UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

April 16, 2008

Florida Power and Light Company
ATTN: Mr. J. A. Stall, Senior Vice President
Nuclear and Chief Nuclear Officer
P. O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC ISFSI INSPECTION REPORT
05000335/2008007, 05000389/2008007, and 07200061/2008001

Dear Mr. Stall:

This inspection report covers two visits made by the United States Nuclear Regulatory Commission (NRC) to your Saint Lucie Units 1 and 2 Nuclear Plant Independent Spent Fuel Storage Installation (ISFSI) between February 25 and March 14, 2008. The purpose of the site visits was to inspect your spent fuel storage pre-operational (dry run) testing activities and to observe your first loading of the NUHOMS-HD storage system. The first NUHOMS-HD canister was loaded and placed in storage at the ISFSI on March 15, 2008. The enclosed inspection report documents the results of the inspection, which were discussed on February 29, 2008, with Mr. Gordon Johnston and other members of your staff. The inspection covered all aspects associated with the preparation, movement, and placement of spent fuel into the ISFSI facility and consisted of field observations, extensive examination of procedures and documents, and interviews with personnel. Dry run preparations were thorough and individuals appropriately trained and qualified in the performance of tasks. Sound, conservative decision-making was noted throughout the performance of the dry run and the initial loading of spent fuel into the ISFSI facility. Activities were implemented in a safe manner. The enclosed report presents the results of that inspection. Based on results of this inspection, no violations or findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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 Web site at http://www.nrc.gov/readingrm/adams.html. (The Public Electronic Reading Room).

Sincerely,

/RA/

Steven J. Vias, Chief
Technical Support Branch
Division of Reactor Projects

Docket Nos.: 50-335, 50-389, and 72-061
License Nos.: DPR-67, NPF-16
Enclosure: Saint Lucie Nuclear Plant - Independent Spent Fuel Storage Installation (ISFSI) Dry Run and Initial Loading Inspection Report

Attachments: 1. Supplemental Information
2. Inspector Notes

Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/readingrm/adams.html. (The Public Electronic Reading Room).

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cc w/encl:
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Site Vice President
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Electronic Mail Distribution

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Letter to J. Art Stall from Steven J. Vias dated April 16, 2008

SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC ISFSI INSPECTION REPORT 05000335/2008007, 05000389/2008007, and 07200061/2008001

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U.S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket Nos.:	50-335, 50-389, 72-061	
License:	DPR-67, NPF-16	
Report No:	05000335/2008007; 05000389/2008007; and 07200061/2008001	
Licensee:	Florida Power and Light Company (FPL)	
Facility:	Saint Lucie Units 1 & 2	
Location:	6351 South Ocean Drive Jensen Beach, FL 34957	
Dates:	February 25 through March 14, 2008	
Inspectors:	Robert Carrion	Region II DRS Inspector - Team Leader
	Vincent Everett	Senior Health Physics Inspector
	Frank Jacobs	HLWRS Senior Project Manager
	Jack Parrott	HLWRS Senior On-Site Licensing Representative - Yucca Mountain
	Robert Temps	SFST Senior Safety Inspector
Accompanying Personnel:	Rollie Berry	SFST Structural Engineer
	Norma Garcia-Santos	SFST Project Manager
Approved By:	Steven J. Vias, Chief Technical Support Branch Division of Reactor Projects	
Attachments:	Supplemental Information Inspector Notes	

Enclosure

EXECUTIVE SUMMARY

Saint Lucie Nuclear Plant
NRC Inspection Report 05000335/2008007; 05000389/2008007; and 07200061/2008001

Florida Power and Light (FPL) had selected the NUHOMS-HD Horizontal Modular Storage System for dry storage of spent nuclear fuel at the Saint Lucie Nuclear Plant. The Nuclear Regulatory Commission (NRC) had certified the NUHOMS-HD cask system for storage of irradiated fuel under Certificate of Compliance No. 72-1030 on January 10, 2007.

From February 25-29, 2008, a team of five inspectors performed two evaluations. The first evaluation was to determine if the ISFSI personnel had been trained, the equipment had been tested, and the procedures had been developed to the extent necessary to safely load spent fuel into dry storage at the ISFSI. The second evaluation was to determine if the Saint Lucie station programs were adequate for continued maintenance and operation of the ISFSI once it was loaded. The results of these two evaluations were discussed during a debriefing on February 29, 2008, with Mr. Gordon Johnston and other members of the staff.

From March 9-14, 2008, NRC inspectors observed the first loading of spent fuel into dry storage using the NUHOMS Storage System. The purpose was to verify that the first loading was performed safely, in accordance with approved procedures, and within the Technical Specification limits.

The following provides a summary of the results of the inspection. Details are provided in the Inspector Notes contained in Attachment 2 to this report.

