

April 28, 2005

Mr. Christopher M. Crane
President and CNO
Exelon Nuclear
Exelon Generation Company, LLC
200 Exelon Way KSA 3-E
Kennett Square, PA 19348

SUBJECT: LIMERICK GENERATING STATION - NRC INTEGRATED INSPECTION
REPORT 05000352/2005002 AND 05000353/2005002

Dear Mr. Crane:

On March 31, 2005, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Limerick Generating Station Units 1 and 2. The enclosed integrated report documents the inspection findings, which were discussed on April 11, 2005, with Mr. R. DeGregorio and other members of your staff.

This 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, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the 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/

Mohamed Shanbaky, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos: 50-352; 50-353
License Nos: NPF-39; NPF-85

Enclosure: Inspection Report 05000352/2005002, 05000353/2005002
w/Attachment: Supplemental Information

Mr. Christopher M. Crane

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cc w/encl:

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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket Nos: 50-352; 50-353

License Nos: NPF-39, NPF-85

Report No: 05000352/2005002 and 05000353/2005002

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 & 2

Location: Evergreen and Sanatoga Roads
Sanatoga, PA 19464

Dates: January 1, 2005 through March 31, 2005

Inspectors: S. Hansell, Senior Resident Inspector
B. Bickett, Resident Inspector
G. Bowman, Resident Inspector
C. Colantoni, Resident Inspector
A. Burritt, Senior Project Engineer
D. Johnson, Reactor Engineer
N. McNamara, Emergency Preparedness Inspector
T. Moslak, Health Physicist
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B. Welling, Senior Reactor Inspector

Approved by: Mohamed Shanbaky, Chief
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SUMMARY OF FINDINGS

IR 05000352/2005-002, IR 05000353/2005-002; 01/01/2005 - 03/31/2005; Limerick Generating Station, Units 1 and 2; Resident Inspector Report.

The report covered a 3-month period of inspection by resident inspectors and announced inspections by a regional health physicist, reactor engineer, senior reactor engineer, senior project engineer, and an emergency preparedness inspector. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations.

None.

REPORT DETAILS

Summary of Plant Status

Unit 1 began this inspection period operating at 100% rated thermal power. On February 18, 2005, operators shut down Unit 1 for a planned maintenance outage to replace seven safety/relief valves. On February 20, the reactor was taken critical, and Unit 1 was returned to 100% power on February 22.

Unit 2 began this inspection period operating at 100% rated thermal power. On January 25, 2005, Unit 2 entered end-of-cycle reactor power coastdown. On February 28, operators shut down Unit 2 for a planned refueling outage (2R08). On March 17, operators took the reactor critical. On March 20, during power ascension, Unit 2 was shut down from approximately 65% power due to an overheated main turbine bearing. The bearing was repaired and Unit 2 was taken critical on March 25. Unit 2 was returned to 100% power on March 28.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 1 sample)

a. Inspection Scope

Adverse Weather Readiness. The inspectors reviewed Exelon's preparation for significant snowfall and cold weather alerts. On January 20, 2005, the inspectors verified that Exelon had implemented appropriate procedures and guidance for a predicted significant snowfall. The inspectors reviewed Exelon procedure SE-14, "Snow." The inspectors walked down the emergency diesel generators and reactor enclosure heating, ventilation, and air-conditioning (HVAC) roll filters to ensure proper heat tracing and ventilation would remain available throughout the storm. The inspectors also reviewed planned maintenance items to ensure appropriate measures were taken in response to the cold temperatures. This inspection activity represented one sample.

The inspectors referred to the following documents:

1. SE-14, "Snow," Rev. 12
2. OP-AA-108-107-1001, "Station Response To Grid Capacity Conditions," Rev. 0

b. Findings

No findings of significance were identified.

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1R04 Equipment Alignment (71111.04 - 4 samples)a. Inspection Scope

Partial System Walkdown. (71111.04Q - 3 samples) The inspectors performed partial system walkdowns to verify system and component alignment and to note any discrepancies that would impact system operability. The inspectors verified selected portions of redundant or backup systems or trains were available while certain system components were out-of-service. The inspectors reviewed selected valve positions, general condition of major system components, and electrical power availability. This inspection activity represented three samples. The partial walk-downs included the following systems:

- D11, D13, and D14 emergency diesel generators with D12 emergency diesel generator out-of-service for a two-year overhaul
- Unit 2 high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) systems
- Unit 1 standby liquid control system (SLCS) following surveillance testing of the A, B, and C SLCS loops

Complete System Walkdown. (71111.04S - 1 sample) The inspectors performed a complete system walkdown on the Unit 2 residual heat removal (RHR) shutdown cooling and alternate shutdown cooling systems to verify that the equipment was aligned properly. The walkdown included reviews of valve positions, major system components, electrical power availability, and equipment deficiencies. The inspectors reviewed system checkoff lists, system operating procedures, the system piping and instrumentation diagram, and the Updated Final Safety Analysis Report (UFSAR). The inspectors reviewed outstanding maintenance activities and issue reports (IRs) associated with the Unit 2 RHR shutdown cooling and alternate shutdown cooling system to determine if they would adversely affect system operability. The inspectors verified that system valves, including locked valves, were correctly positioned to support system operation. The inspectors also verified that electrical power was available, major components were labeled, hangers and supports were functional, and essential support systems were operational. This inspection activity represented one sample. The documents included in the review are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 9 samples)a. Inspection Scope

Tour Plant Areas Important to Reactor Safety. The inspectors toured high-risk areas at Limerick Units 1 and 2 to assess Exelon's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any

related compensatory measures. The inspectors reviewed the respective pre-fire action plan procedures and Section 9A of the UFSAR. This inspection activity represented nine samples. The following fire areas were inspected:

- Unit 2 refuel floor during pre-outage work activities
- Unit 1 A and C core spray pump rooms
- Unit 1 HPCI room
- Units 1 and 2 remote shutdown panel rooms
- Reactor building railroad truck bay area
- Units 1 and 2 auxiliary equipment room halon system
- Remote shutdown panel halon system
- Units 1 and 2 cable spreading room cardox system
- Unit 2 drywell during refuel outage

