



December 2, 2003

L-2003-290
10 CFR 50.59

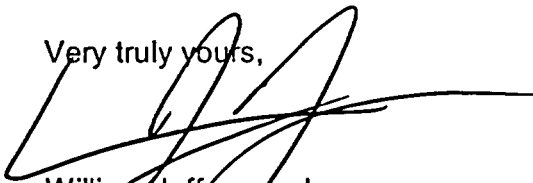
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Re: St. Lucie Unit 2
Docket No. 50-389
Report of 10 CFR 50.59 Plant Changes

Pursuant to 10 CFR 50.59 (d)(2), the attached report contains a brief description and summary of the safety evaluations for changes, tests, and experiments which were approved for Unit 2 during the period of December 21, 2001 through June 9, 2003. This submittal correlates with the information included in Amendment 15 of the Updated Final Safety Analysis Report submitted under separate cover.

Please contact us should there be any questions regarding this information.

Very truly yours,



William Jefferson, Jr.
Vice President
St. Lucie Plant

WJ/spt

Attachment

IE47

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

**ST. LUCIE UNIT 2
DOCKET NUMBER 50-389
CHANGES, TESTS AND EXPERIMENTS
MADE AS ALLOWED BY 10 CFR 50.59
FOR THE PERIOD OF
DECEMBER 21, 2001 THROUGH JUNE 9, 2003**

INTRODUCTION

This report is submitted in accordance with 10 CFR 50.59(d)(2), a report containing a brief description of:

- i) changes in the facility as described in the SAR;
- ii) changes in procedures as described in the SAR; and
- iii) tests and experiments not described in the SAR.

This report is intended to meet this requirement for the period of December 21, 2001 through June 9, 2003. Note that, where practical, summaries from more recent 10 CFR 50.59 evaluations have also been included in this report.

This report is divided into three (3) sections: the first, changes to the facility as described in the Updated Final Safety Analysis Report (UFSAR) performed by Plant Change/Modification (PC/M); the second, changes to the facility or procedures as described in the UFSAR performed by stand-alone 10 CFR 50.59 evaluation; and the third, any fuel reload 10 CFR 50.59 evaluations.

Each of the documents summarized in Sections 1, 2 and 3 includes a 10 CFR 50.59 evaluation that evaluated the specific change(s). Each of these evaluations concluded that the change does not require a plant license amendment or NRC approval prior to implementation.

TABLE OF CONTENTS

<u>SECTION 1</u>	<u>PLANT CHANGE/MODIFICATIONS</u>	<u>PAGE</u>
99170	REMOVAL OF UNIT 2 SPENT FUEL STORAGE CELL BLOCKING DEVICES	5
02042	REPLACEMENT OF THE UNIT 2 DDPS AND SOER AND INSTALLATION OF A PLANT DATA NETWORK	6
03021	UNIT 2 REACTOR HEAD PENETRATION INSPECTION AND REPAIR	7
<u>SECTION 2</u>	<u>STAND-ALONE 50.59 EVALUATIONS</u>	<u>PAGE</u>
SENS-97-006	PERFORMANCE OF FULL CORE REFUELING OFFLOADS	9
FPER-99-008	TWO-SIDED CABLE TRAY FIRE STOP REDESIGN	10
SENS-02-010	CONTAINMENT PURGE SYSTEM ISOLATION VALVES	11
SENS-02-044	CONTROL OF PAINTING AND CHEMICAL RELEASES POTENTIALLY AFFECTING VENTILATION SYSTEMS	12
SENS-02-069	OPERATION WITH INCREASED STEAM GENERATOR TUBE PLUGGING	13
<u>SECTION 3</u>	<u>RELOAD EVALUATIONS</u>	<u>PAGE</u>
02142	UNIT 2 CYCLE 14 FUEL RELOAD	15

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

SECTION 1

PLANT CHANGES / MODIFICATIONS

**PLANT CHANGE/MODIFICATION 99170
REVISION 2**

REMOVAL OF UNIT 2 SPENT FUEL STORAGE CELL BLOCKING DEVICES

Summary:

A summary of Revisions 0 and 1 of this PC/M was provided in the 2002 50.59 summary report. This information is repeated below for continuity.

