



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

January 30, 2009

Mr. J. Randy Johnson
Vice President - Farley
Southern Nuclear Operating Company, Inc.
7388 North State Highway 95
Columbia, AL 36319

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT - NRC INTEGRATED INSPECTION
REPORT 05000348/2008005 AND 05000364/2008005

Dear Mr. Johnson:

On December 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Joseph M. Farley Nuclear Plant, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on January 8, 2009, with yourself and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The NRC 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 NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Scott M. Shaeffer, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Docket No.: 50-348, 50-364
License No.: NPF-2, NPF-8

Enclosure: Inspection Report 05000348/2008005 and 05000364/2008005
w/Attachment: Supplemental Information

cc w/encl.: (See next page)

January 30, 2009

Mr. J. Randy Johnson
Vice President
Southern Nuclear Operating Company, Inc.
P.O. Box 1295
Birmingham, AL 35201-1295

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Letter to J. Randy Johnson from Scott M. Shaeffer dated January 30, 2009

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REPORT 05000348/2008005 AND 05000364/2008005

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 05000348, 05000364

License Nos.: NPF-2, NPF-8

Report No.: 05000348/2008005 and 05000364/2008005

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Joseph M. Farley Nuclear Plant, Units 1 and 2

Location: Columbia, AL

Dates: October 1, 2008 through December 31, 2008

Inspectors: E. Crowe, Senior Resident Inspector
S. Sandal, Resident Inspector
G. Kuzo, Senior Health Physicist (Sections 2OS1, 2PS2, 4OA1)
A. Nielsen, Health Physicist (Sections 2OS2, 2PS1, 4OA1)
B. Collins, Reactor Inspector (Sections 1R07, 1R08, 4OA5)

Approved by: Scott M. Shaeffer, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000348/2008-005 and 05000364/2008-005; 10/01/2008 – 12/31/2008; Joseph M. Farley Nuclear Plant, Units 1 and 2; Routine Integrated Report

The report covered a three-month period of inspection by the resident inspectors, a reactor inspector, and two health physicists. 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. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None.

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REPORT DETAILS

Summary of Plant Status

Unit 1 started the report period at 100 percent Rated Thermal Power (RTP). On November 19, Unit 1 tripped due to when the 'B' reactor coolant pump (RCP) breaker undervoltage (UV) relay tripped on a sensed UV condition. The unit was restarted, achieved 100 percent RTP on November 24, and remained there for the remainder of the inspection period.

Unit 2 started the period near 100 percent RTP. The unit was shut down on October 19 for a refueling outage. Unit 2 was restarted and achieved 100 percent RTP on November 26. On December 5, Unit 2 was reduced to 82 percent RTP for repairs on the 2B steam generator (SG) feedwater pump high pressure stop valve. Unit 2 was restored to 100 percent RTP later that same day, and remained there for the rest of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

Impending Adverse Conditions. The inspectors evaluated implementation of adverse weather preparation procedures and compensatory measures for the following adverse weather condition. The inspectors walked-down portions of the Main Steam Systems, Condensate Storage Systems, Refueling Water Storage (RWS) Systems, and the Emergency Diesel Generators (EDGs). These systems were selected because their safety-related functions could be affected by freezing weather. The inspectors verified the applicable portions of procedure FNP-0-SOP-0.12 Cold Weather Contingencies were performed. Documents reviewed are listed in the Attachment.

- Projected Freezing Temperatures December 22-23

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

Partial Walkdown. The inspectors performed partial walk-downs of the following three systems to verify the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors attempted to identify discrepancies impacting the function of the system and therefore, potentially increasing risk. The walk-downs were performed using the criteria in licensee procedures FNP-0-AP-16, Conduct of Operations – Operations Group, and FNP-0-SOP-0, General Instructions to Operations Personnel. The walk-downs included reviewing the Updated Final Safety Analysis Report (UFSAR), plant procedures and drawings, checks of control room and plant valves, switches, components, electrical power, support equipment, and instrumentation. Documents reviewed are listed in the Attachment.

Enclosure

- Unit 2 Residual Heat Removal (RHR) System
- Unit 2 Chemical Volume and Control System (CVCS)
- Unit 2 Electrical Distribution System during Reactor Coolant System (RCS) mid-loop conditions

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

Fire Protection Area Tours. The inspectors conducted a tour of the four fire areas listed below to assess the material condition and operation status of the fire protection equipment. The inspectors verified combustibles and ignition sources were controlled in accordance with the licensee's administrative procedures; fire detection and suppression equipment was available for use; passive fire barriers were maintained in good material condition, and compensatory measures for out-of-service, degraded, or inoperable fire protection equipment were implemented in accordance with the requirements of licensee procedures FNP-0-AP-36, Fire Surveillance and Inspection; FNP-0-AP-38, Use of Open Flame; FNP-0-AP-39, Fire Patrols and Watches; and the associated Fire Zone Data sheets. Documents reviewed are listed in the Attachment.

- Unit 2, Containment, Fire Zone 55
- Unit 2, 2A Motor-Driven Auxiliary Feedwater Pump (MDAFWP) Room, Fire Zone 6
- Unit 2, 'A' Train 4160 volt electrical switchgear room, Fire Zone 41
- Unit 1 and Unit 2 (Shared), Main Control Room, Fire Zone 44

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

Triennial Inspection. The inspectors reviewed documentation and performed walk-downs of the following six risk significant Heat Exchangers (HXs) to ensure that deficiencies that could mask or degrade performance were identified and corrected. The inspector also reviewed HX testing, monitoring, and maintenance activities to verify they were consistent with Generic Letter (GL) 89-13 licensee commitments and industry guidelines.

- Unit 1 Component Cooling Water HXs (Q1P17H001A-B,B-AB,C-A)
- Unit 2 Component Cooling Water HXs (Q2P17H001A-B,B-AB,C-A)
- Unit 1 Charging Pump Room Coolers (Q1E16H001A-A,B-AB,C-B)

- Unit 2 Charging Pump Room Coolers (Q2E16H001A-A,B-AB,C-B)
- Unit 1 Auxiliary Feedwater Pump Room Coolers (Q1E16H005A-A,B-B)
- Unit 2 Auxiliary Feedwater Pump Room Coolers (Q2E16H005A-A,B-B)

The inspectors reviewed the performance testing methodology and results, basis for acceptance criteria, frequency of performance monitoring, inspection/cleaning methods and results, HX cleaning and replacement schedules, susceptibility to water hammer, periodic flow testing for infrequently used HXs, tube plugging history, and eddy current/visual inspection records. In addition, the inspector conducted a walkdown of accessible HXs to assess general material condition and to identify any degraded conditions.

The inspectors also assessed the general health of the ultimate heat sink (UHS) and its subcomponents through review of documents listed in the Attachment and discussions with service water system engineers. These documents were reviewed to verify design basis were maintained and to verify adequate SW system performance under current preventive maintenance, inspections, and frequencies. The inspectors reviewed performance testing results for the following four UHS subcomponents. In addition, the inspector performed a walk-down of the service water intake structure and service water system to assess general material condition and proper operation.