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 -1 sample)

a. Inspection Scope

The inspectors reviewed documents and inspected structures, systems, and components (SSCs) to evaluate the adequacy of external flood protection measures for safety-related and risk-significant systems and structures. The inspectors interviewed plant personnel, performed walkdowns of the relevant areas to verify the adequacy of watertight doors, flood mitigation doors, site topography, and other flood protection features. The inspectors verified that adequate procedures were in place to identify and respond to floods. This inspection activity represented one external flood protection sample. The documents included in that review are listed in the attachment. The inspectors verified the adequacy of flood protection measures for:

- Unit 2 emergency core cooling system (ECCS) rooms

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08 - 1 sample)

a. Inspection Scope

The inspectors observed in-process non-destructive examination (NDE) activities and reviewed documentation of NDE and repair activities. The sample selection was based on the inspection procedure objectives and risk priority of those components and systems where degradation could result in a significant increase in risk of core damage. The direct observations and documentation reviews were performed to verify activities

were conducted in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code requirements. The inspectors reviewed a sample of examination reports initiated to document the performance and record results of inservice inspection (ISI) examinations completed during the Unit 2 refueling outage in addition to those performed after the previous Unit 2 refueling outage. Also, the inspectors evaluated Exelon's effectiveness in resolving relevant indications identified during ISI activities.

The inspectors reviewed a number of ultrasonic test (UT) data packages and interviewed several inservice inspection personnel, including examiners and program owners. The inspectors reviewed UT data packages to ensure that personnel, procedures, and equipment were in conformance with the requirements of the ASME Code. Included among the data package reviews was the N5A core spray B nozzle-to-safe end weld that was scanned using an automated UT procedure. The inspectors also accompanied the responsible contractor Level II examiner and directly observed UT technicians during the calibration process and examination of WD 06, flued head-to-main steam isolation valve (outboard) weld. The examination was performed using a performance demonstration initiative (PDI) qualified, manual UT procedure.

The inspectors observed and reviewed several visual examinations associated with jet pump main wedge inspections, primarily focused on evaluating wear indications. The inspectors reviewed General Electric (GE) indication notification reports on the main wedge wear indications and discussed the results of those examinations with the GE Level III examiner. The visual examination review evaluated examiner skill, test equipment performance, examination technique, and inspection environment (water clarity), to assess Exelon's contractor oversight activities, and to verify the contractor's ability to identify and characterize observed indications.

The inspectors reviewed one ASME Code repair/replacement and its associated non-destructive examination from this refueling cycle. Specifically, the inspectors reviewed welding activities and documentation for the replacement of RHR valve HV-051-2F016B and adjacent piping. This review included contractor welding procedures and technician qualifications. The radiographs associated with field welds FW006, FW007, and FW1001 were reviewed with the Exelon Level III examiner to discuss all indications and to ensure proper identification and characterization of indications for the welds. This review verified the activities associated with welding on ASME Code Class I or II components were in accordance with applicable ASME Code requirements.

The inspectors examined Limerick's evaluation and disposition for continued operation without repair or rework of non-conforming conditions identified during ISI activities. This was accomplished by review of action request (AR) A1431777 that documented a minimum wall condition on RHR system piping found during the 2005 refueling outage. In addition, the inspectors reviewed examination results and the disposition of recordable indications that were evaluated per the ASME Code as acceptable for the recirculation inlet nozzle examination, N2C, performed during the refueling outage in 2003.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q - 1 sample)

Simulator Evaluation

a. Inspection Scope

On January 24, 2005, the inspectors observed an annual exam simulator scenario evaluation to assess licensed operator performance and the evaluator's critique. The inspectors discussed the results with operators, operations management, and training instructors. This inspection activity represented one sample. The inspectors also referred to the Emergency Operating Procedures and the following simulator scenario document:

- LSES-68, "SRV Opens and ATWS," Rev. 5

b. Findings

No findings of significance were identified.

1R12 Maintenance Implementation (71111.12 - 2 samples)

a. Inspection Scope

The inspectors evaluated the follow-up actions for selected SSC issues and reviewed the performance history of these SSCs to assess the effectiveness of Exelon's maintenance activities. The inspectors reviewed Exelon's problem identification and resolution actions, as applicable, for these issues to evaluate whether Exelon had appropriately monitored, evaluated, and dispositioned the issues in accordance with Exelon's procedures and the requirements of 10 CFR 50.65(a)(1) and (a)(2), "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed selected SSC classification, performance criteria and goals. The inspectors reviewed the associated maintenance AR and discussed the issue with engineering personnel. This inspection activity represented two samples. The following issues were reviewed:

- Unit 1 and 2 remote shutdown panel handswitch failures
- Unit 2 A hydrogen recombiner inlet flow transmitter failure

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13 - 6 samples)a. Inspection Scope

The inspectors reviewed the assessment and management of selected maintenance activities to evaluate the effectiveness of Exelon's risk management for planned and emergent work. The inspectors compared the risk assessments and risk management actions to the requirements of 10 CFR 50.65(a)(4) and the recommendations of NUMARC 93-01 Section 11, "Assessment of Risk Resulting from Performance of Maintenance Activities." The inspectors evaluated the selected activities to determine whether risk assessments were performed when required and appropriate risk management actions were identified.

The inspectors reviewed scheduled and emergent work activities with work control center planning personnel to verify whether risk management action threshold levels were correctly identified. The inspectors assessed those activities to evaluate whether appropriate implementation of risk management actions were performed in accordance with Exelon's procedures.