This change modified selected spent fuel pool (SFP) cell locations by removing their cell blocking devices. The number of cells modified via Revision 0 of this package provided enough storage capacity in the SFP to perform a full core fuel off-load at the end of Cycle 11. Future revisions to this package were planned to allow removal of additional blocking devices up to the maximum number of storage cells allowed by the current Technical Specifications. Additionally, Revision 0 permitted the repositioning of irradiated fuel assemblies stored in the SFP. These assemblies required repositioning to conform to the requirements of License Amendment 101 prior to the startup of Cycle 12. (Repositioning was completed prior to the start of the end-of-cycle 11 refueling outage.) The removal of blocking devices and the repositioning of irradiated fuel is in accordance with License Amendment 101 approved by the NRC.

Revision 1 permitted the removal of additional Region I and Region II cell blocking devices. Removal of these additional blocking devices and the subsequent storage of fuel in these locations was permitted by criticality safety analyses and by Technical Specifications. To reduce the potential for mis-positioning of fuel assemblies, blocking devices located in spent fuel rack locations where fuel storage is not permitted were not removed.

Revision 2 provided for additional permissible storage for unirradiated fuel, and for higher enriched irradiated fuel in Region I racks. Rules governing storage of higher enriched fuel were included with the PC/M. This revision also stipulated that CEAs may be placed or stored in Class 0 fuel storage rack locations; however, placement of actinide material, or non-actinide material displacing an amount of water greater than a 4-finger CEA and its CEA carrier, into any Class 0 storage location continues to be prohibited. This change conforms to the requirements of Technical Specifications 5.6.1 and 5.6.3. The effective neutron multiplication factor of the supplemental storage arrangement is bounded by the calculated value from CENPD-387 for normal and off-normal conditions. CENPD-387 was reviewed and approved by the NRC and it is the criticality analysis that supports NRC approved License Amendment 101.

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

**PLANT CHANGE/MODIFICATION 02042
REVISIONS 0, 1 & 2**

**REPLACEMENT OF THE UNIT 2 DDPS AND SOER
AND INSTALLATION OF A PLANT DATA NETWORK**

Summary:

This modification replaced the obsolete Digital Data Processing System (DDPS) and the Sequence of Events Recorder (SOER) with a Distributed Control System (DCS). The DCS performs the same functions as the existing DDPS and SOER systems and it adds additional display, data access and data archiving capabilities. This modification also installed a common plant data network.

The new system has a common graphic user interface that provides more detailed information to the operators. It records data, currently printed on an hourly basis, directly to permanent digital storage. Historical data will be available on control room displays in tabular or trend formats. Printed reports can still be obtained on demand or on a scheduled print frequency. The DCS will be capable of providing near real time data to corporate users over the firewall protected plant LAN.

Revision 1 released holdpoints associated with equipment installation and connection of electrical circuits.

Revision 2 addressed the replacement of some temperature recorders and revised the software associated with the calculation of calorimetric power. The effects are conservative and are bounded by assumptions in the calorimetric uncertainty calculation. Calculations needed for iodine and xenon worth were revised for a two-second time component.

This modification package implemented a complex plant change. Although the PC/M has not been officially closed, it has been included in this 10 CFR 50.59 summary report because the modification has essentially been completed and released for use.

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

**PLANT CHANGE/MODIFICATION 03021
REVISION 0**

UNIT 2 REACTOR HEAD PENETRATION INSPECTION AND REPAIR

Summary:

As a result of industry and NRC actions associated with Alloy 600 reactor head penetration nozzles, FPL conducted an inspection of the Unit 2 reactor head penetrations during the 2003 refueling outage. Prior to the planned inspection FPL, in conjunction with Framatome ANP and Westinghouse, developed a matrix of options to address potential indications that might be identified during the inspection. This PC/M provided the design analysis and details necessary to implement any of the selected repair options.

