Stevens, Maintenance Director  
J. Tufts, Chemistry Manager

### LIST OF ITEMS OPENED, CLOSED, DISCUSSED

#### Opened and Closed

05000440/2011002-01	NCV	Failure to Establish Radiological Conditions in a Locked HRA [i.e., the fuel pool cooling and cleanup (FPCC) heat exchanger room] Prior to Allowing Personnel Access. (Section 2RS1.1)
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#### Closed

05000440/2010005-04	URI	Seismic Stability of Standby Liquid Control Test Tank (Section 4OA5)
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## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### 1R04 Equipment Alignment

- SOI-M25/26; Control Room HVAC and Emergency Recirculation System; Revision 20
- VLI-M25/26; Control Room HVAC and Emergency Recirculation System; Revision 7
- Drawing 912-0610-00000; Control Room HVAC and Emergency Recirculation System; Revision FF
- VLI-R44; Division 1 and 2 Diesel Generator Starting Air System; Revision 4
- VLI-R45; Division 1 and 2 Diesel Generator Fuel Oil System; Revision 5
- VLI-R46; Division 1 and 2 Diesel Generator Jacket Water System; Revision 4
- VLI-R47; Division 1 and 2 Diesel Generator Lube Oil; Revision 7
- VLI-R48; Division 1 and 2 Diesel Generator Exhaust, Intake and Crankcase Systems; Revision 6
- SOI-M15; Annulus Exhaust Gas Treatment System; Revision 9
- VLI-M15; Annulus Exhaust Gas Treatment System (Unit 1); Revision 4
- Drawing 912-0605-00000; Reactor Building Annulus Exhaust Gas Treatment; Revision W

### 1R05 Fire Protection (Annual/Quarterly)

- PAP-1910; Fire Protection Program; Revision 21
- FPI-1DG; Diesel Generator Building; Revision 6
- Drawing 101-0064-00000; Diesel Generator Building Floor Plan - El. 620'-6" & 646'-6"; Revision H
- FPI-1AB; Auxiliary Building Unit 1; Revision 13
- Drawing 101-0021-00000; Auxiliary Building Floor Plan - El. 568'-4" & 574'-10"; Revision F
- Drawing 101-0022-00000; Auxiliary Building Floor Plan - El. 599'-0" & 620'-6"; Revision H
- FPI-0CC; Control Complex; Revision 8
- Drawing 105-0013-00000; Control Complex Floor Plan - El. 620'-6"; Revision J

### 1R11 Licensed Operator Regualification Program

- PYBP-PTS-0005; Operator Continuing Training Program Administration; Revision 25
- Simulator Exercise Guide OTLC-3058201101\_PY\_SGC1; Cycle 11 2010 Evaluated Scenario C1; Revision 0

### 1R12 Maintenance Effectiveness

- CR 11-88154; Issues With The 1P47B001B Control Complex Chill Water Chiller; dated January 13, 2011
- CR 11-88189; Incorrect Torque Value Supplied Resulting In Cracked Coupling Cover; dated January 13, 2011

- CR 11-88272; Control Complex Chill Water Chiller B Flange Leak; dated January 16, 2011
- CR 11-88452; Control Complex Chiller 'B' Would Not Start; dated January 19, 2011
- CR 11-88631; Delay in Restoring Control Complex Chilled Water Chiller "B" to Service; dated January 24, 2011
- WO 200340526; Inspect Cooler, Oil Cooler & Condenser; dated January 22, 2011