The inspectors compared the assessed risk configuration to the actual plant conditions and any in-progress evolutions or external events to evaluate whether the assessment was accurate, complete, and appropriate for the issue. The inspectors performed control room and plant walkdowns to verify whether the compensatory measures identified by the risk assessments were appropriately performed. This inspection activity represented six samples. The selected maintenance activities included:

- Unit 2 B SLCS relief valve maintenance
- Unit 2 halon fire suppression to the auxiliary equipment room (IR 291642)
- Loss of Unit 1 B reactor enclosure cooling water pump with Unit 1 A service water pump out-of-service
- Unit 2 half scram due to #1 control valve pressure switch problem (IR 294809)
- D11 emergency diesel generator jacket water leak
- Unit 1 replacement of seven leaking safety/relief valves (AR 00229616)

The inspectors reviewed the following documents:

- ARC-MCR-006 K4U, "Control Elevation 289 PB PGCC II (Halon)," Rev. 2
- RT-6-041-490-1, "Suppression Pool Gross Leak Rate Determination," Rev. 14
- S22.1.C, "Setup of Fire Protection Halon system for Normal Operation," Rev. 8
- S22.8.G, "Alignment of Halon Equipment in the Remote Shutdown and Auxiliary Equipment Rooms Following an Alarm," Rev. 7

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions (71111.14 - 3 samples)a. Inspection Scope

Non-Routine/Transient Operations. The inspectors observed and reviewed licensed operator performance during the following non-routine evolutions and off-normal conditions:

- The inspectors observed Limerick's activities associated with the Unit 1 maintenance outage to replace seven SRVs with known or suspected main valve seat, pilot valve seat, or pilot valve tell-tale drain leakage. The inspectors reviewed operating and maintenance procedures, condition reports, and watched portions of the maintenance activities in the field. The inspectors also observed portions of the plant shutdown and startup from the main control room (MCR).
- The inspectors responded to the site to observe Limerick's response to an inadvertent Unit 2 Division 3 loss of coolant accident (LOCA) initiation signal that occurred while Unit 2 was shutdown for the refueling outage. The signal was initiated during replacement of an ECCS instrumentation power supply. The inspectors reviewed operator response and plant recovery, interviewed Limerick personnel, and evaluated Limerick's corrective actions and extent of condition review.
- During preparations for plant startup from the Unit 2 refueling outage, a configuration control error resulted in an inadvertent reactor vessel floodup during feed and condensate system flushing. The inspectors reviewed operating procedures and evaluated operator response to the event, verified that Limerick's evaluation of the issue was adequate, and ensured that corrective actions were appropriate.

The documents reviewed are listed in the Attachment.

This inspection activity represented three samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 5 samples)a. Inspection Scope

The inspectors reviewed operability determinations that were selected based on risk insights. The inspectors assessed the adequacy of the evaluations, the use and control of compensatory measures, and compliance with the Technical Specifications. In addition, the inspectors reviewed the selected operability determinations to verify whether the determinations were performed in accordance with Exelon Procedure LS-

Enclosure

AA-105, "Operability Determinations." The inspectors used the Technical Specifications, UFSAR, associated Design Basis Documents, and applicable AR and IR documents during these reviews. This inspection activity represented five samples. The issues reviewed included:

- Operability of potential defective relays for RHR and core spray
- D14 operability with air start tubing failure
- Core spray unit cooler with failed air operated valve
- Unit 1 A SRV due to pilot valve temperature change
- Unit 1 control rod drive accumulator for control rod 34-27 (received low pressure alarm at 880 psig)

The inspectors reviewed the following documents:

- ARs A1501570 and A1495264
- IRs 287852 and 298256
- RT-6-041-490-1, "Suppression Pool Gross Leak Rate Determination," Rev. 14
- Technical Specification 3.1.3.5, "Control Rod Scram Accumulators"
- Technical Specification 3.5.1, "Emergency Core Cooling Systems"
- Technical Specification 3.8.1., "A.C. Electrical Sources - Operating"

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (71111.16 - 1 sample)

a. Inspection Scope

The inspectors reviewed the most significant control room deficiencies, equipment trouble tags, and selected corrective action reports to determine whether these items would affect the functional capability of a system or a human reliability response during an event. The inspectors evaluated the operators' ability to implement abnormal and emergency operating procedures during postulated plant transients with the existing equipment deficiencies. The inspectors reviewed lists of open operability determinations, operator work-arounds, and operator challenges, and completed an evaluation of their cumulative and synergistic effects.

The following additional documents were reviewed:

- ARs A1461038 and A1467856

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17 - 2 samples)a. Inspection Scope

The inspectors reviewed the analysis for the Unit 1 feedwater flow coefficient change after sodium-24 tracer test. The inspectors reviewed the following documents to verify that the design basis, licensing basis, and performance capability of the reactor feed system were not degraded by this modification:

- IR 287770
- Engineering change request LG 04-00636-000, "Unit 1 Feedwater Tracer Test"
- UFSAR section 4.4.2.9, "Uncertainties in Estimates"
- LGS Calculation EE-94LGS, "Uncertainty for Limerick Feedwater Flow Measurement"

The inspectors also reviewed Exelon's evaluation to support replacement of the analog feedwater level control system used on Unit 2 with a digital control system. The inspectors reviewed the following documents to verify that the design basis, licensing basis, and performance capability of the feedwater level control system were not degraded by this modification:

- Engineering change request LG 04-00118, "Feedwater Level Control System Replacement - Engineering Documents - Unit 2," Rev. 0
- Modification acceptance test MAT-P00988.B-2, "Feedwater Level Control System Replacement Modification Test - Power Ascension," Rev. 0
- 10 CFR 50.59 Safety Evaluation for Modification P00988-2, Digital Feedwater Level Control System Upgrade
- Plant Operations Review Committee (PORC) meeting minutes for 50.59 screening, September 22, 2004
- PORC meeting minutes for digital feedwater level control system power ascension testing, January 12, 2005
- IRs 302713, 303318, 303598, 303073, 303325, 303188, 299535, 310090, 314912, 315458

This inspection activity represented two samples.

b. Findings

No findings of significance were identified.