Although the PC/M provided contingencies for the repair of CEDM, ICI and reactor head vent line nozzles, results of the inspection only warranted the repair of two CEDM nozzles.

Repair of the CEDM nozzles employed a roll expansion to ensure the nozzle does not move during the repair process and semi-automated machine tooling to remove the lower portion of the nozzle to a depth above the existing J-groove weld. The repair welds were performed with a remote machine GTAW weld head using the ambient inside diameter temper bead process. The final inside nozzle surfaces at and near the new welds were conditioned by abrasive water-jet machining to optimize resistance to primary water stress corrosion cracking.

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

SECTION 2
EVALUATIONS

**EVALUATION PSL-ENG-SENS-97-006
REVISION 5**

PERFORMANCE OF FULL CORE REFUELING OFFLOADS

Summary:

Summaries of Revisions 0 through 4 of this evaluation were provided in previous reports. This information is repeated below for continuity.

This evaluation was originally prepared to justify the routine performance of full core fuel offloads. With the conditions imposed by License Amendment 101, each full core offload requires a cycle-specific calculation documenting that the maximum bulk water temperature remains below 150°F.

The purpose of Revisions 1 and 2 to this evaluation was to document that during performance of a full core fuel offload at the end of Cycle 11 (EOC11) operation, 10 CFR 50.59 criteria are met. Additionally, this evaluation documents that a full core fuel offload can be performed at EOC11 conditions and simultaneously comply with the license condition imposed by the NRC during the issuance of License Amendment 101 concerning maximum fuel pool bulk water temperature.

Revision 3 of this evaluation was prepared to address improvement opportunities identified by Quality Assurance. Quality Assurance concluded that the evaluation's requirements for fuel pool water level should be revised to more clearly distinguish between level requirements applicable prior to initiation of the full core offload evolution and those level requirements applicable during the offload evolution.

Revision 4 of this evaluation was prepared to define the conditions under which a full core fuel offload may be performed during refueling outages subsequent to Cycle 11. To do so, Revision 4 specified a limit on decay heat loads for future cycles. By crediting calculations performed as part of the reload engineering process, Revision 4 was intended to obviate the need for subsequent modification of this evaluation so long as the requirements are met. Revision 4 also reformatted the evaluation to comply with the revised requirements of 10 CFR 50.59.

Revision 5 modified the Plant Restrictions related to fuel pool instrumentation to address the need for and approval of compensatory measures in the event of component failure or scheduled refueling outage maintenance activities.

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

**SAFETY EVALUATION PSL-FPER-99-008
REVISIONS 0 & 1**

TWO-SIDED CABLE TRAY FIRE STOP REDESIGN

Summary:

This evaluation was applicable to both St. Lucie Units 1 and 2. A summary of Revisions 0 and 1 was provided in a previous Unit 1 10 CFR 50.59 summary report. That information is repeated below for this Unit 2 report.

The purpose of this evaluation was to provide an upgraded design for two-sided cable tray fire stops to meet the design basis 3-hour fire rating. These fire stops provide reasonable assurance that a fire will not affect redundant safe shutdown circuits in adjacent fire areas/zones. The fire stops are qualified fire barriers and do not require a breach permit.

Revision 1 was issued to address the evaluation of additional configurations.

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

**EVALUATION PSL-ENG-SENS-02-010
REVISION 0**

CONTAINMENT PURGE SYSTEM ISOLATION VALVES

Summary:

This evaluation revised UFSAR Table 6.2-53, Containment Isolation Analysis, to change the allowed time to close from 5 seconds to 3 seconds for the 48-inch containment purge valves. Technical Specifications prohibit these valves from being open during plant operation in Modes 1 through 4, and there is no LOCA-driven time requirement for valve closure. The 3 second requirement was based on valve design and capabilities and not on accident mitigation requirements. This change removed operating restrictions imposed on the Inservice Testing Program while still allowing for proper valve operation.

