



November 8, 2021

L-2021-178
10 CFR 50.59(d)

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

Re: St. Lucie Unit 1
Docket No. 50-335
Report of 10 CFR 50.59 Plant Changes

Pursuant to 10 CFR 50.59(d)(2), the attached report contains a brief description of changes, tests and experiments, including a summary of the evaluation of each, which were made on Unit 1 during the period of November 20, 2019 through May 17, 2021. This submittal correlates with the information included in Amendment 31 of the Updated Final Safety Analysis Report to be submitted under separate cover.

Please contact me at 772-467-7435 with any questions regarding this submittal.

Sincerely,

A handwritten signature in black ink that reads "Wyatt Godes".

Wyatt Godes
Licensing Manager
St. Lucie Plant

WG/rcs

Attachment

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, St. Lucie Plant
USNRC Senior Resident Inspector, St. Lucie Plant

ST. LUCIE UNIT 1
DOCKET NUMBER 50-335
CHANGES, TESTS AND EXPERIMENTS
MADE AS ALLOWED BY 10 CFR 50.59
FOR THE PERIOD OF
NOVEMBER 20, 2019 THROUGH MAY 17, 2021

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 November 20, 2019 through May 17, 2021.

This report is divided into three (3) sections:

1. Summaries of changes to the facility as described in the Updated Final Safety Analysis Report (UFSAR) performed by a permanent modification are summarized.
2. Summaries of changes to the facility or procedures as described in the UFSAR, and for tests and experiments not described in the UFSAR, which are not performed by a permanent modification.
3. A summary of any fuel reload 10 CFR 50.59 evaluation.

Sections 1, 2 and 3 summarize specific 10 CFR 50.59 evaluations for the specific changes. Each of these 10 CFR 50.59 evaluations concluded that the change did not require a change to the plant technical specifications, and prior NRC approval was not required.

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SECTION 1

PERMANENT MODIFICATIONS

EC 290602
UNIT 1 CHRRMS DETECTOR AND MONITOR REPLACEMENT

SUMMARY

The design change package (EC290602) evaluates the replacement of the original plant equipment General Atomics RP-2C analog rate monitor and existing nuclear instrumentation module (NIM) bin with a new digital RM-1000 rate monitor and I/F (current to frequency) converter mounted within a new NIM bin assembly, an AC power line filter, and isolation transmitter/relay panel for each safety related channel of containment high range radiation monitoring system (CHRRMS). The replacement of the detectors and rate meters affects System 26 Radiation Monitoring only.

Regarding accidents previously evaluated in the UFSAR, this modification replaces the containment high range radiation detection inside containment and radiation monitoring circuitry in the control room. This modification does not impact any reactor coolant system (RCS) pressure boundary, nor containment penetrations. As such, this modification does not result in an increase to the frequency of occurrence of an accident previously evaluated in the UFSAR.

Regarding the effect of the proposed activity on systems and components (SSCs) important to safety previously evaluated in the UFSAR, the SSCs that are affected by this proposed activity include:

- CHRRMs system channels 58 and 59 - The existing CHRRMs detector and radiation monitoring components were replaced with new components to extend the environmental qualified life.
- Power sources - RIS-26-58 is powered from safety related PP-101 circuit 19, while RIS-26-59 is powered from safety related PP-102A, circuit 2. The approximate load from the new design is 43W, as compared to 29W using the original plant equipment. This additional 14W on the affected power panel's circuits is insignificant as compared to load calculation assumptions.
- Associated radiation recorder - Recording of containment radiation is provided by RR-26-58 and RR-26-59. There is no change to the input of the existing radiation recorders. The input to the recorder will remain a 0-10Vdc analog signal.
- Distributed Control System (DCS) Emergency Response Data Acquisition & Display (ERDADS) - New isolation transmitters provide electrical isolation between the safety related CHRRMs circuitry and the non-safety related DCS ERDADS circuits. The new transmitters electrically isolate the RM-1000's analog 0-10Vdc output to the 0-10V DCS modules in Isolation Cab 1-NA and Isolation Cab 3-NB.
- Control room alarm panel X annunciation circuit - New relays provide the electrical isolation between the RM-1000's status and alarm relays, and the control room alarm annunciation circuitry. The functional requirements for each relay remain the same.

After reviewing the above effects, and based on the Qualitative Assessment of the software installed on the RM-1000, the likelihood of malfunction of this important to safety SSC has not increased more than minimally.

Regarding the potential for the proposed activity to result in more than a minimal increase in the radiological consequences of an accident or malfunction previously evaluated in the UFSAR, this modification plays a direct role in mitigating the radiological consequences of an accident described in the UFSAR. The containment high range radiation readings are used by procedures to assist in validating protective action recommendations (PARs), severity of plant conditions, and/or recovery operations. Since this modification is replacing the existing CHRRM's detector and radiation monitor with an equivalent system, this modification will not have any effect on the radiological consequences of any accident analysis described in the UFSAR.

None of the malfunctions evaluated in the UFSAR have their radiological consequences affected as a result of replacing the existing CHRRMs equipment with new equivalent components. As such, there will not be a more than a minimal increase in the radiological consequences of a malfunction of an SSC important to safety previously evaluated in the UFSAR.

Regarding the potential for the proposed activity to create a possibility for an accident or malfunction of a different type than any previously evaluated in the UFSAR, the CHRRMs system does not have any control functions such as containment isolation, or containment cooling activation. As such, the CHRRMs system cannot create the possibility of an accident or transient of a different type than any previously evaluated in the UFSAR.

The new components, such as the current-to-frequency (I/F) converter that changes the detector current into pulses for input to the RM-1000, may fail in ways other than the components in the original design (e.g., software failures). However, as documented in the Qualitative Assessment, the end result of the failure(s) is the same as the results of malfunctions for the RP-2C. As such, this digital upgrade would not create a malfunction of an SSC important to safety with a different result.

There are no fission product barriers impacted by the replacement of the CHRRMs detector and radiation monitoring system. Existing cable containment penetrations are not affected by this modification. As such, this modification does not result in a design basis limit for a fission product barrier as described in the UFSAR being exceeded or altered.

There are no methods of evaluation described in the UFSAR impacted by the change.

Based on the discussions herein and on the Qualitative Assessment on the RM-1000's software, the proposed change does not require a change to the technical specifications and does not meet any of the criteria in 10 CFR 50.59(c)(2); therefore, the change can be made without obtaining a license amendment pursuant to 10 CFR 50.90.

SECTION 2

50.59 EVALUATIONS

For the time period of this report, there were no changes to the facility (outside of the plant design modification discussed in Section 1) as described in the Updated Final Safety Analysis Report (UFSAR) performed by a 10 CFR 50.59 Evaluation.

SECTION 3

FUEL RELOAD EVALUATION

EC 295259
ST. LUCIE UNIT 1 CYCLE 30 RELOAD

SUMMARY

The St. Lucie Unit 1 Cycle 30 Core Reload did not require a 10 CFR 50.59 Evaluation. The discussions within this EC, along with the associated 10 CFR 50.59 Applicability Determination and Screening, justify that the design and operation of the Cycle 30 core reload does not meet any of the criteria in 10 CFR 50.59(c)(2). The core reload activities can be implemented with no changes to the St. Lucie Unit 1 Technical Specifications. The safety analyses results are within the current design basis, within the acceptance limits provided by the NRC regulatory criteria and within the criteria provided by 10 CFR 50.59. Therefore, prior NRC approval is not required for implementation of this EC.