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

The inspectors observed portions of post-maintenance testing activities in the field to determine whether the tests were performed in accordance with the approved procedures. The inspectors assessed the test's adequacy by comparing the test

methodology to the scope of maintenance work performed. In addition, the inspectors evaluated the test acceptance criteria to verify whether the test demonstrated that the tested components satisfied the applicable design and licensing bases and the Technical Specification requirements. The inspectors reviewed the recorded test data to determine whether the acceptance criteria were satisfied. This inspection activity represented six samples. The documents included in the review are listed in the Attachment. The maintenance activities reviewed included:

- Unit 2 B SLCS relief valve setpoint change
- Unit 2 B drywell chiller motor-operated valve stroke time testing
- D11 emergency diesel generator jacket water repair
- Unit 2 digital feedwater level control system
- D21 emergency diesel generator governor replacement
- Unit 2 HPCI/RCIC following refueling outage

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors observed and/or reviewed numerous refueling outage activities and controls for the Unit 2 refueling outage, conducted from February 28 to March 17, 2004. This review included the following:

- Plant shutdown and cool down activities
- Outage risk management, including changes due to emergent work or unexpected conditions
- Outage configuration controls including:
 - 1) availability and accuracy of reactor coolant system instrumentation
 - 2) electrical power alignments
 - 3) decay heat removal system operation
 - 4) availability of reactor inventory makeup water systems
 - 5) secondary containment controls and integrity
- Drywell, suppression chamber, and refuel floor walkdowns (including a drywell walkdown prior to final closeout)
- Unit 2 A RHR system equipment clearance
- Fuel handling operations including fuel movement, fuel assembly tracking, local power range monitor replacement, fuel bundle re-channel, and core verification activities
- Reactor startup, including system restoration, preparation for reactor mode changes, control rod withdrawal, reactor criticality, reactor coolant system heat up, and reactor power increases

During the conduct of the refueling inspection activities, the inspectors reviewed the associated documentation to ensure that the tasks were performed safely and in accordance with plant Technical Specification requirements and operating procedures. The procedures reviewed are listed in the Attachment.

Prior to the commencement of the reactor startup, the inspectors also performed a walkdown of selected SSCs to assess the readiness of the SSCs to support plant restart following the refueling outage.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 5 samples)

a. Inspection Scope

The inspectors reviewed and observed portions of the following surveillance tests, and compared test data with established acceptance criteria to verify the systems demonstrated the capability of performing the intended safety functions. The inspectors also verified that the systems and components maintained operational readiness, met applicable Technical Specification requirements, and were capable of performing the design basis functions. This inspection activity represented five samples. The observed or reviewed surveillance tests included:

- RT-4-049-331-2, "RCIC Overspeed Trip Test," Rev. 4, following RCIC turbine maintenance
- RT-6-051-206-2, "2C RHR-SDC Crosstie Valve Test," Rev. 2
- RT-6-092-316-1, "D12 Diesel Generator Abbreviated Run-In," Rev. 2, startup testing from system outage window
- ST-2-041-801-2, "RPS Main Steam Line Isolation Valve Closure: Channel B1 Response Time Test," Rev. 8
- ST-6-48-230-1, "Standby Liquid Control Pump, Valve, and Flow Test," Rev. 27

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 2 samples)

a. Inspection Scope

The inspectors reviewed the following temporary plant modifications:

- Unit 2 reactor cavity work platform
- Unit 2 reactor recirculation jet pump repairs

The inspectors verified that the temporary change did not adversely affect system or support system availability, or adversely affect a function important to plant safety. The inspectors verified that the applicable design and licensing bases were considered and that 10 CFR 50.59 reviews were appropriate. This inspection activity represented two samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope (71114.04 - 1 Sample)

During the period of January 11 - March 31, 2005, the NRC has received and acknowledge the changes made to Limerick's Emergency Plan in accordance with 10 CFR 50.54(q), which Exelon Nuclear had determined resulted in no decrease in effectiveness to the Plan and which have concluded to continue to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR 50. The inspector conducted a sampling review of the Plan changes which could potentially result in a decrease in effectiveness. This review does not constitute an approval of the changes and, as such, the changes are subject to future NRC inspection. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 4, and the applicable requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - 1 sample)

c. Inspection Scope

The inspectors evaluated a licensed operator simulator scenario and Emergency Plan classification for a Site Area Emergency on January 24, 2005, due to a simulated reactor failure to scram. The inspectors reviewed the scenario to identify the timing of classification, notification, and Protective Action Recommendation (PAR) development activities. During the drill and exercise, the inspectors reviewed checklists and forms used for classification and notification activities, and compared them to the criteria in Exelon's Emergency Plan, EP-AA-1000, and supporting procedures. This inspection activity represented one sample.

d. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01 - 21 samples)

a. Inspection Scope

During the period March 14 - 18, 2005, the inspectors conducted the following activities to verify that Exelon was properly implementing physical, administrative, and engineering controls for access to locked high radiation areas and other radiologically controlled areas, and that workers were adhering to these controls when working in these areas during the Unit 2 refueling outage and Unit 1 power operations. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, Technical Specifications, and Exelon's procedures. This inspection activity represents completion of ten samples.

Completion of these ten (outage-related) access control samples in conjunction with the 11 (power-operations-related) samples, completed during the period January 3 - 7, 2005, completes the 71121.01 annual inspection requirement of 21 samples.

Plant Walkdown and RWP Reviews

During the Unit 2 refueling outage, the inspectors identified exposure significant work areas in the Unit 2 drywell, reactor cavity, refuel floor, and reactor building. Specific work activities included drywell demobilization, reactor cavity draindown and decontamination, reactor cavity work platform removal, and traversing in-core probe (TIP) torque testing, respectively. The inspectors reviewed radiation survey maps and radiation work permits (RWP) associated with these areas to determine if the associated controls were acceptable.

The inspectors toured the accessible radiological controlled areas, including the drywell, reactor building, radwaste building, and refuel floor, and with the assistance of a radiation protection technician, performed independent surveys of selected areas to confirm the accuracy of survey data and the adequacy of postings.

In evaluating the RWPs, the inspectors reviewed electronic dosimeter dose/dose rate alarm setpoints to determine if the setpoints were consistent with the survey indications and plant policy. The inspectors verified that the workers were knowledgeable of the actions to be taken when the dosimeter alarms or malfunctions for tasks being performed under selected RWPs. Work activities reviewed included reactor cavity

draindown and decontamination (RWPs 63 and 64), reactor cavity work platform removal (RWP 62), and TIP torque testing (RWP 05).

The inspectors reviewed RWPs and associated instrumentation and engineering controls for potential airborne radioactivity areas located in the Unit 2 drywell and reactor building. The inspectors confirmed that no worker received an internal dose (in excess of 50 mrem) due to airborne radioactivity when performing outage-related tasks. The inspectors reviewed the dose assessment methodology for internal exposures that were less than 50 mrem to confirm the accuracy of the results.