#### 1R13 Maintenance Risk Assessments and Emergent Work Control

- NOP-OP-1007; Risk Management; Revision 7
- VLI-G33; Reactor Water Cleanup System; Revision 7
- SOI-G33; Reactor Water Cleanup System; Revision 29
- CR 11-88386; RWCU Leakage During Valve Disassembly; dated January 19, 2011
- CR 11-88533; RWCU 'A' PLC Was Placed in Normal Causing Rise in Delta Flow; dated January 20, 2011
- CR 11-88534; Steam Leak in RWCU Pump Room A; dated January 20, 2011
- eSOMS Narrative Logs dated January 19-20, 2011
- Clearance Order PY-CYC-013/EPY-G36-0003; 1G36F0029A, F/D A Outlet Strainer Blowdown Second Isolation Valve; dated January 18, 2011
- Drawing 302-0671-00000; Reactor Water Cleanup System; Revision AA
- Drawing 302-0672-00000; Reactor Water Cleanup System; Revision JJ
- Drawing 302-0675-00000; Reactor Water Cleanup Filter Demineralizer System; Revision X
- WO 200329694; Replace "B" Auxiliary Oil Pump Motor for CRD Pump "B"; dated February 14, 2011
- WO 200328740; "New PM" Energized Motor Analysis for CRD Pump "B"; dated February 14, 2011
- Perry Clearance Order PY1-C11-0024 for CRD Pump "B" Isolation issued on February 14, 2011
- Operational Decision Making Summary Sheet for Bus F1C08 being Supplied by the Alternate Source XF1A (XH12); Revision 2; dated February 8, 2011
- CR 11-91116; Failure of RFPT A LOP #1, N27C0007A; dated March 16, 2011
- WO 200451410; Lube Oil Pump Failure/CR 11-91116; dated March 16, 2011
- Drawing 302-0293-00000; RFP Turbine Lube Oil System; Revision K
- Clearance Order WG-N27-200451410-01; Inspect RFPT-A Lube Oil Pump #1 Motor; dated March 16, 2011
- NOP-OP-1001; Clearance/Tagging Program; Revision 14
- CR 11-91966; Air Line Damaged during Excavation; dated March 29, 2011
- WO 200452598; Instrument Air Break (ESWPH)/CR 11-91966; dated March 30, 2011

#### 1R15 Operability Evaluations

- CR 11-88588; ESW Pump A Upper Bearing Temperature Indicated High; dated January 22, 2011
- CR 11-89051; Non Performance of SVI-E51-T2001 5.1.5 Due to Tech Spec Question; dated February 1, 2011
- Operations Night Order; Technical Specification 3.6.1.3/3.6.4.2/3.6.5.3 Guidance When Opening Manual valves within a Containment or Drywell Penetration; dated March 7, 2011
- CR 11-89154; Identified an Increase in Vibration Level on the RCIC Air Handling Unit; dated February 3, 2011
- CR 11-92050; Loose Clamp Hardware Found at Snubber Location 1E22H0034; dated March 30, 2011

- Notification 600673532; Tighten Clamp Hardware/CR 11-92050; dated March 30, 2011
- WO 200452661; Tighten Clamp Hardware 1E22H0034/CR 11-92050; dated March 30, 2011

#### 1R18 Permanent/Temporary Modifications

- Perry Plant Health Report 2010-03 for Temporary Modifications
- NOP-CC-2003; Engineering Changes; Revision 15
- NORM-CC-2001; Engineering Change Process Flowcharts; Revision 00
- ECP 11-0012-0000; Reference Documents - Temporary Modification for the 1N22F0360, 1N22F0480 and 1N22F0495 Control / Position Indication and 1N22F0160A Position Indication; Revision 0
- ECP 11-0012-0001; Temporary Modification Installation for the 1N22F0360, 1N22F0480 and 1N22F0495 Control / Position Indication and 1N22F0160A Position Indication; Revision 0
- WO 200442405; Verify Implementation of ECP; dated January 12, 2011
- Drawing 208-0144-00001; Main, Reheat, Extraction & Misc. Drains; Revision G
- Drawing 209-0100-00226; PGCC Termination Cabinet – 1H13-P743 Bay B; Revision M

#### 1R19 Post-Maintenance Testing

- WO 200326798; SLC Pump Suction Valve 'B' Disconnect; dated February 9, 2011
- SVI-C41-T2001B; Standby Liquid Control B Pump and Valve Operability Test; Revision 15
- Technical Administration Instruction for Electric Motor Predictive Monitoring Program, TIA-2000-5; Revision 4; dated December 14, 2010
- General Electric Instruction for AC and DC Motor Testing, GEI-0049; Revision 6; dated September 11, 2008
- WO 200328740; "New PM" Energized Motor Analysis for CRD Pump "B"; dated February 14, 2011
- WO 200409927; SVI-M15T3015, Canister Sample Method; dated March 9, 2011
- SVI-M15-T1240-B; Annulus Exhaust Gas Treatment System Train B Flow and Filter Operability Test; Revision 6
- SVI-C11-T5376D; SDV High Level Channel D Functional/Calibration for 1C11-N013D; Revision 5
- WO 200290507; Replace P&B Relay in EQ Portion of RPS Trip Channel "D"; Revision 0; dated February 7, 2011
- WO 200218646; Fire Protection Strainer Post-Maintenance Inspection; Revision 0; dated March 24, 2011

