UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 2, 2019

Mr. Don Moul
Vice President, Nuclear Division
and Chief Nuclear Officer
Florida Power & Light Company
Mail Stop: NT3/JW
15430 Endeavour Drive
Jupiter, FL 33478

SUBJECT: ST. LUCIE PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENT NOS. 247 AND 199 REGARDING ADOPTION OF RISK-INFORMED COMPLETION TIMES IN TECHNICAL SPECIFICATIONS (CAC NOS. MF5372 AND MF5373; EPID L-2014-LLA-0001)

Dear Mr. Moul

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment Nos. 247 and 199 to Renewed Facility Operating License Nos. DPR-67 and NPF-16 for the St. Lucie Plant, Unit Nos. 1 and 2, respectively. The amendments revise the Technical Specifications in response to the application from Florida Power & Light Company dated December 5, 2014; as supplemented by letters dated July 8 and July 22, 2016; February 15, 2017; and February 1, March 15, June 7, September 18, November 9, and November 30, 2018, respectively.

The amendments revise various Technical Specifications to permit the use of risk-informed completion times for selected required actions. The NRC staff's safety evaluation of the amendments is enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Additionally, on October 29, 2004, the NRC issued a license change to the St. Lucie Plant, Unit No. 1, license to ensure implementation of Design Basis Threat Order (EA-03-086) requirements (Agencywide Documents Access and Management System Accession No. ML043120018). The NRC staff determined that, as part of that change, the date of issuance of the Renewed Facility Operating License was inadvertently deleted from the revised license page. As such, the NRC staff has returned the date of issuance for the Renewed

Facility Operating License No. DPR-67 to the revised Page 9 that is being issued for this current amendment.

Sincerely,

Michael J. Wentzel, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-335 and 50-389

Enclosures:
1. Amendment No. 247 to DPR-67
2. Amendment No. 199 to NPF-16
3. Safety Evaluation

cc: Listserv

FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-335

ST. LUCIE PLANT UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 247
Renewed License No. DPR-67

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Florida Power & Light Company; dated December 5, 2014; as supplemented by letters dated July 8 and July 22, 2016; February 15, 2017; and February 1, March 15, June 7, September 18, November 9, and November 30, 2018 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Atomic Energy Act of 1954, as amended, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, Renewed Facility Operating License No. DPR-67 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and by amending paragraph 3.B and adding paragraph 3.J as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 247, are hereby incorporated in the renewed license. FPL shall operate the facility in accordance with the Technical Specifications.

J. FPL is authorized to implement the Risk Informed Completion Time Program as approved in License Amendment No. 247 subject to the following conditions:

1. FPL will complete the following prior to implementation of the Risk Informed Completion Time Program:

   a. The items listed in the table of implementation items in the enclosure to FPL letter L-2018-006, "Third Response to Request for Additional Information Regarding License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk Informed Extended Completion Times – RITSTF Initiative 4b'," February 1, 2018, and

   b. The six implementation items listed in Attachment 1 to FPL letter L-2018-201, "Fourth Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," November 9, 2018.

2. The risk assessment approach and methods shall be acceptable to the NRC; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience of the plant, as specified in RG 1.200. Methods to assess the risk from extending the completion times must be PRA methods accepted as part of this license amendment, or other methods approved by the NRC for generic use. If the licensee wishes to change its methods, and the change is outside the bounds of this license condition, the licensee will seek prior NRC approval via a license amendment.

3. This license amendment is effective as of its date of issuance and shall be implemented within 180 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Undine Shoop, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed
Facility Operating License
and Technical Specifications

Date of Issuance: July 2, 2019

ATTACHMENT TO LICENSE AMENDMENT NO. 247

ST. LUCIE PLANT UNIT NO. 1

RENEWED FACILITY OPERATING LICENSE NO. DPR-67

DOCKET NO. 50-335

Replace pages 3 and 9 of Renewed Facility Operating License No. DPR-67 with the attached pages 3 and 9.

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert	Remove	Insert
3/4 3-4	3/4 3-4	3/4 6-15	3/4 6-15
3/4 3-10	3/4 3-10	3/4 6-18	3/4 6-18
3/4 3-11	3/4 3-11	3/4 7-4	3/4 7-4
3/4 3-12	3/4 3-12	3/4 7-9	3/4 7-9
3/4 3-13	3/4 3-13	3/4 7-14	3/4 7-14
3/4 3-13a	3/4 3-13a	3/4 7-16	3/4 7-16
3/4 4-58	3/4 4-58	3/4 8-1	3/4 8-1
3/4 5-1	3/4 5-1	3/4 8-2	3/4 8-2
3/4 5-3	3/4 5-3	3/4 8-3	3/4 8-3
3/4 6-10	3/4 6-10	6-15h	6-15h
		6-15i	6-15i

applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

A. Maximum Power Level

FPL is authorized to operate the facility at steady state reactor core power levels not in excess of 3020 megawatts (thermal).

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 247, are hereby incorporated in the renewed license. FPL shall operate the facility in accordance with the Technical Specifications.