Spent Fuel Cask Crane

- The licensee certified its Unit 1 and Unit 2 spent fuel cask cranes as single-failure proof in accordance with NUREG-0612 and NUREG-0554 in a letter to the NRC dated December 11, 2003. An extensive review was performed and documented by the crane manufacturer to verify compliance with the NUREG requirements. A review of the crane design features by the NRC inspectors against selected NUREG requirements found that for those features reviewed, the crane met the single-failure proof criteria established by the NRC. (Attachment 2, Crane Design, pages 1-10 and Heavy Loads, pages 31-32)

- The crane, hooks, and wire rope were inspected, tested, and maintained in accordance with the ASME Code, NUREG-0554, NUREG-0612, and the crane manufacturer's instructions. (Attachment 2, Crane Inspection/Maintenance, Pages 10-15)

- The crane and hook had been load tested and operated in accordance with the ASME Code, NUREG-0554, and NUREG-0612. (Attachment 2, Crane Load Testing and Crane Operation, Pages 15-20)

Canister Drying and Helium Backfill Operations

- The canister was vacuum dried and backfilled with helium to the pressures specified by Technical Specifications. The drying and backfilling operations were completed within the time limits specified. (Attachment 2, Drying/Helium Backfill, Pages 20-22)

Emergency Planning

- The Emergency Plan had been expanded to include the ISFSI. An Emergency Action Level (EAL) had been developed for accidents involving the ISFSI. (Attachment 2, Emergency Planning, Page 22)

Fire Protection

- The Fire Protection Plan had been expanded to include the ISFSI. Emergency response training had been provided for off-site responders. (Attachment 2, Fire Protection, Pages 22-23)

Fuel Selection and Verification

- The spent fuel assemblies selected for loading into the first NUHOMS-HD canister met the Technical Specification requirements for assembly type, cladding integrity, decay heat load, and physical design characteristics. (Attachment 2, Fuel Selection/Verification, Pages 23-25)

- A canister loading plan had been developed based on the combination of spent fuel assembly enrichment, burnup, cooling time, and decay heat. (Attachment 2, Fuel Selection/Verification, Pages 25-26)

- The Technical Specification actions required for spent fuel mis-loading had been incorporated into the loading procedure. (Attachment 2, Fuel Selection/Verification, Page 27)

General License Conditions

- The NUHOMS-HD cask design was compatible with the Saint Lucie 10 CFR Part 50 requirements. There were no items identified that required NRC review or approval prior to use of the NUHOMS-HD system. (Attachment 2, General License, Page 27)

- The licensee had calculated the dose to the public at the site boundary from normal ISFSI operations. The dose was within the limits allowed by 10 CFR 72.104. (Attachment 2, General License, Pages 27-28)

- The soil structure under the ISFSI pad was determined not to be subject to liquefaction during a Safe Shutdown Earthquake. (Attachment 2, General License, Page 28)

- The Horizontal Storage Modules (HSMs) were placed on the ISFSI pad in an array that was consistent with the Technical Specifications. (Attachment 2, General License, Page 28-29)

- The NUHOMS-HD cask system design parameters were bounded by the Saint Lucie Power Station reactor site parameters. (Attachment 2, General License, Pages 29-31)

Heavy Loads

- All lifts of the transfer cask and canister were made under the Saint Lucie Power Station heavy loads requirements and procedures, as documented through a 10 CFR 50.59 evaluation. (Attachment 2, Heavy Loads, Pages 31-32)

- A safe load path had been established for transfer cask movements, meeting the requirements of NUREG-0612. (Attachment 2, Heavy Loads, Page 32)

Procedures and Technical Specifications

- Procedures were established to ensure that the NUHOMS-HD cask storage system technical specification requirements for inspection, maintenance, operation, and surveillance were implemented. These procedures were implemented during the first NUHOMS cask system loading. (Attachment 2, Procedures and Technical Specifications, Pages 32-35)

Quality Assurance

- The licensee's 10 CFR Part 50 Quality Assurance Program had been expanded to include the ISFSI. The licensee had established measures for ensuring that: instruments used to verify compliance with the Technical Specifications were calibrated; conditions adverse to quality were promptly identified and corrected; dry fuel storage components were properly stored to prevent degradation; and purchased material, equipment, and services conformed to procurement documents. (Attachment 2, Quality Assurance, Pages 35-38)

Radiation Protection

- Measures were established to limit personnel exposures to as low as reasonably achievable (ALARA). Considerations for exposure and contamination control had been incorporated into the procedures for canister gas sampling and re-flooding during unloading. The transfer cask annulus seal survey was accomplished in the proper sequence to ensure the canister did not exit the building with contamination above the limits. The total exposure estimated for the first canister was 0.128 person-rem but could be revised once the TLDs are processed and the results received. This value was low compared to other reactor sites which have loaded canisters. A range of 0.300 to 0.700 person-rem has typically been reported by the industry for first loadings. (Attachment 2, Radiation Protection, Pages 38-39)

