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FPL

June 26, 2008

L-2008-148
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 of any changes, tests, and experiments, including a summary of the 50.59 evaluation of each which were made on Unit 2 during the period of June 12, 2006 through April 4, 2008. St. Lucie Unit 2 Updated Final Safety Analysis Report (UFSAR) Amendment 18 is being submitted under separate cover.

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

Very truly yours,

Gordon L. Johnston

Gordon L. Johnston
Site Vice President
St. Lucie Plant

GLJ/tlt

Attachment

IE47
NRR

ST. LUCIE UNIT 2
DOCKET NUMBER 50-389
CHANGES, TESTS AND EXPERIMENTS
MADE AS ALLOWED BY 10 CFR 50.59
FOR THE PERIOD OF
JUNE 12, 2006 THROUGH APRIL 4, 2008

INTRODUCTION

This report is submitted in accordance with 10 CFR 50.59 (d)(2), which requires that:

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

that are conducted without prior Commission approval be reported to the Commission in accordance with 10 CFR 50.90 and 50.4. This report is intended to meet these requirements for the period of June 12, 2006 through April 4, 2008.

This report is divided into three (3) sections. First, changes to the facility as described in the Updated Final Safety Analysis Report (UFSAR) performed by a Plant Change/Modification (PC/M). Second, changes to the facility/procedures as described in the UFSAR, or tests/experiments not described in the UFSAR, which are not performed by a PC/M. Third, a summary of any fuel reload 50.59 evaluation.

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 50.59 evaluations concluded that the change does not require a change to the plant technical specifications, and that prior NRC approval is not required.

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SECTION 1

PLANT CHANGE / MODIFICATIONS

PLANT CHANGE/MODIFICATION 05133

REVISIONS 0 & 1

STEAM GENERATOR 2A & 2B SUPPORTS MODIFICATIONS FOR THE UNIT 2 COMPONENT REPLACEMENT PROJECTS

Summary:

PC/M 05137, "Replacement Steam Generators 2A & 2B for the Unit 2 Component Replacement Projects," provides for the replacement of Steam Generators 2A (SG2A) and 2B (SG2B). In order to implement that modification, the steam generator supports must be disassembled from Original Steam Generators (OSGs) and reassembled on the Replacement Steam Generators (RSGs). The steam generator supports consist of the upper lateral supports (ULS) at El. 74.21' on the Reactor Vessel Side & Feedwater Side of each SG, steam generator snubbers at 7 ft below the ULS, and a sliding base support at El. 25.41'.

This PC/M provides the design requirements for temporary removal and subsequent reinstallation of the SG supports. Disassembly and reassembly of the SG supports involve both temporary and permanent modifications to the SG supports.

The function of the SG supports (i.e., SG Upper Lateral Supports, SG Snubbers and Sliding Base Supports) is to restrain the SGs in the event of postulated pipe breaks or seismic events since unrestricted SG movement could potentially damage or limit the ability of essential components necessary to shutdown and maintain the reactor in a safe shutdown condition.

The 10 CFR 50.59 Screening documents that, except for the affirmative regarding the potential for a change in evaluation methodology as related to the SG ULS modification, these activities do not require a 10 CFR 50.59 Evaluation. For the SG ULS, the proposed use of ANSYS as an alternate structural analysis program to MRI/STARDYNE does not result in a departure from a method of evaluation described in the UFSAR. ANSYS is approved at Unit 2 for general applications. With the same textbook structural analysis design inputs applied to ANSYS and MRI/STARDYNE programs, the ANSYS design outputs results are essentially the same or are more conservative. All quality control requirements for use of ANSYS have been met. Therefore, the ANSYS evaluation methodology utilized does not require a change to the plant Operating License or a change to the plant Technical Specifications and no prior NRC review and approval is required.

Revision 1 of PC/M 05133 performed a DBD Change Package to update DBD-SLI-PBK-2 to denote the deletion of the north-south direction LOCA restraint from the SG sliding base support and added DBD-SLI-PBK-2, "Selected Licensing Issues Pipe Break Criteria," Rev. 2 to the list of documents reviewed.

SECTION 2

50.59 EVALUATIONS

EVALUATION SECS-06-002
REVISION 0

DETERMINATION OF PRYING FORCES FOR CONCRETE EXPANSION ANCHOR DESIGN – UFSAR UPDATE

Summary:

This 10 CFR 50.59 evaluation documents the acceptability of using a calculated safety factor for the determination of prying forces in the design of concrete expansion anchors as an alternative to those methods currently addressed in the Unit 2 UFSAR Appendix 3.9B to qualify usage of concrete expansion anchors for application(s) throughout St. Lucie Unit 2.

This evaluation concludes that the use of manual calculation methodology from the applicable design standard(s) in lieu of finite element analysis methods, for determination of prying forces is acceptable and does not impact plant safety, nor does it require a change to the technical specifications. Additionally, the factor of safety between the calculated expansion anchor design load and expansion anchor ultimate capacity, with the inclusion of the calculated prying forces, complies with NRC IE Bulletin No. 79-02, Revision 2, minimum factor of safety requirements (Four – for wedge and sleeve type anchors, and Five – for shell type anchors).