- Unit 1 Component Cooling Water Pumps (Q1P17P0001A,B,C)
- Unit 2 Component Cooling Water Pumps (Q2P17P0001A,B,C)
- Unit 1 Service Water Pumps (Q1P16P001A-A,B-A,D-B,E-B,C-AB)
- Unit 2 Service Water Pumps (Q2P16P001A-A,B-A,D-B,E-B,C-AB)

The inspectors reviewed Corrective Action Program documents to verify that industry operating experience, potential common cause problems, and problems which could affect system performance were entered into the corrective action program for evaluation and resolution.

Annual Review. The inspectors reviewed the results of performance testing for the following two system heat exchangers documented in S063243501 and S061860301 and Work Orders (WOs) 1063515601 and WO1061627001 respectively. The inspectors verified the licensee utilized the periodic maintenance method outlined in Electric Power Research Institute (EPRI) report NP-7552, HX Performance Monitoring Guidelines and station procedure FNP-0-ETP-4367 accurately reflected those guidelines. The inspectors reviewed station procedure FNP-0-M-82, SW Plan to verify EDG HX monitoring was adequately scoped to identify any potential HX deficiencies. The inspectors evaluated these activities for conditions which could mask degraded performance, common cause heat sink performance problems that could increase risk, and heat sink performance problems that could result in initiating events or affect multiple HX in mitigating systems. The inspectors also reviewed the licensee's condition report (CR) database to verify HX problems were being identified and resolved.

- 1-2A EDG Jacket Water and Lube Oil Heat Exchangers
- 1B DG Jacket Water and Lube Oil Heat Exchangers

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activitiesa. Inspection Scope

Non-Destructive Examination (NDE) Activities and Welding Activities. The inspectors reviewed implementation of the licensee's ISI program for monitoring degradation of the RCS boundary and risk significant piping boundaries. The inspector's activities consisted of an on-site review of NDE and welding activities to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of record: 2001 Edition with 2003 Addenda), and to verify indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code, Section XI acceptance standards.

The inspector's review of NDE activities specifically covered examination procedures, NDE reports, equipment and consumables certification records, personnel qualification records, and calibration reports (as applicable) for the following examinations:

- UT examination of weld APR1-4100-1DM-RI, ASME Class 1, RCS, 36-inch diameter nozzle-to-safe end (Risk Informed ISI) – Direct Observation
- UT examination of weld APR1-4200-1DM-RI, ASME Class 1, RCS, 36-inch diameter nozzle-to-safe end (Risk Informed ISI) – Direct Observation
- UT examination of weld APR1-4300-1DM-RI, ASME Class 1, RCS, 36-inch diameter nozzle-to-safe end (Risk Informed ISI) – Direct Observation
- Magnetic Particle Testing (MT) examination of weld APR1-2100-8, RCS, Pressurizer support skirt to bottom head (Section XI ISI) – Direct Observation

The inspector's review of welding activities specifically covered the welding activity listed below in order to evaluate compliance with procedures and the ASME Code. The inspector reviewed the WO, repair and replacement plan, weld data sheets, welding procedures, procedure qualification records, welder qualification records, and NDE reports.

- Welding Package for Design Change Package (DCP) 2062800201 for Containment Spray Full Flow Testing Modification (Class 1 and Class 2)
- Welding Package for DCP 2072448001 for MSIV Actuator Modification (Class 2).

Boric Acid Corrosion Control (BACC) Inspection Activities. The inspectors reviewed the licensee's BACC program activities to verify implementation of commitments made in response to NRC GL 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary," and applicable industry guidance documents. Specifically, the inspector performed an on-site record review of procedures and the results of the licensee's containment walk-down inspections performed during the Unit 2 2008 fall outage. The

inspector also interviewed the BACC program owner and conducted a walk-down of the reactor building to evaluate compliance with the licensee's BACC program requirements and verified degraded or non-conforming conditions, such as boric acid leaks identified during the containment walk-down, were properly identified and corrected in accordance with the licensee's BACC and CAP. The inspector reviewed the following three completed engineering evaluations for boric acid found on systems containing borated water to verify the minimum design code requiring section thickness had been maintained for the affected components.

- CR 2008100156 – Boric Acid Leak Evaluation
- CR 2008102774 – Boric Acid Leak Evaluation
- CR 2008107803 – Boric Acid Leak Evaluation

Identification and Resolution of Problems. The inspectors performed a review of ISI-related problems, including welding, BACC, and SG problems, identified by the licensee and entered into the CAP. The inspector reviewed the CRs to confirm the licensee appropriately described the scope of the problem and initiated corrective actions. The review also included the licensee's consideration and assessment of operating experience events applicable to the plant. The inspector performed this review to ensure compliance with 10CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspector are listed in the report Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

Resident Inspector Quarterly Review. On December 1, the inspectors observed portions of the licensed operator training and testing program to verify implementation of procedures FNP-0-AP-45, Farley Nuclear Plant Training Plan; FNP-0-TCP-17.6, Simulator Training Evaluation/Documentation; and FNP-0-TCP-17.3, Licensed Operator Continuing Training Program Administration. The inspectors observed operations simulator scenario OPS-56400A S301 08-10, conducted in the licensee's simulator for a small steam leak upstream of the main steam isolation valves (MSIV) outside of containment, a tube rupture in the 'B' SG, and subsequent fuel cladding failure that resulted in a Site Area Emergency declaration. The inspectors observed high risk operator actions, overall performance, self-critiques, training feedback, and management oversight to verify operator performance was evaluated against the performance standards of the licensee's scenario. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Effectivenessa. Inspection Scope

The inspectors reviewed the two following activities for (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the Maintenance Rule (MR); (4) characterizing reliability issues for performance; (5) trending key parameters for condition monitoring; (6) charging unavailability for performance; (7) classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (8) appropriateness of performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). In addition, the NRC specifically reviewed events where ineffective equipment maintenance resulted in invalid automatic actuations of Engineered Safeguards Systems affecting the operating units. Documents reviewed are listed in the Attachment.

- Unit 1, Q1E11MOV8702B Actuator Torque
- Unit 2, RHR Hydraulic Snubber Reservoir Level

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluationa. Inspection Scope

The inspectors reviewed the following three activities to verify appropriate risk assessments were performed prior to taking equipment out of service (OOS) for maintenance. The inspectors verified 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 appropriate use of the licensee's risk assessment and risk categories in accordance with requirements in licensee procedures FNP-0-ACP-52.3, Mode 1, 2, & 3 Risk Assessment; FNP-0-UOP-4.0, General Outage Operations Guidance; NMP-GM-006, Work Management; and FNP-0-AP-16, Conduct of Operations - Operations Group.