- Criticality prevention and monitoring during cask loading was implemented. The minimum spent fuel pool boron concentration required by Technical

Specifications was established. Criticality monitoring and alarm systems were installed in all areas where spent fuel was handled. (Attachment 2, Radiation Protection, Page 39)

- The licensee had performed an analysis to confirm that the limits of 10 CFR 72.104 would not be exceeded during normal operation of the ISFSI when fully loaded. The Horizontal Storage Module (HSM) dose rates had been established based on the analysis. (Attachment 2, Radiation Protection, Pages 39-40)

- The licensee had established a special program to assess the neutron dose to workers when the water was removed from the canister and a higher energy spectrum would result in the areas near the cask. (Attachment 2, Radiation Protection, Page 40)

Training

- The training and certification of personnel for ISFSI activities was conducted under the licensee's 10 CFR Part 50 Training Program. Only those personnel who had completed all phases of the training were certified to operate the ISFSI equipment and systems. (Attachment 2, Training, Pages 40-41)

- The training had been conducted in the classroom and in the field. The classroom training used the training modules that were developed in conformance with the NUHOMS FSAR requirements. The field training had been conducted during the dry run training exercise (pre-operational testing). The tasks that were taught during the dry run were consistent with the conditions of the Certificate of Compliance. All ISFSI personnel had completed the training. (Attachment 2, Training, Pages 41-43)

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

G. Adams, ISFSI Licensing
R. Bashwiner, Operations - Senior Reactor Operator
E. Belizar, Manager of Projects
M. Bladek, Operations
D. Ceechett, Work Control
L. Church, ISFSI Project Manager of Operations
T. Cosgrove, Engineering
C. Costanzo, Plant General Manager
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C. Lloyd, Nuclear Assurance
R. Margolis, RE
C. Martin, Radiation Protection
W. Mead, RE
M. Moore, Radiation Protection Manager
M. Moran, Engineering
B. Mouring, Radiation Protection
E. Mullins, Mechanical Maintenance Supervisor
L. Neely, Work Control Manager
M. Page, Operations
T. Patterson, Licensing Manager
J. Porter, Engineering
G. Pustover, Quality Assurance
D. Rey, Maintenance Manager
L. Ruff, Projects
R. Russo, ISFSI Civil Engineer
M. Seidler, Security
P. Sharp, Nuclear Fuels Engineer
D. Taylor, Health Physics Supervisor
R. Vandevender, Contractor
R. Young, Systems Engineer
A. Zielonka, Project Engineering Manager

Transnuclear/TriVis Personnel
J. Chapman
J. Kelly

American Crane & Equipment Corporation
M. Fitzgerald, Project Manager

INSPECTION PROCEDURES USED

60854.1	Pre-operational Testing of Independent Spent Fuel Storage Installations at Operating Plants
60855.1	Operation of an Independent Spent Fuel Storage Installation at Operating Plants
60856.1	Review of 10 CFR 72.212(b) Evaluations at Operating Plants
60857	Review of 10 CFR 72.48 Evaluations

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

None

Discussed

None

LIST OF ACRONYMS USED

ACECO	American Crane and Equipment Corporation
ALARA	As Low As Reasonably Achievable
ARM	Area Radiation Monitor
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
BPRA	Burnable Poison Rod Assembly
CAQ	Conditions Adverse to Quality
cm	centimeter
CoC	Certificate of Compliance
CR	Condition Report
dpm	disintegrations per minute
DBE	Design Basis Earthquake
EAL	Emergency Action Level
EPIP	Emergency Plan Implementing Procedure
F	Fahrenheit
FHB	Fuel Handling Building
FPL	Florida Power and Light
HEPA	High Efficiency Particulate Air
HSM	Horizontal Storage Module

ISFSI	Independent Spent Fuel Storage Installation
JPM	Job Performance Measure
keV	kiloelectron Volt
kW	kilowatt
lb	pound
LCO	Limiting Condition for Operation
MeV	Megaelectron Volt
MMP	Mechanical Maintenance Procedure
mph	miles per hour
mrem	milli-rem
MT	Magnetic Particle
NDE	Non-Destructive Examination
NFAH	Non-Fuel Assembly Hardware
NRC	Nuclear Regulatory Commission
OBE	Operating Basis Earthquake
OJT	On-Job Training
PMB	Preventive Maintenance Bases
ppm	parts per million
psig	pounds per square inch gage
QA	Quality Assurance
ref-cc/sec	reference cubic centimeters per second
SAT	Systematic Approach to Training
SCAQ	Significant Conditions Adverse to Quality
SER	Safety Evaluation Report
SSC	Structures, Systems, and Components
SSE	Safe Shutdown Earthquake
SSI	Soil Structure Interaction
TLD	Thermoluminescent Dosimetry
TPA	Thimble Plug Assembly
UFSAR	Updated Final Safety Analysis Report
VPI	Vibration Suppression Insert