Appendix B, the Environmental Protection Plan (Non-Radiological), contains environmental conditions of the renewed license. If significant detrimental effects or evidence of irreversible damage are detected by the monitoring programs required by Appendix B of this license, FPL will provide the Commission with an analysis of the problem and plan of action to be taken subject to Commission approval to eliminate or significantly reduce the detrimental effects or damage.

C. Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on March 28, 2003, describes certain future activities to be completed before the period of extended operation. FPL shall complete these activities no later than March 1, 2016, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on March 28, 2003, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed license. Until that update is complete, FPL may make changes to the programs described in such supplement without prior Commission approval, provided that FPL evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

D. Sustained Core Uncovery Actions

Procedural guidance shall be in place to instruct operators to implement actions that are designed to mitigate a small-break loss-of-coolant accident prior to a calculated time of sustained core uncovery.

J. FPL is authorized to implement the Risk Informed Completion Time Program as approved in License Amendment No. 247 subject to the following conditions:

1. FPL will complete the following prior to implementation of the Risk Informed Completion Time Program:

    a. The items listed in the table of implementation items in the enclosure to FPL letter L-2018-006, "Third Response to Request for Additional Information Regarding License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk Informed Extended Completion Times – RITSTF Initiative 4b'," February 1, 2018, and

    b. The six implementation items listed in Attachment 1 to FPL letter L-2018-201, "Fourth Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," November 9, 2018.

2. The risk assessment approach and methods shall be acceptable to the NRC; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience of the plant, as specified in RG 1.200. Methods to assess the risk from extending the completion times must be PRA methods accepted as part of this license amendment, or other methods approved by the NRC for generic use. If the licensee wishes to change its methods, and the change is outside the bounds of this license condition, the licensee will seek prior NRC approval via a license amendment.

4. This renewed license is effective as of the date of issuance and shall expire at midnight on March 1, 2036.

FOR THE NUCLEAR REGULATORY COMMISSION

ORIGINAL SIGNED BY
J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Attachments:
1. Appendix A, Technical Specifications
2. Appendix B, Environmental Protection Plan

Date of Issuance: October 2, 2003

TABLE 3.3-1 (Continued)

TABLE NOTATION

* With the protective system trip breakers in the closed position and the CEA drive system capable of CEA withdrawal.

** Mode 1 applicable only when Power Range Neutron Flux power ≤ 15% of RATED THERMAL POWER.

(a) Trip may be bypassed below 1% of RATED THERMAL POWER; bypass shall be automatically removed when Wide Range Logarithmic Neutron Flux power is ≥ 1% of RATED THERMAL POWER.

(b) Trip may be manually bypassed below 685 psig; bypass shall be automatically removed at or above 685 psig.

(c) Trip may be bypassed below 15% of RATED THERMAL POWER; bypass shall be automatically removed when Power Range Neutron Flux power is ≥ 15% of RATED THERMAL POWER.

(d) Trip may be bypassed below 10^{-4}% and above 15% of RATED THERMAL POWER; bypass shall be automatically removed when Wide Range Logarithmic Neutron Flux power is ≥ 10^{-4}% and Power Range Neutron Flux power ≤ 15% of RATED THERMAL POWER.

(e) Deleted.

(f) There shall be at least two decades of overlap between the Wide Range Logarithmic Neutron Flux Monitoring Channels and the Power Range Neutron Flux Monitoring Channels.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and/or open the protective system trip breakers.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. For the purposes of testing and maintenance, the inoperable channel may be bypassed for up to 48 hours from time of initial loss of OPERABILITY; however, the inoperable channel shall then be either restored to OPERABLE status or placed in the tripped condition.

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION (SIAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Containment Pressure – High	4	2	3	1, 2, 3	9
c. Pressurizer Pressure – Low	4	2	3	1, 2, 3(a)	9
2. CONTAINMENT SPRAY (CSAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Containment Pressure – High-High	4	2(b)	3	1, 2, 3	10A, 10B
3. CONTAINMENT ISOLATION (CIS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Containment Pressure – High	4	2	3	1, 2, 3	9
c. Containment Radiation – High	4	2	3	1, 2, 3, 4	9
d. SIAS	---------------------------- (See Functional Unit 1 above) ------------------------------				
4. MAIN STEAM LINE ISOLATION (MSIS)					
a. Manual (Trip Buttons)	2/steam generator	1/steam generator	2/operating steam generator	1, 2, 3, 4	8
b. Steam Generator Pressure – Low	4/steam generator	2/steam generator	3/steam generator	1, 2, 3(c)	9

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. CONTAINMENT SUMP RECIRCULATION (RAS)					
a. Manual RAS (Trip Buttons)	2	1	2	1, 2, 3, 4	8
b. Refueling Water Tank - Low	4	2	3	1, 2, 3	13
6. LOSS OF POWER					
a. 4.16 kv Emergency Bus Under-voltage (Loss of Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
b. 4.16 kv Emergency Bus Under-voltage (Degraded Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
c. 480 V Emergency Bus Under-voltage (Degraded Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	12
7. AUXILIARY FEEDWATER (AFAS)					
a. Manual (Trip Buttons)	4/SG	2/SG	4/SG	1, 2, 3	11
b. Automatic Actuation Logic	4/SG	2/SG	3/SG	1, 2, 3	11
c. SG Level (1A/1B) - Low	4/SG	2/SG	3/SG	1, 2, 3	14a, 14b, 15
8. AUXILIARY FEEDWATER ISOLATION					
a. SG 1A – SG 1B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	14a, 14b, 15
b. Feedwater Header 1A – 1B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	14a, 15

TABLE 3.3-3 (Continued)

TABLE NOTATION

(a) Trip function may be bypassed in this MODE when pressurizer pressure is < 1725 psia; bypass shall be automatically removed when pressurizer pressure is $\geq$ 1725 psia.