- Unit 2, October 14, Review of Unit 2 Refueling Outage Risk Plan
- Unit 2, October 22, ORANGE Risk Condition due to core cooling while draining RCS from solid to 134'
- Unit 2, November 14, ORANGE Risk Condition due to core cooling while draining RCS to mid-loop in preparation for vacuum refill

b. Findings

No findings of significance were identified.

1R15 Operability Evaluationsa. Inspection Scope

The inspectors reviewed the following four operability evaluations to verify they met the requirements of licensee procedures FNP-0-AP-16, Conduct of Operations - Operations Group and NMP-AD-012, Operability Determinations and Functionality Assessments. The scope of this inspection also included a review of the technical adequacy of the evaluations, the adequacy of compensatory measures, and the impact on continued plant operation.

- CR 2008110880, Unit 1, Degraded 1B EDG Voltage Regulator Motor-Operated Potentiometer (MOP)
- CR 2008110110, Unit 1, 'A' Train SW Supply to 1A MDAFW Pump Pin-Hole Leak
- CR 2008111945, Unit 2, 2A RHR Pump run for 8 minutes with discharge valve closed
- CR 2008113239, Unit 2, 'A' Train SW Supply to 2A MDAFW Pump piping below administrative limit for minimum pipe wall thickness

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testinga. Inspection Scope

The inspectors reviewed the criteria contained in licensee procedures FNP-0-PMT-0.0, Post-Maintenance Test Program, to verify post-maintenance test procedures and test activities for the following six systems/components were adequate to verify system operability and functional capability. The inspectors also witnessed the test or reviewed the test data to verify test results adequately demonstrated restoration of the affected safety function(s). Documents reviewed are listed in the Attachment.

- FNP-0-IMP-410.2, United Controls Differential Pressure (DP) Switches (Generic), following replacement of Turbine Building SW Isolation Valves pressure switches Q1P16PDS566/569
- FNP-0-MP-65.4, Onsite Testing and Rebuilding of Snubbers by Vendor, following corrective maintenance on hydraulic snubber N1B13SNUBBR216B
- FNP-2-STP-22.16, Turbine Driven Auxiliary Feedwater (TDAFW) Pump Quarterly Inservice Test (TAVG \geq 547°F) With Pre-service Test Appendix following replacement of the mini-flow orifice with a "dirty" trim valve
- FNP-2-STP-45.1, CVCS Cold Shutdown Valves Inservice Test following replacement of the RWST to Charging Pump Isolation Valve Q2E21LCV115D
- FNP-2-STP-905.1, Auxiliary Building (AB) Battery Service Test following replacement of the 2B AB safety-related battery
- FNP-2-STP-4.2, 2B Charging Pump Quarterly Inservice Test following replacement of the pump casing

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b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activitiesa. Inspection Scope

Refueling Activities. The inspectors reviewed the following activities related to the Unit 2 Refueling Outage (RFO) to verify compliance with licensee procedure FNP-0-UOP-4.0, General Outage Operations Guideline, and FNP-2-UOP-4.1, Controlling Procedure for Refueling. Surveillance tests were reviewed to verify results were within the Technical Specification (TS) requirements. Shutdown risk, management oversight, procedural compliance, and operator awareness were evaluated for each of the following activities. Documents reviewed are listed in the Attachment.

- Outage Risk Assessment
- Cooldown
- Core offload and reload
- Reactor coolant instrumentation
- Electrical system alignments and bus outages
- Reactor vessel disassembly and assembly activities
- Outage-related surveillance tests
- Containment Closure
- Low Power Physics Testing and Startup Activities
- Clearance Activities
- Decay Heat Removal and Spent Fuel Pool (SFP) Cooling
- Containment heavy load lifts

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. Inspection Scope

The inspectors reviewed the following three surveillance tests and either observed the test or reviewed test results to verify that testing adequately demonstrated equipment operability and met TS requirements. The inspectors reviewed the activities to assess for preconditioning of equipment, procedure adherence, and valve alignment following completion of the surveillance. The inspectors reviewed licensee procedures FNP-0-AP-24, Test Control; FNP-0-M-050, Master List of Surveillance Requirements; and FNP-0-AP-16, Conduct of Operations - Operations Group; and attended selected briefings to determine if procedure requirements were met. Documents reviewed are listed in the Attachment.

Surveillance Tests

- FNP-2-STP-627.0, Local Leak Rate Testing of Containment Penetrations, Penetration 78

In-Service Test (IST)

- FNP-2-STP-22.29, TDAFW Check Valve Reverse Flow Closure Operability Test

Containment Isolation Valve

- FNP-2-STP-627.0, Local Leak Rate Testing of Containment Penetrations, Penetration 33

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety

2OS1 Access Control To Radiologically Significant Areas

a. Inspection Scope

Access Controls. Licensee activities for controlling and monitoring worker access to radiologically significant areas and tasks were evaluated. The inspectors evaluated changes to and adequacy of procedural guidance; directly observed implementation of established administrative and physical radiological controls; appraised radiation worker and health physics technician (HPT) knowledge of and proficiency in implementing radiation protection activities; and assessed occupational exposures to radiation and radioactive material.

The inspectors directly observed controls established for workers and HPT staff in airborne radioactivity area, radiation area, high radiation area (HRA), locked-high radiation area (LHRA), and very high radiation area (VHRA) locations. Controls and their implementation for HRA keys and for storage of irradiated material within Unit 1 and Unit 2 SFP areas were reviewed and discussed in detail. The inspectors reviewed and evaluated select Unit 2 Outage Refueling Cycle 19 (2R19) tasks including under vessel bare metal inspection activities; reactor vessel head disassembly; replacement of reactor vessel neutron dosimetry, transfer cart/canal inspection/maintenance; fuel off-load; valve maintenance; RCP maintenance; radioactive waste (radwaste) handling and storage; and transportation activities. Radiological controls and resultant doses for an 'at power' Unit 1 entry were evaluated. The inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details to assess communication of radiological control requirements to workers. Occupational workers' adherence to selected RWPs and HPT proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Direct Alarming Dosimeter (DAD) alarm set points and worker stay times were evaluated against area radiation survey results and actual dose rates encountered and doses received. Worker exposure as measured by DAD, or by licensee evaluations of potential skin doses resulting from discrete radioactive particle

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(DRP) and dispersed skin contamination events during conduct of 2R19 activities were reviewed and assessed independently. For HRA tasks involving potentially significant dose rate gradients, e.g., under vessel bare metal inspection and reactor vessel neutron dosimetry replacement, the inspectors evaluated the potential use of dosimeter multi-badging to monitor worker exposure.

Postings for access to radiologically controlled areas (RCAs) and physical controls for the Unit 2 reactor building containment (RB) and for Unit 1 and Unit 2 Auxiliary Building (AB) locations designated as LHRAs and VHRAs were evaluated during facility tours. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys and results for Unit 2 RB, the Unit 1 and Unit 2 AB equipment and work locations, and Low Level Radioactive Waste Building and storage areas. All results were compared to current licensee surveys and assessed against established postings and radiological controls.