#### 1R20 Refuel Outage

- 1R13 Pre-Outage Defense-In-Depth Report; dated March, 18, 2011

#### 1R22 Surveillance Testing

- SVI-E21-T2001; Low Pressure Core Spray Pump and Valve Operability Test; Revision 21
- SVI-E21-T1181; Low Pressure Core Spray Venting and Valve Lineup Verification; Revision 12
- SOI-E21; Low Pressure Core Spray System; Revision 23
- SVI-E51-T2001; RCIC Pump and Valve Operability Test; Revision 33
- SVI-E51-T1269; RCIC System Valve and Flow Controller Position Verification; Revision 11
- SOI-E51; Reactor Core Isolation Cooling System; Revision 28
- SVI-D23-T1213; Suppression Pool Average Temperature; Revision 7

- SVI-E12-T2003; RHR C Pump and Valve Operability Test; Revision 25
- SOI-E12; Residual Heat Removal System; Revision 47
- SVI-M25-T1270-A; Control Room Ventilation Heat Removal Test – Train A; Revision 3
- SOI-M25/26; Control Room HVAC and Emergency Recirculation System; Revision 20
- SVI-E22-T1319; Diesel Generator Start and Load Division 3; Revision 17
- PTI-E22-P0006; Division 3 HPCS Diesel Generator Auxiliary System Monitoring; Revision 9
- SOI-E22B; Division 3 Diesel Generator; Revision 25
- CR 11-91080; NRC Identified Concern During Div 3 DG Run; dated March 14, 2011

#### 1EP6 Drill Evaluation

- Perry ERO Drill Scenario Guide; dated February 23, 2011
- EPI-A2; Emergency Actions Based on Event Classification; Revision 14
- PSI-0017; Drills and Exercises for Emergency Planning; Revision 8

#### 2RS1 Radiological Hazard Assessment and Exposure Controls

- CR 10-73255; Worker Received Dose Rate Alarm; dated March 12, 2010
- CR 1087093; Radioactive Source Issued to Plant Worker Before Receipt Documentation Completed; dated December 13, 2010
- CR 10-86072; Dose Rate Alarm – Operations; dated November 19, 2010

#### 2RS5 Radiation Monitoring Instrumentation

- 2010 Perry Station Clock Reset List; dated January 2011
- 2010 Radiation Protection Department Clock Reset List; dated January 2011
- CR 09-68673; Mixed Gamma Standard for Whole Body Counter Can Not Be Located in the Warehouse; dated December 07, 2009
- CR 10-70791; No Direction from RPI-0506 Regarding Low Flow Alarms; dated January 29, 2010
- CR 10-76251; Error in Calculation – SAM; dated May 02, 2010
- CR 11-88480; Leaking Alpha Source; dated January 17, 2011
- CR 11-88704; Meter Failure; dated January 25, 2011
- FENOC Oversight Quality Field Observation; PY-PA-10-01 Radiation Protection 1st Quarter Assessment; dated March 31, 2010
- FENOC Oversight Quality Field Observation; PY-PA-10-04 Radiation Protection 4<sup>th</sup> Quarter Assessment; dated December 31, 2010
- FENOC Oversight Quality Field Observation; Radiation Protection and Radwaste Programs Audit MS-C-09-10-03; dated December 2009
- HPI-F0006; Radionuclide Source Term Distribution; Revision 03
- HPI-J0005; Calibration of the Eberline Model E-520 Survey Meter; Revision 07
- HPI-J0006; Calibration of Portable Ion Chamber Instruments; Revision 08
- HPI-J0014; Calibration of Portable Air Samplers; Revision 07
- HPI-J0041; Calibration of the Area Radiation Monitors; Revision 05
- HPI-J0044; Calibration of the Merlin Gerin DCM Dosimeter; Revision 08
- HPI-J0045; Calibration of the Ludlum Model 306 Area Radiation Monitoring System; Revision 03
- HPI-J0047; Calibration of the Small Articles Monitor; Revision 03
- HPI-J0053; Calibration of the MG AMP Area Monitor Probe; Revision 06
- HPI-J0054; Calibration of the ABACOS 2000 Whole Body Counting System; Revision 01