(b) An SIAS signal is first necessary to enable CSAS logic.

(c) Trip function may be bypassed in this MODE below 685 psig; bypass shall be automatically removed at or above 685 psig.

ACTION STATEMENTS

ACTION 8 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 9 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. For the purposes of testing and maintenance, the inoperable channel may be bypassed for up to 48 hours from time of initial loss of OPERABILITY; however, the inoperable channel shall then be either restored to OPERABLE status or placed in the tripped condition.

b. Within one hour, all functional units receiving an input from the inoperable channel are also bypassed or tripped.

c. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 48 hours while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.

TABLE 3.3-3 (continued)

TABLE NOTATION

ACTION 10A - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the bypassed or tripped condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour. If the inoperable channel can not be restored to OPERABLE status within 48 hours, then place the inoperable channel in the tripped condition.

b. Within 1 hour, all functional units receiving an input from the inoperable channel are also bypassed or tripped.

ACTION 10B - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 11 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

ACTION 12 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

TABLE 3.3-3 (continued)

TABLE NOTATION

ACTION 13 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If OPERABILITY cannot be restored within 48 hours or in accordance with the Risk Informed Completion Time Program, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.

ACTION 14 - With the number of channels OPERABLE one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If an inoperable SG level channel can not be restored to OPERABLE status within 48 hours, then AFAS-1 or AFAS-2 as applicable in the inoperable channel shall be placed in the bypassed condition. If an inoperable SG DP or FW Header DP channel can not be restored to OPERABLE status within 48 hours, then both AFAS-1 and AFAS-2 in the inoperable channel shall be placed in the bypassed condition. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

b. Within 1 hour, all functional units receiving an input from the inoperable channel are also bypassed or tripped.

ACTION 15 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

REACTOR COOLANT SYSTEM

PORV BLOCK VALVES

LIMITING CONDITION FOR OPERATION

3.4.12 Each Power Operated Relief Valve (PORV) Block Valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

With one or more block valve(s) inoperable, within 1 hour or in accordance with the Risk Informed Completion Time Program either restore the block valve(s) to OPERABLE status or close the block valve(s) and remove power from the block valve(s); otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.12 Each block valve shall be demonstrated OPERABLE in accordance with the Surveillance Frequency Control Program by operating the valve through one complete cycle of full travel.

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SAFETY INJECTION TANKS (SITs)

LIMITING CONDITION FOR OPERATION

3.5.1 Each reactor coolant system safety injection tank shall be OPERABLE with:

a. The isolation valve open,

b. Between 1090 and 1170 cubic feet of borated water,

c. A minimum boron concentration of 1900 ppm, and

d. A nitrogen cover-pressure of between 230 and 280 psig.

APPLICABILITY: MODES 1, 2 and 3 with pressurizer pressure ≥ 1750 psia

ACTION:

a. With one SIT inoperable due to boron concentration not within limits, or due to an inability to verify the required water volume or nitrogen cover-pressure, restore the inoperable SIT to OPERABLE status with 72 hours; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With one SIT inoperable due to reasons other than those stated in ACTION-a, restore the inoperable SIT to OPERABLE status within 24 hours ; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.5.1 Each safety injection tank shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by:

1. Verifying that the borated water volume and nitrogen cover-pressure in the tanks are within their limits, and

2. Verifying that each safety injection tank isolation valve is open.

ECCS SUBSYSTEMS - OPERATING

LIMITING CONDITION FOR OPERATION

3.5.2 Two independent ECCS subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE high-pressure safety injection (HPSI) pump,

b. One OPERABLE low-pressure safety injection pump,

c. An independent OPERABLE flow path capable of taking suction from the refueling water tank on a Safety Injection Actuation Signal and automatically transferring suction to the containment sump on a Recirculation Actuation Signal, and

NOTE

One ECCS subsystem charging pump shall satisfy the flow path requirements of Specification 3.1.2.2.a or 3.1.2.2.d. The second ECCS subsystem charging pump shall satisfy the flow path requirements of Specification 3.1.2.2.b or 3.1.2.2.e.

d. One OPERABLE charging pump.

APPLICABILITY: MODES 1, 2 and 3 with pressurizer pressure ≥ 1750 psia.

ACTION:

a. 1. With one ECCS subsystem inoperable only because its associated LPSI train is inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

2. With one ECCS subsystem inoperable for reasons other than condition a.1., restore the inoperable subsystem to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

CONTAINMENT AIR LOCKS

LIMITING CONDITION FOR OPERATION

3.6.1.3 Each containment air lock shall be OPERABLE with:

a. Both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed, and

b. An overall air lock leakage rate in accordance with the Containment Leakage Rate Testing Program.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

NOTE
If the inner air lock door is inoperable, passage through the OPERABLE outer air lock door is permitted to effect repairs to the inoperable inner air lock door. No more than one air lock door shall be open at any time.

a. With one containment air lock door inoperable:

1. Maintain at least the OPERABLE air lock door closed and either restore the inoperable air lock door to OPERABLE status within 24 hours or lock the OPERABLE air lock door closed.