For the licensee's Independent Spent Fuel Storage Installation (ISFSI), the inspectors reviewed survey results, and toured and evaluated RWP controls, postings and conducted independent radiation surveys.

Licensee controls for airborne radioactivity areas with the potential for individual worker internal exposures of greater than 30 millirem (mrem) Committed Effective Dose Equivalent were evaluated. For selected RWPs identifying potential airborne and highly contaminated areas associated with 2R19 activities, e.g., under vessel inspections, valve maintenance, cavity deconning activities, and seal table equipment maintenance, the inspectors evaluated the implementation and effectiveness of administrative and physical controls including air sampling, alpha-monitoring, barrier integrity, engineering controls, and postings. Licensee identification and assessment of potential occupational radionuclide intakes from January 1, 2007, through November 5, 2008, were reviewed and evaluated.

Radiation protection activities were evaluated against the UFSAR, TS, and 10 Code of Federal Regulations (CFR) Parts 19 and 20 requirements. Specific assessment criteria included UFSAR Section 11, Radioactive Waste Management, and Section 12, Radiation Protection; 10 CFR 19.12; 10 CFR 20, Subpart B, Subpart C, Subpart F, Subpart G, Subpart H, and Subpart J; TS Sections 5.4, Procedures, and 5.7, High Radiation Area Controls; and approved procedures. Documents reviewed are listed in the Attachment. The inspectors completed the required 21 samples. In addition, the inspectors evaluated radiation protection activities for the licensee's ISFSI.

Problem Identification and Resolution. Licensee CAP documents associated with access control to radiologically significant areas were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with Nuclear Management Procedure (NMP)-GM-002, CAP, Version 7, and NMP-GM-002-001, CAP Instructions, Version 8. Licensee CRs and audits associated with access controls, personnel monitoring instrumentation, and personnel contamination events were reviewed. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

2OS2 As Low As Reasonably Achievable (ALARA) Planning and Controls

a. Inspection Scope

ALARA Program Review. The inspectors reviewed ALARA program guidance and its implementation for ongoing 2R19 job tasks. The inspectors evaluated the accuracy of ALARA work planning and dose budgeting, observed implementation of ALARA initiatives and radiation controls for selected jobs in-progress, assessed the effectiveness of source-term reduction efforts, and reviewed historical dose information.

ALARA planning documents and procedural guidance were reviewed and projected dose estimates were compared to actual dose expenditures for the following high dose jobs: scaffolding installation/removal, reactor vessel head work, RCP seal maintenance, and valve work inside containment. Differences between budgeted dose and actual exposure received were discussed with cognizant ALARA staff. Changes to dose budgets relative to changes in radiation source term and/or job scope were also discussed. The inspectors attended pre-job briefings and evaluated the communication of ALARA goals, RWP requirements, and industry lessons-learned to job crew personnel. The inspectors also reviewed the minutes of the last two Plant ALARA Review Committee meetings.

The inspectors made direct field or closed-circuit-video observations of outage job tasks involving work inside Unit 2 containment. For the selected tasks, the inspectors evaluated radworker and HPT job performance, individual and collective dose expenditure versus percentage of job completion, surveys of the work areas, appropriateness of RWP requirements, and adequacy of implemented engineering controls.

Implementation and effectiveness of selected program initiatives with respect to source-term reduction were evaluated. Chemistry program ALARA initiatives and their effect on containment and auxiliary building dose rate trends were reviewed. The effectiveness of temporary shielding installed for the current outage was assessed through review of shielding request packages and pre-shielding versus post-shielding dose rate data.

Plant exposure history for 2005 through 2007 and data reported to the NRC pursuant to 10 CFR 20.2206 were reviewed, as were established goals for reducing collective exposure during the current 2R19 outage. The inspectors reviewed procedural guidance for dosimetry issuance and exposure tracking. The inspectors also examined dose records of declared pregnant workers to evaluate assignment of gestation dose.

ALARA program activities and their implementation were reviewed against 10 CFR Part 20, and approved licensee procedures. In addition, licensee performance was evaluated against guidance contained in Regulatory Guide 8.8, Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As

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Reasonably Achievable, and RG 8.13, Instruction Concerning Prenatal Radiation Exposure. Documents reviewed are listed in the Attachment. The inspectors completed the required 15 samples.

Problem Identification and Resolution. The inspectors reviewed selected CRs in the area of exposure control. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with NMP-GM-002, Version 7.0. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope

Groundwater Monitoring. The inspectors discussed current and future programs for onsite groundwater monitoring with Chemistry specialists and Corporate staff, including number and placement of monitoring wells and identification of plant systems with the greatest potential for contaminated leakage. The inspectors also reviewed procedural guidance for identifying and assessing onsite spills and leaks of contaminated fluids. In addition, the inspectors reviewed records of historical and recent contaminated spills retained for decommissioning purposes as required by 10 CFR Part 50.75(g).

The licensee had installed a number of onsite groundwater monitoring wells; optimally located to detect contamination based on recent hydrological studies. The sample results from these wells were included in the Annual Radiological Environmental Monitoring Program Report. For the period reviewed, all monitoring well results were below reporting limits (20,000 pCi/L for drinking water and 30,000 pCi/L for non-drinking water). This programmatic review did not constitute an inspection sample.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

Waste Processing and Characterization. Selected liquid and solid radioactive waste (radwaste) processing system components were inspected for material condition and for configuration compliance with the UFSAR and Process Control Program (PCP). Inspected equipment included the recycle hold-up tanks; supplemental demineralizer

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system; resin transfer piping; resin and filter packaging components; and abandoned waste evaporator equipment. The inspectors discussed component function, equipment operability, and changes to radwaste processing systems with licensee staff.

The Semiannual Effluent and Waste Disposal Reports for 2006 and 2007 were reviewed. Radionuclide characterizations from January 1, 2005 through Year-to-Date 2006 for each major waste stream were reviewed and discussed with radwaste staff.

For RCS filters, SFP filters, and dry active waste (DAW); the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined comparison results between gamma emitting radionuclides reported in the licensee waste stream characterizations and the vendor laboratory data. The inspectors also discussed the licensee's process and guidance for monitoring changes in waste stream isotopic mixtures.

Radwaste processing activities were reviewed for compliance with 10 CFR Part 50.59 and consistency with the licensee's current PCP and UFSAR. Waste stream characterization analyses and selected shipping records were reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 61, 49 CFR Part 173, and guidance provided in the Branch Technical Position on Waste Classification and Waste Form. Documents reviewed are listed in the Attachment.

Transportation. On November 5, 2008, the inspectors directly observed preparation activities for a shipment of surface contaminated equipment. The inspectors noted package bracing and conveyance placards, and interviewed the shipping technicians regarding Department of Transportation (DOT) regulations. The inspectors also observed dose rate and contamination surveys of the shipping packages and compared the results to DOT limits.