Problem Identification and Resolution

The inspectors reviewed elements of Exelon's corrective action program related to controlling access to radiologically controlled areas, completed since the last inspection of this area, to determine if problems were being entered into the program for resolution. Details of this review are contained in Section 4OA2 of this report.

Jobs-In-Progress

The inspectors observed aspects of various maintenance activities being performed during the inspection period to verify that radiological controls, such as required surveys, area postings, job coverage, and pre-job RWP briefings were conducted. The inspectors also verified that personnel dosimetry was properly worn and that workers were knowledgeable of the radiological conditions in their work area. The inspectors attended the pre-job RWP briefings and observed selected aspects of the Unit 2 reactor cavity draindown and decontamination, reactor cavity work platform removal, TIP torque testing, and drywell demobilization.

High Risk Significant, High Dose Rate, and Very High Radiation Area Controls

The keys to Unit 1 and Unit 2 locked high radiation areas (LHRA) and very high radiation areas (VHRA) were inventoried, and accessible LHRAs and VHRAs in Units 1 and 2 were verified to be properly secured and posted during plant tours.

The inspectors reviewed the physical and procedural controls for securing and transferring highly activated/contaminated materials stored in the Unit 1 and 2 spent fuel pools.

The inspectors discussed with Radiation Protection supervisors High Dose Rate (HDR) areas and VHRA controls and procedures. The inspectors verified that any changes to relevant procedures did not substantially reduce the effectiveness and level of worker protection. The inspectors evaluated the prerequisite communications and authorizations that would allow entry into potentially high dose rate areas. Controls for significant high-risk areas reviewed included entries into areas of the Unit 2 drywell and TIP room for outage-related activities.

Radiation Worker Performance

The inspectors observed radiation worker and radiation protection technician performance during reactor cavity draindown and decontamination, reactor cavity work platform removal, and drywell demobilization. The inspectors determined whether the individuals were aware of current radiological conditions and access controls, and whether their skill level was sufficient for the potential radiological hazards and the work involved.

The inspectors reviewed IRs, related to radiation worker and radiation protection errors, and personnel contamination event reports to determine if an observable pattern traceable to a similar cause was evident.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 - 8 samples)

a. Inspection Scope

During the period March 14 - 18, 2005, the inspectors conducted the following activities to verify that Exelon was properly implementing operational, engineering, and administrative controls to maintain personnel exposure as low as is reasonably achievable (ALARA) for tasks conducted during the Unit 2 refueling outage. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and Exelon's procedures. This inspection represents completion of eight samples.

Radiological Work Planning

The inspectors reviewed pertinent information regarding cumulative exposure history, current exposure trends, and ongoing activities to assess current performance and outage exposure challenges. The inspectors determined the site's 3-year rolling collective average exposure.

The inspectors reviewed the Unit 2 refueling outage work scheduled during the inspection period and the associated work activity dose estimates. Scheduled work reviewed included reactor cavity draindown and decontamination, TIP torque testing, and reactor cavity work platform removal.

The inspectors reviewed procedures associated with maintaining worker dose ALARA and with estimating and tracking work activity specific exposures.

The inspectors reviewed the 2R08 dose summary reports, detailing worker estimated and actual exposures, through March 17, 2005, for jobs performed during the refueling outage.

The inspectors evaluated the exposure mitigation requirements specified in RWPs and ALARA Plans (AP), and compared actual worker cumulative exposure to estimated dose for tasks associated with these work activities. The inspectors reviewed in detail those work activities whose actual cumulative exposure approached 80% of the estimated dose, which resulted in a subsequent Work-In-Progress (WIP) ALARA Review, and evaluation by the station ALARA Committee. Jobs reviewed included Refuel Floor-Middle Activities (Cavity Flooded) (AP 05-38), Reactor Cavity Work Platform Activities (AP 05-42), Drywell Permanent Shielding Installation (AP 05-28), and Drywell Scaffolding Installation and Removal (AP 05-25).

The inspectors evaluated the departmental interfaces between radiation protection, engineering, maintenance crafts, and operations to identify missing ALARA program elements and interface problems. The evaluation was accomplished by interviewing the Radiological Engineering Manager and Radiation Protection Manager, reviewing station ALARA Committee meeting minutes, reviewing outage related Nuclear Oversight Department Rapid Trending Reports, and attending pre-job briefings for jobs-in-progress (reactor cavity draindown and decontamination, reactor cavity work platform removal, and TIP torque testing).

The inspectors compared the person-hour estimates provided by the maintenance planning group and other work groups with actual work activity time requirements and evaluated the accuracy of these estimates. Specific jobs reviewed included drywell scaffolding, drywell permanent shielding installation, reactor cavity work platform activities, and jet pump repair activities.

The inspectors determined if work activity planning included the use of temporary shielding, system flushes, hydrolazing of piping, and operational considerations to further minimize worker exposure. The inspectors examined temporary and permanent shielding installed in the Unit 2 drywell, system pre- and post-flush dose rate data for the RHR system return check valve, and use of temporary containments for contaminated valve repairs.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the assumptions and basis for the annual site collective exposure estimate and the Unit 2 refueling outage dose projection. The inspectors reviewed whole body counting data and related calculations for internal dose assessments for selected personnel.

The inspectors reviewed Exelon's method for adjusting exposure estimates and replanning jobs when emergent work was encountered. The inspectors reviewed the WIP ALARA reviews and actions of the station ALARA Committee to monitor and control dose allocations.

The inspectors reviewed Exelon's exposure tracking system to determine whether the level of detail, exposure report timeliness and dissemination was sufficient to support the control of collective exposures. Included in this review were departmental dose compilations, highest personnel exposures to date, and individual exposure records.

Job Site Inspection and ALARA Control

The inspectors observed maintenance and operational activities being performed for reactor cavity draindown and decontamination, drywell demobilization, reactor cavity work platform removal, and TIP torque testing to verify that radiological controls, such as required surveys, job coverage, and contamination controls were implemented; personnel dosimetry was properly located; and that workers were knowledgeable of work area radiological conditions.

The inspectors reviewed the exposure of individuals in selected work groups, including Mechanical Maintenance, Radiation Protection, and Outage Services, to determine if supervisory efforts were being made to equalize doses among the workers.