2. Operation may then continue until performance of the next required overall air lock leakage test provided that the OPERABLE air lock door is verified to be closed at least once per 31 days.

3. Otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

b. With one or both containment air lock(s) inoperable, except as the result of an inoperable air lock door, maintain at least one air lock door closed in the affected air lock(s) and restore the inoperable air lock(s) to OPERABLE status within 24 hours or in accordance with the Risk Informed Completion Time Program; otherwise be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

SURVEILLANCE REQUIREMENTS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY AND COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two containment spray trains and two containment cooling trains shall be OPERABLE.

APPLICABILITY:

Containment Spray System:	MODES 1, 2, and MODE 3 with Pressurizer Pressure ≥ 1750 psia.
Containment Cooling System:	MODES 1, 2, and 3.

ACTION:

1. Modes 1, 2, and 3 with Pressurizer Pressure ≥ 1750 psia:

   a. With one containment spray train inoperable, restore the inoperable spray train to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 54 hours.

   b. With one containment cooling train inoperable, restore the inoperable cooling train to OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.

   c. With one containment spray train and one containment cooling train inoperable, concurrently implement ACTIONS a. and b. The completion intervals for ACTION a. and ACTION b. shall be tracked separately for each train starting from the time each train was discovered inoperable.

> **NOTE**
> Action not applicable when second containment spray train intentionally made inoperable.

   d. With two containment spray trains inoperable, within 1 hour verify TS 3.7.7, "Control Room Emergency Ventilation System," is met, and restore at least one containment spray train to OPERABLE status within 24 hours; otherwise, be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.

   e. With two containment cooling trains inoperable, restore one cooling train to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.

2. Mode 3 with Pressurizer Pressure < 1750 psia:

   a. With one containment cooling train inoperable, restore the inoperable cooling train to OPERABLE status within 72 hours; otherwise be in MODE 4 within the next 6 hours.

   b. With two containment cooling trains inoperable, enter LCO 3.0.3 immediately.

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3.1 The containment isolation valves shall be OPERABLE:

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more of the isolation valve(s) inoperable, either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours or in accordance with the Risk Informed Completion Time Program, or

b. Isolate each affected penetration within 4 hours or in accordance with the Risk Informed Completion Time Program by use of at least one deactivated automatic valve secured in the isolation position, or

c. Isolate each affected penetration within 4 hours or in accordance with the Risk Informed Completion Time Program by use of at least one closed manual valve or blind flange; or

d. Be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

SURVEILLANCE REQUIREMENTS

4.6.3.1.1 The isolation valves shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of the cycling test, and verification of isolation time.

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

a. Two motor driven feedwater pumps, and

b. One feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With one auxiliary feedwater pump steam supply inoperable, restore the inoperable auxiliary feedwater pump steam supply to OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With one auxiliary feedwater pump inoperable, restore the auxiliary feedwater pump to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With one auxiliary feedwater pump steam supply inoperable and one motor-driven auxiliary feedwater pump inoperable, either restore the inoperable auxiliary feedwater pump steam supply OR restore the inoperable motor-driven auxiliary feedwater pump to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

d. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

NOTE

LCO 3.0.3 and all other LCO Actions requiring MODE changes are suspended until one AFW pump is restored to OPERABLE status.

e. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status.

f. LCO 3.0.4.b is not applicable.

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by:

MAIN STEAM LINE ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.5 Each main steam line isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

MODE 1 - With one main steam line isolation valve inoperable, POWER OPERATION may continue provided the inoperable valve is either restored to OPERABLE status or closed within 4 hours; otherwise, be in MODE 2 within the next 6 hours.

MODES 2 and 3 - With one or both main steam isolation valve(s) inoperable, subsequent operation in MODES 2 or 3 may continue provided:

1. The inoperable main steam isolation valves are closed within 8 hours, and
2. The inoperable main steam isolation valves are verified closed once per 7 days.

Otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.5 Each main steam line isolation valve that is open shall be demonstrated OPERABLE by verifying full closure within 6.0 seconds when tested pursuant to the INSERVICE TESTING PROGRAM.

PLANT SYSTEMS

3/4.7.3 COMPONENT COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.3.1 At least two independent component cooling water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only one component cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

SURVEILLANCE REQUIREMENTS

4.7.3.1 At least two component cooling water loops shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by verifying that each valve (manual, power operated or automatic) servicing safety related equipment that is not locked, sealed or otherwise secured in position, is in its correct position.

b. In accordance with the Surveillance Frequency Control Program during shutdown by verifying that each automatic valve servicing safety related equipment actuates to its correct position on a Safety Injection Actuation Signal.