Five shipping records were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, radiation survey results, and evaluated whether receiving licensees were authorized to accept the packages. The licensee's procedures for use of Type B shipping casks were compared to recommended vendor protocols and Certificate of Compliance (CoC) requirements. In addition, training records for individuals currently qualified to ship radioactive material were reviewed.

Transportation program implementation was reviewed against regulations detailed in 10 CFR Parts 20 and 71, 49 CFR Parts 172-178; as well as the guidance provided in NUREG-1608. Training activities were assessed against 49 CFR Part 172 Subpart H. Documents reviewed are listed in the Attachment. The inspectors completed the six required samples.

Problem Identification and Resolution. The inspectors reviewed and discussed with HP supervision selected CRs and audits associated with transportation and radwaste processing program activities. The inspectors assessed the licensee's ability to

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characterize, prioritize, and resolve the identified issues in accordance with licensee procedure NMP-GM-002, Ver. 7.0 and NMP-GM-002-001, Ver. 8.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee data for the Performance Indicators (PIs) listed below to verify the accuracy of the PI data reported during the period listed. Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Rev. 5, was used to verify the basis in reporting for each data element. Documents reviewed are listed in the Attachment.

Cornerstone: Mitigating Systems

- Mitigating Systems Performance Index, High Pressure Injection System
- Mitigating Systems Performance Index, Residual Heat Removal System

The inspectors reviewed samples of raw PI data, Licensee Event Reports (LERs), and Monthly Operating Reports for the period covering October 2007 through September 2008. The data reviewed from the LERs and Monthly Operating Reports was compared to graphical representations from the most recent PI report. The inspectors also examined a sampling of operations logs and procedures to verify the PI data was appropriately captured for inclusion into the PI report, as well as ensuring the individual PIs were calculated correctly.

Cornerstone: Occupational Radiation Safety

- Occupational Exposure Control Effectiveness

The inspectors reviewed PI data collected from January 1, 2007, through September 30, 2008. For the reviewed period, the inspectors assessed CAP records to determine whether HRA, VHRA, or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred during the review period. In addition, the inspectors reviewed selected personnel contamination event data, internal dose assessment results, and DAD alarms for cumulative doses and/or dose rates exceeding established set-points. Documents reviewed are listed in the Attachment.

Cornerstone: Public Radiation Safety

- RETS/ODCM Radiological Effluent

The inspectors reviewed the PI data for the period of January 1, 2007, through September 30, 2008. For the assessment period, the inspectors reviewed cumulative and projected doses to the public, out-of-service (OOS) effluent radiation monitors, and

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required compensatory sampling data. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily CR Reviews

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the NRC performed a daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing hard copies of CRs, attending daily screening meetings, and accessing the licensee's computerized database.

.2 Selected Issue Follow-up Inspection

a. Inspection Scope

In addition to the routine review, the inspectors selected the two issues listed below for a more in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of CRs; and (7) completion of corrective actions in a timely manner.

- CR 2008110110, SW piping leak on suction supply line to the 1A MDAFW pump
- CR 2008110018, U2 TDAFW pump symptoms of cavitation

b. Findings and Observations

CR 2008110018: On October 2, the TDAFW pump was operating at low flow conditions with flow passing through the mini-flow orifice and returning to the Condensate Storage Tank. The inspectors reviewed the licensee's condition reporting database and discovered the licensee had previously observed this condition on June 9, 2005. On both occasions, the licensee noted pump suction pressure was less than the actual head of the Condensate Storage Tank (22 psig instead of 35 psig) and also noted a fluctuation of discharge flow. The inspectors determined the licensee identified the low suction pressure in a timely manner on each occasion. The inspectors reviewed CR 2005105602 and associated licensee corrective actions. The licensee suspected possible damage to the valve disc hanger pins and contacted a vendor to evaluate the condition. The vendor determined the disc hanger pins had no evidence of damage and

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the disc had good freedom of movement. However, the vendor determined the design basis accident (DBA) flow rate (400 gpm) was not sufficient to fully open the check valve. The vendor also determined that TDAFW pump mini-flow conditions of 100 gpm only opened the valve 0.7°. The inspectors determined the check valve was causing a throttling process when open only 0.7° and that the licensee had not evaluated this condition related to long term effects. The inspectors reviewed quarterly surveillance data and did not discover any adverse effects to the pump based upon current data. The inspectors did not find any similar events in the licensee's Unit 1 condition reporting database. Based on no immediate adverse affects, the licensee did not identify plans for plant modification or changes to station documentation related to this condition. No findings of significance were identified.

CR 2008110110: On October 4, a pin-hole leak was discovered on SW piping which provides the backup water source to the 1A MDAFW Pump. The inspectors reviewed documents provided by the licensee to determine the extent of degradation of SW piping. The licensee's operability determination reviewed by the resident inspectors and NRC regional ASME code experts did not identify actual flaw size. Discussions between the licensee and NRC staff established the flaw size to be smaller than that detectable (1/16 inch by 1/16 inch) by the licensee's UT probe. The discussions also established which UT scans were performed of the piping material and what transducers were used for which SW piping areas. The inspectors determined the licensee had identified the leakage problem in a timely manner. However, some delays were evident during the initial efforts to obtain complete characterization of the flaw. Based on this follow-up review, the inspectors determined the licensee had ultimately addressed operability and reportability concerns. The resident inspectors reviewed the licensee's final reports for SW radiographic and ultrasonic test inspections performed in 2005 and 2006. Both reports recommended the SW piping to 1A AFW System pumps be replaced during the Spring 2009 refueling outage. The 2007 report stated that, "significant degradation was known to exist in the stagnant SW lines to the 1A MDAFW pump." The licensee had scheduled to replace the piping during the next refueling outage (Spring 2009). The inspectors determined from this review the licensee was considering extent of condition, generic implications, common causes, and previous occurrences. The inspectors determined planned licensee actions would return the system to code requirements at the next available opportunity. The licensee also initiated actions to change their procedures regarding the timeliness and processing of operability determinations/evaluations. No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by Inspection Procedure 71152, Identification and Resolution of Problems, 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' reviewed repetitive equipment and corrective maintenance issues and also considered the results of daily inspector CAP item screening discussed above. The review also included issues documented outside the normal CAP process including system health reports, corrective maintenance WOs, component status reports, and MR

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assessments. The inspectors' review nominally considered the six-month period of July through December, 2008, although some examples expanded beyond those dates when the scope of the trend warranted. The inspectors compared and contrasted their results with the results contained in the licensee's latest integrated quarterly assessment report. Corrective actions associated with the sample of the issues identified in the licensee's trend report were reviewed for adequacy. Documents reviewed are listed in the Attachment.

b. Assessment and Observations

No findings of significance were identified. As documented in previous NRC inspection reports, the inspectors had observed an adverse trend in the rigor of cause evaluations. The licensee had implemented corrective actions to improve the rigor of evaluations in response to the observation. The inspectors reviewed cause evaluations related to risk significant issues performed over the review period and noted improvement in the quality of those causes evaluations. These evaluations were performed using approved systematic methods to identify both root causes and contributing causes. The level of effort applied to each method was documented in detail and was commensurate with the significance of the issue. The evaluations also contained pertinent information obtained by the licensee's review of appropriate internal and external operating experience. The licensee utilized this information in their assessment of root and contributing causes. The inspectors reviewed corrective actions and determined that selected root causes and contributing causes had plausible recommended corrective actions. The inspectors also reviewed selected apparent cause determinations. The inspectors noted that licensee senior management was performing more rigorous reviews of cause determinations which had resulted in senior management rejecting apparent cause evaluations and requiring personnel to re-perform the evaluation to meet current standards. The inspectors noted two cases where internal operating experience was not properly incorporated into the cause evaluation. This observation was discussed with the licensee.