Source Term Reduction and Control

The inspectors reviewed the status and historical trends for the Unit 2 source terms. Through survey map review and interviews with the Radiation Protection Manager and Radiological Engineering Manager, the inspectors evaluated recent source term measurements and control strategies taken in response to an observed increase in coolant activity apparently caused by reactor recirculation system jet pump wedge wear. Specific strategies employed by the licensee included extended use of the reactor water cleanup and reactor cavity filtration systems, system flushes and hydrolazing, and use of temporary shielding.

Declared Pregnant Workers

The inspectors reviewed the radiological controls and dosimetry records for a declared pregnant worker performing outage-related tasks.

Problem Identification and Resolution

The inspectors reviewed elements of Exelon's corrective action program related to implementing radiological controls to determine if problems were being entered into the program for resolution. Details of this review are contained in Section 4OA2 of this report.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

1. Routine PI&R Review

The inspectors reviewed selected IRs as part of the routine baseline inspection documented in this report. The IRs were assessed to verify whether the full extent of the various issues were adequately identified, appropriate evaluations were performed, and reasonable corrective actions were identified. The inspectors evaluated the IRs against the requirements of LS-AA-125, "Corrective Action Program (CAP) Procedure," and 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." During this inspection period, the inspectors performed a screening review of each item that Exelon entered into their corrective action program, to assess whether there were any unidentified repetitive equipment failures or human performance issues that might warrant additional follow-up.

2. (Closed) URI 05000352, 05000353/2004006-001 Peak Pellet Exposure Calculations

a. Inspection Scope

The inspectors reviewed, with support from NRC headquarters personnel, the significance of the issue related to the subject unresolved item (URI) and IR 190531, which questioned the differences between three NRC-licensed computer codes for calculating fuel peak pellet exposure.

b. Findings and Observations

No findings of significance were identified.

The inspectors determined that the differences between the computer codes were within expected levels of variation for calculations of this nature. As such, this issue does not constitute a finding or a violation of NRC requirements. The inspectors also noted that IR 190531 was not initiated in a timely manner. This is a licensee corrective action program performance deficiency, but it is not a finding of significance. URI 05000352, 05000353/2004006-001 is closed.

3. Access Controls and ALARA Planning and Controls

a. Inspection Scope

The inspectors reviewed 15 IRs, three prompt investigative reports, the 2005 Dose Reduction Plan, and 14 Nuclear Oversight Rapid Trend reports to evaluate the threshold for identifying, evaluating, and resolving problems in implementing the ALARA program. This review was conducted against the criteria contained in 10 CFR 20, Technical Specifications, and Exelon's procedures.

b. Findings and Observations

No findings of significance were identified.

4. Inservice Inspections

a. Inspection Scope

The inspectors reviewed various IRs which identified deficiencies during non-destructive testing activities. The inspectors verified that identified deficiencies were reported, characterized, evaluated, and resolved within the corrective action program.

b. Findings and Observations

No findings of significance were identified.

4OA3 Event Followup 71153 (71153 - 2 samples)

1. Unit 2 Main Turbine Bearing Failure During Startup

a. Inspection Scope

On March 20, 2005, during startup following the Unit 2 refueling outage, Limerick operators identified a high temperature condition on a main turbine bearing. The inspectors responded to the site and observed operator performance during the event. Due to the high temperature and other indications of bearing damage, the main turbine and reactor were shutdown. The inspectors observed the main turbine shutdown and reviewed Exelon's bearing damage assessment. The following documents were reviewed by the inspectors:

- EP-AA-1008, "Exelon Nuclear Radiological Emergency Plan Annex for Limerick Generating Station," Rev. 6
- IR 315014 and 315228
- Prompt investigation report for Unit 2 main turbine bearing failure
- S01.2.A, "Shutdown of the Main Turbine," Rev. 26
- SE-24, "In Plant Evacuations," Rev. 0

b. Findings

No findings of significance were identified.

2. (Closed) LER 05000352; 05000353/2005-001-00, Loss of Licensed Material in the Form of a Radiation Detector Calibration Source

a. Inspection Scope

On March 8, 2005, Exelon identified that a 0.0154 microcurie Thorium-230 source, used to calibrate alpha counters, was missing from its storage box in a locked cabinet. The source has not been located despite an extensive search. Exelon documented the problem in IR 293274 and determined that the apparent cause of the lost source was human error. As a corrective action, sealed sources now require an independent peer check and signoff verification that the source has been returned and secured in its appropriate location.

10 CFR 20.1801 requires that licensees maintain control of licensed material. Contrary to this requirement, a 0.0154 microcurie Thorium-230 calibration source could not be accounted for on site. This issue has minor safety significance due to the very low source activity, and because it is not a repetitive occurrence. This LER is closed.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meetings

On April 11, 2005, the resident inspectors presented the inspection results to Mr. DeGregorio and other members of his staff, who acknowledged the findings. The inspectors confirmed that proprietary information was not included in the inspection report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company

T. Basso, Senior Manager - Design Engineering
E. Callan, Director - Engineering
R. DeGregorio, Vice President
B. Hanson, Plant Manager
W. Harris, Radiation Protection Manager
R. Kreider, Senior Operations Manager
C. Mudrick, Director - Operations
J. Newman, Radiological Engineering Manager
P. Orphanos, Shift Operations Superintendent
D. Schmidt, ISI Program Manager
R. Shortes, Health Physics Supervisor

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

05000352/2004006-01 and 05000353/2004006-01	URI	Peak Pellet Exposure Calculations
05000352/2005-001-00 and 05000353/2005-001-00	LER	Loss of Licensed Material in the Form of a Radiation Detector Calibration Source

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Drawings

Piping and Instrument Diagram M-48, sheet 1, "Standby Liquid Control," Rev. 29
Piping and Instrument Diagram M-51, sheets 7 and 8, "Residual Heat Removal,"
Revisions 16 and 22

Procedures

GP-6.2, "Shutdown Operations - Shutdown Condition Tech Spec Actions," Rev. 37
ON-121, "Loss of Shutdown Cooling," Rev. 23
S49.1.A, "Normal RCIC Line-Up for Automatic Operation," Rev. 18
S49.9.A, "Routine Inspection of the RCIC System," Rev. 22