3/4.7.4 INTAKE COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4.1 At least two independent intake cooling water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only one intake cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

SURVEILLANCE REQUIREMENTS

4.7.4.1 At least two intake cooling water loops shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by verifying that each valve (manual, power operated or automatic) servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position.

b. In accordance with the Surveillance Frequency Control Program during shutdown by verifying that each automatic valve servicing safety related equipment actuates to its correct position on a Safety Injection Actuation signal.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generator sets each with:

1. Engine-mounted fuel tanks containing a minimum of 152 gallons of fuel,

2. A separate fuel storage system containing a minimum of 19,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one offsite circuit of 3.8.1.1.a inoperable, except as provided in Action f. below, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the offsite circuit to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

NOTE
If the absence of any common-cause failure cannot be confirmed, Surveillance Requirement 4.8.1.1.2.a.4 shall be completed regardless of when the inoperable EDG is restored to OPERABILITY.

b. With one diesel generator of 3.8.1.1.b inoperable, demonstrate the OPERABILITY of the A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and if the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless it can be confirmed that the cause of the inoperable EDG does not exist on the remaining EDG; restore the diesel generator to OPERABLE status within 14 days or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. Additionally, within 4 hours from the discovery of concurrent inoperability of required redundant feature(s) (including the steam driven auxiliary feed pump in MODE 1, 2, and 3), declare required feature(s) supported by the inoperable EDG inoperable if its redundant required feature(s) is inoperable.

ACTION (continued)

NOTE
If the absence of any common-cause failure cannot be confirmed, Surveillance Requirement 4.8.1.1.2.a.4 shall be completed regardless of when the inoperable EDG is restored to OPERABILITY.

c. With one offsite A.C. circuit and one diesel generator inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and if the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours unless it can be confirmed that the cause of the inoperable EDG does not exist on the remaining EDG. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN. Restore the other A.C. power source (offsite circuit or diesel generator) to OPERABLE status in accordance with the provisions of Section 3.8.1.1 ACTION Statement a or b, as appropriate, with the time requirement of that ACTION Statement based on the time of the initial loss of the remaining inoperable A.C. power source. Additionally, within 4 hours from the discovery of concurrent inoperability of required redundant feature(s) (including the steam driven auxiliary feed pump in MODE 1, 2, and 3), declare required feature(s) supported by the inoperable EDG inoperable if its redundant required feature(s) is inoperable.

d. With two of the required offsite A.C. circuits inoperable, restore one of the inoperable offsite sources to OPERABLE status within 24 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite source, follow ACTION Statement a. with the time requirement of that ACTION Statement based on the time of the initial loss of the remaining inoperable offsite A.C. circuit.

ACTION (continued)

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in the at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN. Following restoration of one diesel generator unit, follow ACTION Statement b. with the time requirement of that ACTION Statement based on the time of initial loss of the remaining inoperable diesel generator.

f. With one Unit 1 startup transformer (1A or 1B) inoperable and with a Unit 2 startup transformer (2A or 2B) connected to the same A or B offsite power circuit and administratively available to both units, then should Unit 2 require the use of the startup transformer administratively available to both units, Unit 1 shall demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the inoperable startup transformer to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

g. LCO 3.0.4.b is not applicable to diesel generators.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE in accordance with the Surveillance Frequency Control Program by verifying correct breaker alignments, indicated power availability; and

b. Demonstrated OPERABLE in accordance with the Surveillance Frequency Control Program by transferring (manually and automatically) unit power supply from the auxiliary transformer to the startup transformer.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by:

1. Verifying fuel level in the engine-mounted fuel tank,

2. Verifying the fuel level in the fuel storage tank,

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the engine-mounted tank,

o. Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of frequencies of those Surveillance Requirements for which the frequency is controlled by the program.

b. Changes to the frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 4.0.2 and 4.0.3 are applicable to the frequencies established in the Surveillance Frequency Control Program.

p. Snubber Testing Program

This program conforms to the examination, testing and service life monitoring for dynamic restraints (snubbers) in accordance with 10 CFR 50.55a inservice inspection (ISI) requirements for supports. The program shall be in accordance with the following:

1. This program shall meet 10 CFR 50.55a(g) ISI requirements for supports.

2. The program shall meet the requirements for ISI of supports set forth in subsequent editions of the Code of Record and addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure (BPV) Code and the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code) that are incorporated by reference in 10 CFR 50.55a(b) subject to the conditions listed in 10 CFR 50.55a(b) and subject to Commission approval.

3. The program shall, as required by 10 CFR 50.55a(b)(3)(v), meet Subsection ISTA, "General Requirements" and Subsection ISTD, "Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants".

4. The 120-month program updates shall be made in accordance with 10 CFR 50.55a(g)(4), 10 CFR 50.55a(g)(3)(v) and 10 CFR 50.55a(b) (including 10 CFR 50.55a(b)(3)(v)) subject to the conditions listed therein.

q. Component Cyclic or Transient Limit Program

The program provides controls to track the FSAR, Section 5.2, cyclic and transient occurrences to ensure that components are maintained within the design limits.

r. Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b: Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0-A, November 2006. The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODES 1 and 2;

c. When a RICT is being used, any plant configuration change within the scope of the Configuration Risk Management Program must be considered for the effect on the RICT.