4OA3 Event Follow-up

.1 Unit 1 Reactor Trip

a. Inspection Scope

On November 19, the Unit 1 reactor tripped when the 'B' RCP breaker undervoltage (UV) relay tripped on a sensed UV condition. The UV condition was caused by a momentary fault in the high voltage switchyard when a disconnect for a shunt reactor was remotely opened while under electrical load. All three unit RCP breakers remained closed during the event and no actual loss of RCP flow occurred. The inspectors discussed the event with operations, engineering, and licensee management personnel to gain an understanding of the event, verify that plant equipment performed as designed in response to the automatic reactor trip, and assess licensee follow-up actions. The inspectors monitored licensee compensatory actions and verified actions taken by the licensee were in accordance with plant TS. The inspectors also reviewed the initial

licensee notification to verify it met the requirements specified in NUREG-1022, Event Reporting Guidelines.

b. Findings

No findings of significance were identified.

.2 (Closed) LER 05000348/2008-001-00 Emergency Diesel Generator 1B Exhaust Pipe Failure

On March 13, 2008, during testing of the 1B Emergency Diesel Generator (EDG), the EDG exhaust pipe failed. The exhaust from the EDG heated the 1B EDG room causing actuation of the CO₂ fire protection system. The licensee declared an ALERT based on toxic gas (CO₂) in a safety related area. The cause of the exhaust pipe failure was a section of pipe not being fully welded to the connecting flange. This condition was documented in CR 2008102490. The safety significance of this event was determined to be of low to moderate significance (White) as documented in inspection report 05000348/2008012. This event was further inspected during a 95001 supplemental inspection the results of which were documented in NRC inspection report 05000348/2008013. No additional findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings of significance were identified.

.2 (Discussed) NRC Temporary Instruction (TI) 2515/172, RCS Dissimilar Metal Butt Welds (DMBW's)

a. Inspection Scope

The inspectors reviewed the licensee's activities related to the inspection and mitigation of DMBW's in the RCS to ensure the licensee's activities were consistent with industry

requirements established in the Materials and Reliability Program document MRP-139, "Primary System Piping Butt Weld Inspection and Evaluation Guidelines," July 2005.

The inspectors reviewed documentation of overlay and NDE activities covering mitigation of pressurizer dissimilar metal (DM) full structural weld overlays (FSWOL) from the fall of 2007 (Unit 1) and spring of 2007 (Unit 2). The inspector also reviewed pre-overlay NDE activities associated with reactor vessel nozzle DM welds from the fall of 2007 (Unit 1) and fall of 2008 (Unit 2 hot leg nozzles). Inspection activities covered the following: a) documentation review of the weld overlay process on the unit 1 pressurizer (PZR) surge line nozzle ALA1-4500-7DM, PZR spray nozzle ALA1-4205-49DM, PZR safety/relief nozzle #1 ALA-4501-1DM, PZR safety/relief #2 ALA1-2502-1DM, PZR safety/relief #3 ALA1-4503-1DM and PZR safety/relief ALA1-4504-1DM, b) documentation review of the weld overlay process on the Unit 2 PZR surge line nozzle APR1-4500-7DM, c) documentation review of volumetric examinations of all nozzles listed in a) and b) previously, as well as the unit 1 reactor vessel (RV) hot leg (HL) nozzles ALA1-4100/4200/4300-1DM, Unit 1 RV cold leg nozzles 1ALA-4100/4200/4300-14DM, Unit 2 RV HL nozzles APR1-4100/4200/4300-1DM, Unit 2 PZR spray nozzle ALA1-4205-49DM, PZR safety/relief nozzle #1 ALA-4501-1DM, PZR safety/relief #2 ALA1-2502-1DM, PZR safety/relief #3 ALA1-4503-1DM and PZR safety/relief ALA1-4504-1DM, and d) review of MRP-139 program documentation.

b. Findings and Observations

No findings of significance were identified.

MRP-139 Baseline Inspections

- 1) Have the baseline inspections been performed or are they scheduled to be performed in accordance with MRP-139 guidance? Were the baseline inspections of the PZR temperature DMBWs of the nine plants listed in TI 2515/172, 03.01.b completed during the spring 2008 outages?

Yes, all baseline volumetric inspection activities required to be completed per MRP-139 Section 1.2 at the time of this inspection have been completed.

The licensee has completed full structural weld overlays (FSWOLs) on all Unit 1 PZR nozzles (six nozzles) and on the Unit 2 PZR surge nozzle, and completed the accompanying baseline volumetric inspections per mandatory MRP-139 Section 1.2. Butt welds associated with the PZR were required to receive a baseline inspection by December 31, 2007. Unit 1 PZR baseline inspections were completed during the fall 2007 outage and Unit 2 PZR baseline inspections were completed during the spring 2007 outage.

Prior to installing the PZR FSWOLs, the licensee conducted an informational UT of all 12 nozzles. The Unit 1 PZR nozzle welds and Unit 2 surge nozzle weld achieved less than 90 percent coverage due to geometry constraints and were

subsequently overlaid during the same outage. The remaining welds on Unit 2 achieved greater than 90 percent coverage and therefore met the requirements of MRP-139 Section 5.1.

The licensee conducted baseline UT of all Unit 1 reactor vessel inlet and outlet nozzles during the fall 2007 outage and of the Unit 2 reactor vessel outlet nozzles during the fall 2008 outage, satisfying the requirements of mandatory MRP-139 Section 1.2. These welds achieved greater than 90 percent coverage and therefore met the requirements of MRP-139 Section 5.1. The Unit 2 reactor vessel inlet nozzles are scheduled to be volumetrically inspected during the spring 2010 outage, which will satisfy the requirements of mandatory MRP-139 Section 1.2. No FSWOLs have been applied to the reactor vessel nozzles on either unit.

Baseline inspections of typical DM butt weld locations were not required as follows: The SG in both units have been replaced and use non-susceptible material in the DM nozzle-to-safe end weld. The RCP bowl material is stainless steel, therefore there is no DM butt weld associated with the RCP.

- 2) Is the licensee planning to take any deviations from MRP-139 requirements?
No, the licensee has not submitted any requests for deviation from MRP-139 requirements.