EVALUATION SENJ-07-039

REVISION 0

TRANSMITTAL OF 10 CFR 50.59 EVALUATION OF ST. LUCIE UNIT 2 REPLACEMENT STEAM GENERATORS

Summary:

This report discusses the use of AREVA NP replacement steam generators (RSGs) at the St. Lucie Unit 2 Plant. It evaluates use of the RSGs in satisfying the existing Updated Final Safety Analysis Report (UFSAR) acceptance criteria and Technical Specification (TS) Limits, and is the basis document for a 10 Code of Federal Regulations (CFR) 50.59 evaluation.

The RSGs are manufactured by AREVA NP in Chalon, France. The RSGs are designed, manufactured, and tested in accordance with the 1998 Edition through 2000 Addendum of Section III of the American Society of Mechanical Engineers (ASME) Code and will be N-stamped by AREVA NP, an AREVA and Siemens Company (AREVA NP), after hydrotest and prior to shipment to St. Lucie Unit 2. The design, procurement, and manufacturing process are performed under a Quality Assurance (QA) Program that complies with the requirements of Appendix B to 10 CFR 50 and with the current Nuclear Regulatory Commission (NRC) requirements that relate to steam generator design.

The RSGs are approximately the same physical size as the original steam generators (OSGs). There are no changes to interfaces with the reactor coolant (RC), main feedwater (MFW), or main steam systems (MSS), and no significant changes to major component supports or piping supports. RSG design differences compared to the OSG design include (1) a small operating weight decrease and a small change in the center of gravity (CG) location, (2) an addition of an integral flow restrictor in the main steam nozzle (3) increased heat transfer area, (4) use of ¾ inch thermally treated Alloy 690 tube material, (5) reduced tube wall thickness, (6) a 3.8% increase in secondary side liquid inventory at hot full power (HFP) conditions and a 3.9% decrease in secondary inventory at hot zero power (HZP) conditions, (7) a higher circulation ratio, and (8) reduced moisture carryover. Evaluations of the differences between the RSGs and OSGs are presented in this report. These evaluations confirm that the use of the RSGs meets the existing UFSAR design basis acceptance criteria.

SECTION 3

RELOAD EVALUATION

PLANT CHANGE/MODIFICATION 07004

REVISION 0

ST. LUCIE UNIT 2 CYCLE 17 RELOAD

Summary:

This engineering package (EP), provides the reload core design for St. Lucie Unit 2 Cycle 17 developed by Florida Power & Light Company (FPL) and Westinghouse Electric (W). The Cycle 17 core is designed for a nominal cycle length of 11,560 EFPH, based on a nominal Cycle 16 length of 11,200 EFPH. The Cycle 17 reload design supports an additional end-of-cycle coastdown length of 360 EFPH with a maximum reduction in primary coolant inlet temperature to 535 degrees F.

The primary design change to the core for Cycle 17 is the replacement of 77 irradiated fuel assemblies (4 Region P assemblies, 73 Region S assemblies) with 72 fresh fuel assemblies (Region X), and 5 irradiated Region S fuel assemblies currently residing in the spent fuel pool. The fuel in the Cycle 17 core is arranged in a low leakage pattern. The mechanical design of Region X fuel is essentially the same as that of the Region U fuel, and consists of "value-added" fuel pellets and the "guardian grid" design, first introduced in Cycle 11. The only significant difference is that Region X incorporates the use of ZIRLO™ cladding. The Cycle 17 core will have 18 new full strength CEAs due to the scheduled replacement of CEAs that have reached their lifetime limit. These CEAs are of the same design as the current full strength CEAs.

The implementation instructions provided in this EP for core reconfiguration from Cycle 16 to Cycle 17 support a full core off-load. The safety analysis of this design was performed by W and by FPL using NRC approved methodologies. The core design and the generation of physics inputs to safety are performed by FPL using the Westinghouse physics methodology.

The Cycle 17 reload is based on the Westinghouse WCAP-9272, Westinghouse Reload Safety Evaluation Methodology, first introduced in Cycle 15 for St. Lucie Unit 2. This approach uses a checklist format to assess cycle-specific core design, and plant parameters for compliance with the existing safety analysis.

The Technical Specification criteria of 21.7 EFPY for the pressure/temperature (P/T) limit curves will be exceeded at approximately 1.069 EFPY into Cycle 17. Actions identified in this PC/M to the Component Support and Inspection and Licensing departments to ensure the timely submittal of a License Amendment Request to the NRC were completed to enable approval prior to Cycle 17 reaching a cycle exposure of 1.069 EFPY (approximately 9360 EFPH).

This PC/M supports the implementation of reactor vessel closure head and the steam

generator replacements. All the UFSAR analyses have been dispositioned to meet the appropriate acceptance criteria.

This PC/M also implements the Startup Test Activity Reduction (STAR) program for St. Lucie Unit 2 to allow an option to eliminate rod worth measurements during zero power physics testing, following refueling. The evaluation is based on the STAR program approved by the NRC for the participating Combustion Engineering designed pressurized water reactors, which includes St. Lucie Unit 2.