1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. Use of a RICT is not permitted for entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.

e. If the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

1. Numerically accounting for the increased possibility of CCF in the RICT calculation, or

2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

6.9 REPORTING REQUIREMENTS

ROUTINE REPORTS

6.9.1 In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following reports shall be submitted to the NRC.

STARTUP REPORT

6.9.1.1 A summary report of plant startup and power escalation testing shall be submitted following:

(1) receipt of an operating license,

(2) amendment of the license involving a planned increase in power level,

(3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and

(4) modifications that may have significantly altered the nuclear, thermal or hydraulic performance of the plant.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FLORIDA POWER & LIGHT COMPANY

ORLANDO UTILITIES COMMISSION OF
THE CITY OF ORLANDO, FLORIDA

AND

FLORIDA MUNICIPAL POWER AGENCY

DOCKET NO. 50-389

ST. LUCIE PLANT UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 199
Renewed License No. NPF-16

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Florida Power & Light Company; dated December 5, 2014; as supplemented by letters dated July 8 and July 22, 2016; February 15, 2017; and February 1, March 15, June 7, September 18, November 9, and November 30, 2018; complies with the standards and requirements of the Atomic Energy Act of 1954, as amended and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Atomic Energy Act of 1954, as amended, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Renewed Facility Operating License No. NPF-16 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and by amending paragraph 3.B and adding paragraph 3.O as follows:

   B. Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 199, are hereby incorporated in the renewed license. FPL shall operate the facility in accordance with the Technical Specifications.

   O. FPL is authorized to implement the Risk Informed Completion Time Program as approved in License Amendment No. 199 subject to the following conditions:

      1. FPL will complete the items listed in the table of implementation items in the enclosure to FPL letter L-2018-006 dated February 1, 2018 prior to implementation of the Risk Informed Completion Time Program.

         a. The items listed in the table of implementation items in the enclosure to FPL letter L-2018-006, "Third Response to Request for Additional Information Regarding License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk Informed Extended Completion Times – RITSTF Initiative 4b'," February 1, 2018, and

         b. The four implementation items listed in Attachment 1 to FPL letter L-2018-201, "Fourth Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," November 09, 2018.

      2. The risk assessment approach and methods shall be acceptable to the NRC; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience of the plant, as specified in RG 1.200. Methods to assess the risk from extending the completion times must be PRA methods accepted as part of this license amendment, or other methods approved by the NRC for generic use. If the licensee wishes to change its methods, and the change is outside the bounds of this license condition, the licensee will seek prior NRC approval via a license amendment.

3. This license amendment is effective as of its date of issuance and shall be implemented within 180 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Undine Shoop, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed
Facility Operating License
and Technical Specifications

Date of Issuance: July 2, 2019

ATTACHMENT TO LICENSE AMENDMENT NO. 199

ST. LUCIE PLANT UNIT NO. 2

RENEWED FACILITY OPERATING LICENSE NO. NPF-16

DOCKET NO. 50-389

Replace pages 3 and 9 of Renewed Facility Operating License No. NPF-16 with the attached pages 3, 9 and 10.

Replace the following pages of the Appendix A Technical Specifications with the attached page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove	Insert	Remove	Insert
XIX	XIX	3/4 5-1	3/4 5-1
3/4 1-8	3/4 1-8	3/4 5-3	3/4 5-3
3/4 3-3	3/4 3-3	3/4 6-9	3/4 6-9
3/4 3-12	3/4 3-12	3/4 6-14	3/4 6-14
3/4 3-13	3/4 3-13	3/4 6-15	3/4 6-15
3/4 3-14	3/4 3-14	3/4 6-19	3/4 6-19
3/4 3-15	3/4 3-15	3/4 7-4	3/4 7-4
3/4 3-16	3/4 3-16	3/4 7-9	3/4 7-9
3/4 3-16a	3/4 3-16a	3/4 7-13	3/4 7-13
3/4 3-16b	3/4 3-16b	3/4 7-14	3/4 7-14
3/4 3-18	3/4 3-18	3/4 8-1	3/4 8-1
3/4 3-22	3/4 3-22	3/4 8-2	3/4 8-2
3/4 3-42	3/4 3-42	3/4 8-3	3/4 8-3
3/4 4-8	3/4 4-8	6-16	6-16
3/4 4-10	3/4 4-10	--	6-16a

neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required.

D. Pursuant to the Act and 10 CFR Parts 30, 40, and 70, FPL to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

E. Pursuant to the Act and 10 CFR Parts 30, 40, and 70, FPL to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

3. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission's regulations: 10 CFR Part 20, Section 30.34 of 10 FR Part 30, Section 40.41 of 10 CFR Part 40, Section 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

A. Maximum Power Level

FPL is authorized to operate the facility at steady state reactor core power levels not in excess of 3020 megawatts (thermal).

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 199, are hereby incorporated in the renewed license. FPL shall operate the facility in accordance with the Technical Specifications.

NRC dated December 9, 2003, and October 29, 2004, in response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 6.15.d, shall be within 36 months in a staggered test basis, plus the 138 days allowed by SR 4.0.2, as measured from November 13, 2006, which is the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.