Volumetric Examinations

- 1) For each examination inspected, was the activity performed in accordance with the examination guidelines in MRP-139, Section 5.1, for unmitigated welds or mechanical stress improved welds and consistent with NRC staff relief request authorization for overlaid welds?

Yes, the volumetric examinations listed in 4OA5.1.a were performed in accordance with the requirements of the proposed alternative authorization (Safety Evaluation for Farley Nuclear Plant Units 1 and 2, Request for Relief G-RR ISI-GEN-ALT-06-03, Full Structural Preemptive Weld Overlays (TAC Nos. MD6304 and MD6305), dated March 8, 2007). The UT procedures used were qualified in accordance with ASME Section XI, Appendix VIII, as implemented by the Electrical Power Research Institute Performance Demonstration Initiative Program, with specific reliefs having been granted by the Safety Evaluation report (SER). The required pre-service inspection volumes indicated by ASME Section XI, Non-Mandatory Appendix Q, Figures Q-4100-1 and Q-4300-1, were examined with greater than 90 percent coverage obtained for each. The inspector reviewed the licensee's procedure, equipment and personnel certifications, transducer selection documentation, and conducted interviews with plant personnel.

- 2) For each examination inspected, was the activity performed by qualified personnel?
Yes, personnel involved in the UT examinations listed in 4OA5.1.a were qualified in accordance with MRP-139 requirements and the previously noted proposed

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alternative authorization. The examiners were qualified UT Level II as required by the UT procedure and in accordance with the vendor's written practice for NDE personnel. The UT examiners were also Performance Demonstration Initiative (PDI) qualified for the specific UT procedure they implemented. The final examination report was reviewed by a vendor's UT Level III, a licensee's UT Level III, and the Authorized Nuclear Inservice Inspector.

- 3) For each examination inspected, was the activity performed such that deficiencies were identified, dispositioned, and resolved?

Yes, the inspector reviewed documentation and conducted interviews with plant personnel to verify that deficiencies were identified, dispositioned, and resolved. Based on the inspection activities, the inspector determined that the examination was conducted in a manner such that deficiencies were identified, dispositioned, and resolved.

Weld Overlays

- 1) For each weld overlay inspected, was the activity performed in accordance with ASME Code welding requirements and consistent with NRC staff relief requests authorizations? Has the licensee submitted a relief request and obtained NRR staff authorization to install weld overlays?

Yes, the licensee installed the overlays listed in 4OA5.1.a in accordance with ASME Code Section XI, Code Case N504-2, Code Case N638-1, Code Case N740 and the proposed alternative authorization (Safety Evaluation for Farley Nuclear Plant Units 1 and 2, Request for Relief G-RR ISI-GEN-ALT-06-03, Full Structural Preemptive Weld Overlays (TAC No.s MD6304 and MD6305), dated March 8, 2007). The inspector reviewed welding procedure specifications, procedure qualification records, weld wire certifications, and the in-process welding control sheets for compliance to ASME Section IX requirements and adherence to the SER. The inspector also evaluated corrective action program documents and third party contractor corrective action process issue reports regarding weld overlay quality issues.

- 2) For each weld overlay inspected, was the activity performed by qualified personnel?

Yes, welding personnel were qualified in accordance with the requirements identified in ASME Code Section IX. The inspector reviewed the welder performance qualification test records and compared them with the requirements of QW-300. The in-process welding process control sheets were reviewed for compliance with the proposed alternative and ASME Code Section IX requirements.

- 3) For each weld overlay inspected, was the activity performed such that deficiencies were identified, dispositioned, and resolved?

Yes, the inspector reviewed documentation to verify that deficiencies were identified, dispositioned, and resolved. Based on inspection activities, the inspector

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determined that the installation of the FSWOL was conducted in a manner such that deficiencies were identified, dispositioned, and resolved.

Mechanical Stress Improvement (Not Applicable)

The licensee has not implemented Mechanical Stress Improvement as a mitigation method for DMBWs.

In-service Inspection Program

- 1) Has the licensee prepared an MRP-139 ISI program?

No, the licensee did not have a stand-alone MRP-139 ISI program document. The licensee incorporated MRP-139 program requirements into their pre-existing ISI program, as well as their Alloy 600 Management program document, NMP-ES-029-GL01, Version 3. The inspector reviewed these documents and interviewed appropriate licensee representatives.

- 2) Are welds appropriately categorized?

The inspector reviewed all welds categorized at the time of the inspection for appropriate categorization in accordance with MRP-139, Section 6. All welds listed in 4OA5.1.a were appropriately categorized.

- 3) Are inspection frequencies consistent with the requirements of MRP-139?

Yes, planned inspection frequencies for welds in the MRP-139 program are consistent with the requirements of MRP-139.

- 4) What is the licensees' basis for categorizing welds as H or I and plans for addressing potential Primary Water Stress Corrosion Cracking (PWSCC)?

No welds were categorized as Categories H or I after application of a FSWOL.

- 5) What deviations has the licensee incorporated and what approval process was used?

No deviations to MRP-139 have been incorporated by the licensee.

4OA6 Meetings, Including Exit

On January 8, 2009, the NRC presented the inspection results to members of your staff who acknowledged the findings. The NRC confirmed proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

K. Armstrong, Emergency Preparedness Supervisor
M. Caldwell, CCW System Engineer
C. Collins, Plant Manager
J. Cox, Southern Nuclear Corporate SW HX Program Manager
M. Dove, Southern Nuclear Corporate Alloy 600 Program Manager
M. Goocher, SW System Engineer
B. Grinder, Engineering Support Manager
P. Hayes, Engineering Director
L. Hogg, Security Manager
J. Horn, Training Manager
J. Jerkins, Performance Improvement Senior Engineer
J.R. Johnson, Site Vice President
M. Johnston, ISI Coordinator
W. Lee, Emergency Planning Supervisor, Corporate
T. Livingston, Chemistry Manager
G. Lofthus, Southern Nuclear Corporate Level III
H. Mahan, Licensing Engineer
B.D. McKinney, Licensing Supervisor
B.L. Moore, Site Support Manager
K. Moore, Equipment Reliability Supervisor
D. Morrow, Engineering Support Program Supervisor
W. Oldfield, Fleet Oversight Supervisor
C. Peters, HP Manager
R. Retherford, Engineering Support (Acting Supervisor)
J. Swartzwelder, Work Control Superintendent
G. Terry, Southern Nuclear Corporate HX/Cooler Eddy Current Testing Program Manager
R. Wells, Operations Manager
C. Wimberly, Emergency Preparedness Assistant

NRC personnel

Scott M. Shaeffer, Chief, Branch 2, Division of Reactor Projects

LIST OF REPORT ITEMS

Closed

05000348/2008-001-00 LER Emergency Diesel Generator 1B Exhaust Pipe Failure
(Section 4OA3.2)

Discussed

2515/172 TI RCS Dissimilar Metal Butt Welds (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

CRs: 2008108723, 2008108710, 2008107896, 2008108022

Procedures:

FNP-0-SOP- 0.12, Cold Weather Contingencies, Version 15.0
FNP-0-STP-63.5, HVAC Verification for Diesel Generator Building, Version 13.0
FNP-1-EMP-1383.01, Freeze Protection Inspections, Version 15.0
FNP-2-EMP-1383.01, Freeze Protection Inspections, Version 13.0

Documents:

UFSAR Section 9.4.7, Diesel Generator Building
UFSAR Section 6.3, Emergency Core Cooling System
UFSAR Section 6.5, Auxiliary Feedwater System

Section 1R04: Equipment Alignment

Drawings:

D-205038, Sheet 1, Revision 35
D-205038, Sheet 2, Revision 21
D-205038, Sheet 3, Revision 28
D-205039, Sheet 6, Revision 3
D-205041, Sheet 1, Revision 19
D-207001, Sheet 1, Revision 17

Functional System Description:

A-181002, Residual Heat Removal/Low Head Safety Injection, Revision 37

Procedures: FNP-2-SOP-7.0, Residual Heat Removal System
Technical Specifications: 3.5.3; 3.9.4; 3.9.5

Section 1R05: Fire Protection

Plant Drawings:

A-509018, Sheet 14, Version 3.0
A-509018, Sheet 30, Version 16.0
A-509018, Sheet 46, Version 3.0
A-509018, Sheet 47, Version 2.0
A-509018, Sheet 48, Revision 1.0
A-509018, Sheet 49, Revision 1.0
A-508651, Sheet 22, Version 2.0

Section 1R07: Heat Sink Performance

CRs: 2007104849, 2007108977

Procedures

ES-MIS-230. Inservice Testing (IST) Programs – Including Relief Requests, Version 2.0.
FNP-0-ETP-4483. Service Water Underground Piping Flow Test, Version 2.0.
FNP-0-ETP-24.6. Service Water Buried Pipe Inspection, Version 12.0.
FNP-0-M-82. Service Water Plan, Version 10.

FNP-1-STP-24.1. 1A, 1B and 1C Service Water Pump Quarterly Inservice Test, Version 62.0.
 FNP-1-STP-24.2. 1C, 1D and 1E Service Water Pump Quarterly Inservice Test, Version 62.0.
 FNP-1-STP-24.7. Service Water Valves Inservice Test, Version 29.0.
 FNP-2-STP-24.1. 2A, 2B and 2C Service Water Pump Quarterly Inservice Test, Version 51.0.
 FNP-2-STP-24.2. 2C, 2D and 2E Service Water Pump Quarterly Inservice Test, Version 53.0.
 FNP-2-STP-24.7. Service Water Valves Inservice Test, Version 23.0.
 NMP-ES-012. Heat Exchanger Program, Version 3.0.
 NMP-GM-002-F02. Apparent Cause Determination Report for CR 2008103910, Version 3.0.

Other:

A181001. Service Water System Functional System Description, Version 52.0.
 FNP-FSAR-9, Section 9.2. Water Systems, Rev. 22.
 Letter from W.G. Hairston III to NRC. "Joseph M. Farley Nuclear Plant Implementation of NRC Generic Letter 89-13," dated July 16, 1992.
 Letter from W.G. Hairston III to NRC. "Joseph M. Farley Nuclear Plant Implementation of NRC Generic Letter 89-13," dated September 21, 1992.
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CRs: 2008110869 and 2008110879

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2007204961, 2007204642

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Technical Specifications:

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3.7.5, Auxiliary Feedwater System (AFW)

3.7.8, Service Water System (SWS)

3.8.1, AC Sources – Operating

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CRs: 2007102608, 2007110176, 2008111930, 2008111931, 2008112040

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FNP-2-STP-4.2, 2B Charging Pump Quarterly Inservice Test, Version 48.0

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FNP-0-AP-94, Outage Nuclear Safety, Version 7.0

FNP-2-UOP-4.3, Mid-Loop Operations, Version 27.0

FNP-0-ACP-47.3, Outage Preparation, Version 12.0

FNP-2-STP-35.0, Reactor Coolant System Pressure and Temperature/Pressurizer Temperature Limits Verification, Revision 16

FNP-2-UOP-2.1, Shutdown of Unit from Minimum Load to Hot Standby, Version 52.0

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FNP-2-SOP-1.6, Draining the Reactor Coolant System, Version 37.0

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CRs: 2008107664, 2008107524, 2008107587, 2008107240, 2008106076, 2008104081, 2008103158, 2008103157, 2008101429, 2007111439, 2007109735, 2007107021, 2007106035, 2007105307 2007104453, 2007103834, 2007103831, 2006109341, 2008108897

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 U2 "A" Loop RCS Piping Trending Surveys
 Declared Pregnant Worker Dosimetry Records, 2006 - 2008
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CAP Documents:

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Wesdyne Report: Farley Unit 1 Spray Nozzle 4205 SWOL Examination Coverage Summary, dated 10/30/2007.

Wesdyne Report: Farley Unit 1 Surge Nozzle 4500 SWOL Examination Coverage Summary, dated 10/22/2007.

Wesdyne Report: Farley Unit 1 Safety Nozzle 4501 SWOL Examination Coverage Summary, dated 10/30/2007.

Wesdyne Report: Farley Unit 1 Safety Nozzle 4502 SWOL Examination Coverage Summary, dated 10/21/2007.

Wesdyne Report: Farley Unit 1 Safety Nozzle 4503 SWOL Examination Coverage Summary, dated 10/22/2007.

Wesdyne Report: Farley Unit 1 PORV Nozzle 4504 SWOL Examination Coverage Summary, dated 10/21/2007.

Wesdyne Report: Farley Unit 2 Surge Nozzle 4500 SWOL Examination Coverage Summary, dated 4/11/2007.

WPQ 9193. Weld Performance Qualification (Beam), dated 7/19/2006.

WPQ 10052. Weld Performance Qualification (Copeland), dated 2/24/2007.

WPQ V448. Weld Performance Qualification (Crawford), dated 7/28/2006.

WPQ 9274. Weld Performance Qualification (Fairley), dated 8/10/2006.

WPQ V229. Weld Performance Qualification (Frost), dated 6/8/2006.

WPQ 9233. Weld Performance Qualification (Mancill), dated 7/28/2006.
WPQ V490. Weld Performance Qualification (Parker), dated 8/11/2006.
WPQ 9265. Weld Performance Qualification (Pitts), dated 8/2/2006.
WPQ V546. Weld Performance Qualification (Skipper), dated 8/28/2006.
WPQ 9225. Weld Performance Qualification (Woodall), dated 7/26/2006.
WPS 3-8/52-TB MC-GTAW-N638. Weld Procedure Specification, Rev. 7.
WPS 43 MN-GTAW/SMAW. Weld Procedure Specification, Rev. 7.
WPS 8-F43 MN-GTAW. Weld Procedure Specification, Rev. 4.
WPS 8/F43 MN-SMAW. Weld Procedure Specification, Rev. 0.