S51.8.B, "Shutdown Cooling/Reactor Coolant Circulation Operation Startup and Shutdown," Rev. 59
S55.1.A, "Normal HPCI Line-Up for Automatic Operation," Rev. 29
S55.9.A, "Routine Inspection of the HPCI System," Rev. 29
ST-6-048-230-1, "SLC Pump, Valve, and Flow Test," Rev. 27
ST-6-048-450-1, "SLC Lineup Verification," Rev. 2
ST-6-107-641-2, "Reactor Vessel Temperature and Pressure Monitoring with no RHR Shutdown Cooling Loops in Operation," Rev. 18

Technical Specifications

Technical Specification 3.9.11, "Residual Heat Removal and Coolant Circulation"
Technical Specification Bases 3.9.11, "Residual Heat Removal and Coolant Circulation"
Technical Specification 3.9.7, "Residual Heat Removal - High Water Level"
10 CFR 50.59 Safety Evaluation NCR LG98-0061
ARC-MCR-215 A3, "2B/D Core Spray Pump Room Flood," Rev. 1
ARC-MCR-215 C3, "RHR Isolation Valve Compt Room 376 Flood," Rev. 0
ARC-MCR-215 G5, "2B/D RHR Pump Room Flood," Rev. 1
IR 174341
SE-4-1, "Reactor Enclosure Flooding," Rev. 6
Work orders R0787655, R0794590, R0846422, and R0878936

Section IR06: Flood Protection Measures

10 CFR 50.59 Safety Evaluation NCR LG98-0061
ARC-MCR-215 A3, "2B/D Core Spray Pump Room Flood," Rev. 1
ARC-MCR-215 C3, "RHR Isolation Valve Compt Room 376 Flood," Rev. 0
ARC-MCR-215 G5, "2B/D RHR Pump Room Flood," Rev. 1
IR 174341
SE-4-1, "Reactor Enclosure Flooding," Rev. 6
Work orders R0787655, R0794590, R0846422, and R0878936

Section 1R08: Inservice Inspections

Examination Reports

NDE Report 100866-002, Radiographic Examination Pipe to Valve weld FW-6 (RT)
NDE Report 100866-003, Radiographic Examination Valve to Fitting FW-1001 (RT)
LGS Unit 2 Shroud Weld H1/H2 UT Indication Data, March 2005
Examination Summary Report 714600 - Closure Head Dollar Plate Weld (manual UT)
Examination Summary Report 72250 - Core Spray N5A Nozzle/Safe End (auto UT)
Examination Summary Report 710500 - Flued head to outboard main steam isolation valve (manual UT)
Visual Examination Recordings - Jet Pumps 1,8,12, and 17, March 2005 (VT)

Flaw Evaluation

UT Examination Summary Sheet, RPV Recirculation Inlet nozzle - N2C, February 2003

INR Li2R08-05-11 Jet Pump #12 Wedge, Rev. 1, March 2005
INR Li2R08-05-09 Jet Pump #17 Wedge, Rev. 0, March 2005
A1431777, minimum wall evaluation on RHR piping adjacent to valve 2F016B, March 2005

Issue reports/Action Requests

IR 310676 IR 308541 IR 308873 IR 308670 IR 308878 IR 308541
IR 148221 IR 309283 IR 308258 IR 308520 A1464271

Miscellaneous

LGS Jet Pump Inspection Repair Matrix - 2005
QAP 9.3, "Workmanship and Visual Inspection Criteria for ASME Welding," Rev. 16
Limerick specific 2R08 NDE Oversight, February 2005
Check-In Self-Assessment - Li2R08 ISI Activities - February 2005

Procedures

WSI Traveler 100866-1, "Procedure for Replacement of RHR-HV0512-F016B," Rev. 0
Welding Procedure Specification (WPS)-01-01-TS-501, Rev. 3
Welder Information Data Sheet, HV-051-2F016B, February 2005
CC-AA-501-1008, "Welding General Requirements," Rev. 2
ER-AA-335-025, "Oversight of vendor NDE activities," Rev. 1
L2R08RHR - Eddy Current Technique Sheet: 2B RHR Heat Exchanger, March 2005
GE-UT-245, "Procedure for Automated Ultrasonic Examination of Corrosion Resistant Clad Welds," Version 1
GE-UT-300, "Procedure for Manual Examination of Reactor Vessel Assembly Welds in accordance with PDI," Version 8

Section 1R12: Maintenance Rule Implementation

Procedures

ER-LG-310-1010, "Maintenance Rule Implementation - Limerick Generation Station," Rev. 1
Limerick Generation Station MR Scope and Performance Monitoring Database

Issue reports/Action Requests

A1502864 A1503935 A1495900 A1495598 IR 301792 IR 304130

Section 1R14: Personnel Performance During Non-Routine Plant Evolutions

Drawings

Drawing M-1-E21-1040-E-028, "Core Spray System Elementary Diagram," Rev. 4
Drawing M-1-E21-1040-E-023, "Core Spray System Elementary Diagram," Rev. 11

Issue reports/Action Requests

A1477273 IR 217960 IR 218009 IR 229616 IR 227686 IR 242605
IR 296626 IR 309337 IR 312046 IR 313812

Procedures

GP-2, "Normal Plant Startup," Rev. 111
GP-2, Appendix 1, "Reactor Startup and Heatup," Rev. 32
GP-2, Appendix 3, "Startup of the Main Turbine," Rev. 22
GP-3, "Normal Plant Shutdown," Rev. 10
OT-110, "Reactor High Level," Rev. 24
RT-6-041-490-1, "Suppression Pool Gross Input Leak Rate Determination," Rev. 10
S06.5.A, "Long Path Recirculation and Feedwater System Flushing," Rev. 25

Prompt Investigation Reports

Prompt investigation report for inadvertent Division 3 LOCA initiation signal

Work Orders

R0970684

Section IR19: Post Maintenance Testing

- AR 1384619
- Work order CO211621
- MAT-P00988.B-2, "Feedwater Level Control System (FWLCS) Replacement Modification Test - Power Ascension," Rev.0
- RT-6-092-501-2, "D21 Diesel Generator Governor Tuning Response Test," Rev.0
- ST-6-049-320-2, "RCIC Operability Verification," Rev. 17
- ST-6-055-321-2, "HPCI Operability Verification," Rev. 14
- ST-6-087-200-2, "Drywell Chilled Water Valve Test - Quarterly," Rev. 9
- ST-6-092-311-2, "D21 Diesel Generator Slow Start Operability Test Run," Rev. 51