N. FATES3B Safety Analyses (Westinghouse fuel only)

FATES3B has been specifically approved for use for St. Lucie Unit 2 licensing basis analyses based on FPL maintaining the more restrictive operational/design radial power fall-off curve limits as specified in Attachment 4 to FPL Letter L-2012-121, dated March 31, 2012 as compared to the FATES3B analysis radial power fall-off curve limits. The radial power fall-off curve limits shall be verified each cycle as part of the Reload Safety Analysis Checklist (RSAC) process.

O. FPL is authorized to implement the Risk Informed Completion Time Program as approved in License Amendment No. 199 subject to the following conditions:

1. FPL will complete the items listed in the table of implementation items in the enclosure to FPL letter L-2018-006 dated February 1, 2018 prior to implementation of the Risk Informed Completion Time Program.

   a. The items listed in the table of implementation items in the enclosure to FPL letter L-2018-006, "Third Response to Request for Additional Information Regarding License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk Informed Extended Completion Times – RITSTF Initiative 4b'," February 1, 2018, and

   b. The four implementation items listed in Attachment 1 to FPL letter L-2018-201, "Fourth Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," November 09, 2018.

2. The risk assessment approach and methods shall be acceptable to the NRC; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience of the plant, as specified in RG 1.200. Methods to assess the risk from extending the completion times must be PRA methods accepted as part of this license amendment, or other methods approved by the NRC for generic use. If the licensee wishes to change its methods, and the change is outside the bounds of this license condition, the licensee will seek prior NRC approval via a license amendment.

4. This renewed license is effective as of the date of issuance, and shall expire at midnight April 6, 2043.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by

J. E. Dyer, Director

Office of Nuclear Reactor Regulation

Attachments:
1. Appendix A, Technical Specifications
2. Appendix B, Environmental Protection Plan
3. Appendix C, Antitrust Conditions
4. Appendix D, Antitrust Conditions

Date of Issuance: October 2, 2003

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FLOW PATHS – OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.2 At least two of the following three boron injection flow paths shall be OPERABLE:

a. One flow path from the boric acid makeup tank(s) with the tank meeting Specification 3.1.2.8 part a) or b), via a boric acid makeup pump through a charging pump to the Reactor Coolant System.

b. One flow path from the boric acid makeup tank(s) with the tank meeting Specification 3.1.2.8 part a) or b), via a gravity feed valve through a charging pump to the Reactor Coolant System.

c. The flow path from the refueling water tank via a charging pump to the Reactor Coolant System.

OR

At least two of the following three boron injection flow paths shall be OPERABLE:

d. One flow path from each boric acid makeup tank with the combined tank contents meeting Specification 3.1.2.8 c), via both boric acid makeup pumps through a charging pump to the Reactor Coolant System.

e. One flow path from each boric acid makeup tank with the combined tank contents meeting Specification 3.1.2.8 c), via both gravity feed valves through a charging pump to the Reactor Coolant System.

f. The flow path from the refueling water tank, via a charging pump to the Reactor Coolant System.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only one of the above required boron injection flow paths to the Reactor Coolant System OPERABLE, restore at least two boron injection flow paths to the Reactor Coolant System to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to its COLR limit at 200 °F within the next 6 hours; restore at least two flow paths to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

TABLE NOTATION

* With the protective system trip breakers in the closed position, the CEA drive system capable of CEA withdrawal, and fuel in the reactor vessel.

** Mode 1 applicable only when Power Range Neutron Flux power ≤ 15% of RATED THERMAL POWER.

(a) Trip may be manually bypassed below 0.5% of RATED THERMAL POWER in conjunction with (d) below; bypass shall be automatically removed when Wide Range Logarithmic Neutron Flux power is greater than or equal to 0.5% of RATED THERMAL POWER.

(b) Trip may be manually bypassed below 705 psig; bypass shall be automatically removed at or above 705 psig.

(c) Trip may be bypassed below 15% of RATED THERMAL POWER; bypass shall be automatically removed when Power Range Neutron Flux power is greater than or equal to 15% of RATED THERMAL POWER.

(d) Trip may be bypassed during testing pursuant to Special Test Exception 3.10.3.

(e) Trip may be bypassed below 10^{-4}% and above 15% of RATED THERMAL POWER; bypass shall be automatically removed when Wide Range Logarithmic Neutron Flux power is $\geq 10^{-4}$% and Power Range Neutron Flux power $\leq$ 15% of RATED THERMAL POWER.

(f) Each channel shall be comprised of two trip breakers; actual trip logic shall be one-out-of-two taken twice.

(g) There shall be at least two decades of overlap between the Wide Range Logarithmic Neutron Flux Monitoring Channels and the Power Range Neutron Flux Monitoring Channels.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and/or open the protective system trip breakers.