- HPI-J0057; Calibration of the Gilian 3500 Live Flow Air Sampling Pump; Revision 00
- HPI-J0063; Calibration of the Model CDM21 Electronic Dosimeter Calibrator; Revision 03
- HPI-J0064; Calibration of the Tennelec Series 5 Counting System; Revision 00
- HPI-J0065; Calibration and Use of the MGP Telepole; Revision 01
- HPI-J0070; SAM-12 Calibration, Source Checks and Use; Revision 00
- HPI-L0006; Instrument Quality Checks; Revision 04
- Off-Site Dose Calculation Manual (ODCM); Revision 18
- Perry Nuclear Power Plant; 2010-02; Plant Health Report
- Perry Nuclear Power Plant; 2010-03; Plant Health Report
- PTI-D21-P3000; Surveillance Instruction; Area Radiation Monitor System Calibration; Revision 06
- PTI-D21-P3001; Drywell Area Radiation Monitor Channel Calibration for 1D21-K341; Revision 02
- PY-SVI-D19-T1356-A; Containment High Range Radiation Monitor Channel A Calibration for 1D19-K100; dated February 2010
- RPS-11-01; Radiological Engineering Assessment; Source Term Determination per HPI-F006; Cycle 13; dated January 2011
- Self-Assessment Report; FO-SA-10-011; Radioactive Material (RAM) Monitoring and Controls; dated September 2010

#### 40A1 Performance Indicator Verification

- NOBP-LP-4012-01, Rev 2; Unplanned Scrams per 7,000 Critical Hours; January 2010 through December 2010
- NOBP-LP-4012-02, Rev 3; Unplanned Scrams with Complications; January 2010 through December 2010
- NOBP-LP-4012-03, Rev 2; Unplanned Power Changes per 7,000 Critical Hours Input; January 2010 through December 2010
- CR 10-86242; PYRP Missed NRC PI Occurrence March 2010; dated November 23, 2010
- Perry Computer Automated Laboratory System (CALs) Data; Various Entries; Various Dates
- Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 06
- NRC Performance Indicator Submittals; January 2010 through December 2010; Occupational and Public Radiation Safety Cornerstones; Selected Samples; Various dates
- NRC NE 99-02 Frequently Asked Question (FAQ) #363; Occupational Radiation Safety

#### 40A2 Identification and Resolution of Problems

- CR 11-88386; Clearance Error Leads to Additional RWCU Leakage During Valve Disassembly; dated January 18, 2011
- NOP-LP-2001; Corrective Action Program; Revision 27
- NOBP-LP-2011; FENOC Cause Analysis; Revision 12
- NORM-LP-2003; Analytical Methods Guidebook; Revision 2
- CR 10-83590; Equipment Tagged Greater than 90 Days, 50.59 Review not Performed; dated October 4, 2010
- CR 10-84063; Equipment Tagged Greater than 90 Days, 50.59 Review not Performed; dated October 11, 2010
- CR 10-85858; Equipment Tagged Greater than 90 Days, 50.59 Review not Performed; dated October 25, 2010

- CR 11-89245; Equipment Tagged Greater than 90 Days, 50.59 Review not Performed; dated February 7, 2011
- CR 11-89697; NRC ID: Negative Trend, Clearances in Place >90 Days without 50.59 Review; dated February 16, 2011
- CR 11-89501; Non-Performance of SVE-E51-T2001 5.1.5 due to Tech Spec Question; dated February 1, 2011
- Operations Night Order; Technical Specification 3.6.1.3/3.6.4.2/3.6.5.3 Guidance when Opening Manual Valves within a Containment or Drywell Penetration; dated March 7, 2011

4OA3 Follow-up of Events and Notices of Enforcement Discretion

- TXI-0392; Cycle 13 Feedwater Temperature Reduction; Revision 0
- IOI-3; Power Changes; Revision 44

## LIST OF ACRONYMS USED

AEGTS	annulus exhaust gas treatment system
ALARA	as low as reasonably achievable
CAP	corrective action program
CR	condition report
ED	electronic dosimeter
EDG	emergency diesel generator
ESW	emergency service water
FENOC	FirstEnergy Nuclear Operating Company
FPCC	fuel pool cooling and cleanup
HRA	high radiation area
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PI	performance indicator
PM	post-maintenance
RCIC	reactor core isolation cooling
RETS	Radiological Effluent Technical Specifications
RFO	refueling outage
RP	radiation protection
RWCU	reactor water cleanup
SDP	Significance Determination Process
TS	Technical Specification
URI	unresolved item
USAR	Updated Safety Analysis Report
WO	work order

M. Bezilla

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Sincerely,

**/RA/**

Jamnes L. Cameron, Chief  
Branch 6  
Division of Reactor Projects

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Letter to M. Bezilla from J. Cameron dated April 28, 2011.

SUBJECT: PERRY NUCLEAR POWER PLANT NRC INTEGRATED INSPECTION  
REPORT 05000440/2011002

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