Section 1R20: Refueling and Other Outage Activities

Procedures

GP-2, "Normal Plant Shutdown," Rev. 112
GP-2, Appendix 1, "Reactor Startup and Heatup," Rev. 32
GP-2, Appendix 2, "Drywell/Suppression Pool Closeout and Inspections," Rev. 27
GP-2, Appendix 3, "Startup of the Main Turbine," Rev. 33
GP-3, "Normal Plant Startup," Rev. 110
GP-6.1, "Shutdown Operations - Refueling, Core Alteration, and Core Off-Loading," Rev. 6

GP-13, "Control Rod Drive/Control Rod Blade Outage Maintenance Coordination," Rev. 18
NF-AA-330-1001, "Core Verification Guideline," Rev. 0
ON-104, "Control Rod Problems," Rev. 45
ON-121, "Loss of Shutdown Cooling," Rev. 23
ON-125, "Loss of Fuel Pool Cooling," Rev. 5
S51.5.C, "RHR Shutdown Cooling Piping Flushes," Rev. 19
S51.7.A, "Draining Reactor Well and Dryer/Separator Storage Pool with RHR," Rev. 14
S51.8.B, "Shutdown Cooling/Reactor Coolant Circulation Operation Startup and Shutdown," Rev. 59
S51.8.L, "RHR Alternate Decay Heat Removal Startup and Shutdown," Rev. 9
ST-6-107-640-2, "Reactor Vessel Temperature and Pressure Monitoring," Rev. 29

Section 1R23: Temporary Plant Modifications

Action Requests

A00308792

Safety Evaluations

50.59 safety evaluation LG 2005E002 for the reactor cavity inspection platform

Technical Specifications

Technical Specification 3.4.1.2, "Reactor Coolant System Jet Pumps"

Updated Final Safety Analysis Report

UFSAR section 3.9.5.1.1.8, "Jet Pump Assemblies"
UFSAR section 9.1.4, "Reactor Cavity Work Platform"
UFSAR section 15.7.4, "Design Bases Fuel Handling Accident Analysis"

Sections 1EP4/1EP6: Emergency Action Level and Emergency Plan Changes and Drill Evaluation

Procedures

Exelon Standard Emergency Plan and Implementing Procedures
Limerick Annex Emergency Plan

Sections 2OS1/2OS2: Access Control to Radiologically Significant Areas and ALARA Planning and Control

Procedures

HPJS 7.5, "Electron Capture Isotope Control," Rev. 4

RP-AA-210, "Dosimetry Issue, Usage, and Control," Rev. 5
 RP-AA-250, "External Dose Assessments From Contamination," Rev. 3
 RP-AA-350, "Personnel Contamination Monitoring, Decontamination, and Reporting,"
 Rev. 4
 RP-AA-376, "Radiological Postings, Labeling, and Markings," Rev. 1
 RP-AA-400, "ALARA Program," Rev. 3
 RP-LG-400-1003, "Emergent Dose Control and Authorization," Rev. 0
 RP-LG-700-1001, "Radiation Protection Instrumentation Operations Guidelines," Rev. 0
 RP-LG-400-1021, "Reactor Cavity Drindown," Rev. 0
 RP-AA-401, "Operational ALARA Planning and Controls," Rev. 4
 RP-AA-403, "Administration of the Radiation Work Permit Program," Rev. 1
 RP-AA-460, "Controls for High and Very High Radiation Areas," Rev. 6
 RP-LG-460-1016, "Radiation Protection Controlled Keys," Rev. 1
 RT-0-100-460-0, "High Radiation and Locked High Radiation Door Preventative
 Maintenance Inspection," Rev. 1
 LS-AA-125, "Corrective Action Program (CAP) Procedure," Rev. 8

ALARA Plans

05-25: Drywell Scaffolding Installation/Removal
 05-28: Drywell Shielding Installation/Removal
 05-38: Refuel Floor Outage-Middle Activities (Cavity Flooded)
 05-42: Reactor Cavity Work Platform - Inspection Activities

Section 40A2: Problem Identification and Resolution

Access Controls and ALARA Planning and Controls

Issue Reports

IR 311088	IR 310204	IR 308421	IR 309552	IR 309203	IR 309237
IR 306732	IR 302664	IR 298383	IR 309033	IR 296335	IR 265420
IR 309203	IR 293278	IR 311172			

Prompt Investigative Reports

Prompt investigation report for Cobalt-60 transient during Unit 2 shutdown
 Prompt investigation report for worker entry into a high radiation area without a brief
 Prompt investigation report for technician injured in a fall while taking a radiation survey

Nuclear Oversight Observation/Rapid Trending Reports

3/4/05	3/5/05	3/6/05	3/7/05	3/8/05	3/10/05
3/11/05	3/12/05	3/14/05	3/15/05		

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
AR	Action Request
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient Without Scram
CAP	Corrective Action Program
CFR	Code of Federal Regulations
ECCS	Emergency Core Cooling Systems
GE	General Electric
HDR	High Dose Rate
HPCI	High Pressure Coolant Injection
HVAC	Heating, Ventilation, and Air Conditioning
IR	Issue Report
ISI	Inservice Inspection
LER	Licensee Event Report
LGS	Limerick Generating Station
LHRA	Locked High Radiation Area
LOCA	Loss of Coolant Accident
MCR	Main Control Room
NDE	Non-Destructive Examination
NRC	Nuclear Regulatory Commission
PAR	Protective Action Recommendation
PARS	Publically Available Records
PDI	Performance Demonstration Initiative
PORC	Plant Operations Review Committee
RHR	Residual Heat Removal
RPS	Reactor Protection System
RWP	Radiation Work Permit
SDC	Shutdown Cooling
SRV	Safety/Relief Valve
SSC	System, Structure, or Component
TIP	Traversing In-Core Probe
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UT	Ultrasonic Testing
VHRA	Very High Radiation Area
WIP	Work In Progress