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

**EVALUATION PSL-ENG-SENS-02-044
REVISION 1**

**CONTROL OF PAINTING AND CHEMICAL RELEASES POTENTIALLY
AFFECTING VENTILATION SYSTEMS**

Summary:

For certain ventilation systems, Technical Specification (TS) surveillances require the testing of system filters "following painting, fire or chemical release in any ventilation zone communicating with the system." The intent of this requirement is to ensure that system filters are not rendered inoperable as a result of contamination by paint fumes, smoke, or chemical fumes. For Unit 2, the affected ventilation systems are:

Shield Building Ventilation System
Control Room Emergency Air Cleanup System

This evaluation provided the justification to revise the TS Bases to incorporate guidance contained in NRC Regulatory Guide 1.52, Revision 3. This regulatory guide provides clarification with respect to the TS surveillance wording. In addition, this evaluation provided specific plant guidance and controls for painting/chemical release activities in those plant areas to ensure the continued operability of the affected ventilation systems. The changes are consistent with the CEOG Standard Technical Specifications, current regulatory guidance, as well as plant design and licensing requirements. There is no effect on the operation or testing of the subject ventilation systems.

Revision 1 was issued to provide minor changes to the plant guidance. Note that Revision 0 was not approved by the plant because it was desired to have the associated procedure changes prepared and presented along with the evaluation.

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

**EVALUATION PSL-ENG-SENS-02-069
REVISION 0**

OPERATION WITH INCREASED STEAM GENERATOR TUBE PLUGGING

Summary:

The NRC approved Unit 2 Technical Specification Amendment 131 in April 2003. License Amendment 131 allowed a reduction in reactor coolant system (RCS) flow from 363,000 gpm to 355,000 gpm in order to accommodate increased steam generator tube plugging. This evaluation considered the impact of such a change on plant systems from an operational perspective and provided actions to various plant groups to make conforming changes.

St. Lucie Unit 2
Docket No. 50-389
L-2003-290 Attachment

SECTION 3

RELOAD EVALUATIONS

**PLANT CHANGE/MODIFICATION 02142
REVISIONS 0 & 1**

UNIT 2 CYCLE 14 FUEL RELOAD

Summary:

This package provided the reload core design for St. Lucie Unit 2 Cycle 14 developed by Florida Power & Light Company (FPL) and Westinghouse Electric - Combustion Engineering (W-CE). The Cycle 14 core was designed for a nominal cycle length of 12,472 EFPH, based on a nominal Cycle 13 length of 11,321 EFPH. The Cycle 14 reload design supports an additional end-of-cycle coastdown to 12820 EFPH at full power with a maximum reduction in primary coolant inlet temperature to 535°F. Cycle 13 was expected to achieve an end-of-cycle exposure of approximately 11,334 EFPH.

The primary design change to the core for Cycle 14 was the replacement of 81 irradiated fuel assemblies with 80 fresh Region S assemblies and 1 irradiated Region K fuel assembly that was residing in the spent fuel pool. The fuel in the Cycle 14 core was arranged in a low leakage pattern similar to the design of the Cycle 13 core. The mechanical design of the Region S fuel is essentially the same as that of the Region R fuel, and consists of "value-added" fuel pellets and the "guardian grid" design, first introduced in Cycle 11.

The implementation instructions provided in this modification required a full core offload. The safety analysis of this design was performed by W-CE and by FPL using NRC approved methodologies.

The analyses for Cycle 14 support a maximum steam generator tube plugging level of 1250 tubes per steam generator with a maximum asymmetry of 400 tubes, including the corresponding reduction in RCS flow. The reduction in RCS flow was approved by the NRC in April 2003 via Technical Specification License Amendment 131.

Revision 1 incorporated a redesigned core loading pattern in order to eliminate the use of assemblies that resided on the core shroud during any previous operating cycle, as they are considered to be the most likely candidates to contain failed fuel. The redesigned core was analyzed to meet all applicable design requirements.