TABLE 3.3-3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION (SIAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	12
b. Containment Pressure – High	4	2	3	1, 2, 3	13, 14
c. Pressurizer Pressure – Low	4	2	3	1, 2, 3(a)	13, 14
d. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	12
2. CONTAINMENT SPRAY (CSAS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3, 4	12
b. Containment Pressure – High-High	4	2	3	1(b), 2(b), 3(b)	18A, 18B
c. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	12
3. CONTAINMENT ISOLATION (CIAS)					
a. Manual CIAS (Trip Buttons)	2	1	2	1, 2, 3, 4	12
b. Safety Injection (SIAS)	See Functional Unit 1 for all Safety Injection Initiating Functions and Requirements				
c. Containment Pressure – High	4	2	3	1, 2, 3	13, 14
d. Containment Radiation – High	4	2	3	1, 2, 3	13, 14
e. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	12

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. MAIN STEAM LINE ISOLATION (MSIS)					
a. Manual (Trip Buttons)	2	1	2	1, 2, 3	16
b. Steam Generator Pressure – Low	4/steam generator	2/steam generator	3/steam generator	1, 2, 3(c)	13, 14
c. Containment Pressure – High	4	2	3	1, 2, 3	13, 14
d. Automatic Actuation Logic	2	1	2	1, 2, 3	12
5. CONTAINMENT SUMP RECIRCULATION (RAS)					
a. Manual RAS (Trip Buttons)	2	1	2	1, 2, 3, 4	12
b. Refueling Water Tank - Low	4	2	3	1, 2, 3	19
c. Automatic Actuation Logic	2	1	2	1, 2, 3	12

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. LOSS OF POWER (LOV)					
a. (1) 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	2/Bus	2/Bus	1/Bus	1, 2, 3	17A
(2) 480 V Emergency Bus Undervoltage (Loss of Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17B
b. (1) 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17B
(2) 480 V Emergency Bus Undervoltage (Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3	17B
7. AUXILIARY FEEDWATER (AFAS)					
a. Manual (Trip Buttons)	4/SG	2/SG	4/SG	1, 2, 3	15
b. Automatic Actuation Logic	4/SG	2/SG	3/SG	1, 2, 3	15
c. SG Level (2A/2B) – Low	4/SG	2/SG	3/SG	1, 2, 3	20a, 20b, 21
8. AUXILIARY FEEDWATER ISOLATION					
a. SG 2A – SG 2B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	20a, 20b, 21
b. Feedwater Header 2A – 2B Differential Pressure	4/SG	2/SG	3/SG	1, 2, 3	20a, 21

TABLE 3.3-3 (Continued)

TABLE NOTATION

(a) Trip function may be bypassed in this MODE when pressurizer pressure is less than 1836 psia; bypass shall be automatically removed when pressurizer pressure is greater than or equal to 1836 psia.

(b) An SIAS signal is first necessary to enable CSAS logic.

(c) Trip function may be bypassed in this MODE below 700 psia; bypass shall be automatically removed at or above 700 psia.

ACTION OF STATEMENTS

ACTION 12 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit	**Functional Unit Bypassed**
1. Containment Pressure -	Containment Pressure – High (SIAS, CIAS, CSAS) Containment Pressure – High (RPS)
2. Steam Generator Pressure -	Steam Generator Pressure – Low (MSIS) AFAS-1 and AFAS-2 (AFAS) Thermal Margin/Low Pressure (RPS) Steam Generator Pressure – Low (RPS)
3. Steam Generator Level -	Steam Generator Level – Low (RPS) If SG-2A, then AFAS-1 (AFAS) If SG-2B, then AFAS-2 (AFAS)
4. Pressurizer Pressure -	Pressurizer Pressure – High (RPS) Pressurizer Pressure – Low (SIAS) Thermal Margin/Low Pressure (RPS)

TABLE 3.3-3 (Continued)

TABLE NOTATION

ACTION 14 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour.

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below.

Process Measurement Circuit	**Functional Unit Bypassed/Tripped**
1. Containment Pressure -	Containment Pressure – High (SIAS, CIAS, CSAS) Containment Pressure – High (RPS)
2. Steam Generator Pressure -	Steam Generator Pressure – Low (MSIS) AFAS-1 and AFAS-2 (AFAS) Thermal Margin/Low Pressure (RPS) Steam Generator Pressure – Low (RPS)
3. Steam Generator Level -	Steam Generator Level – Low (RPS) If SG-2A, then AFAS-1 (AFAS) If SG-2B, then AFAS-2 (AFAS)
4. Pressurizer Pressure -	Pressurizer Pressure – High (RPS) Pressurizer Pressure – Low (SIAS) Thermal Margin/Low Pressure (RPS)

ACTION 15 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

ACTION 17A - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or place the inoperable channel in the tripped condition and verify that the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

TABLE 3.3-3 (Continued)

TABLE NOTATION

ACTION 17B - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or place the inoperable channel in the tripped condition and verify that the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

ACTION 18A - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour. If the inoperable channel can not be restored to OPERABLE status within 48 hours, then place the inoperable channel in the tripped condition.

b. With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed in ACTION 13.

ACTION 18B - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 19 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. Within 1 hour the inoperable channel is placed in either the bypassed or tripped condition. If OPERABILITY cannot be restored within 48 hours or in accordance with the Risk Informed Completion Time Program, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

TABLE 3.3-3 (Continued)

TABLE NOTATION

ACTION 20 - With the number of channels OPERABLE one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If an inoperable SG level channel can not be restored to OPERABLE status within 48 hours, then AFAS-1 or AFAS-2 as applicable in the inoperable channel shall be placed in the bypassed condition. If an inoperable SG DP or FW Header DP channel can not be restored to OPERABLE status within 48 hours, then both AFAS-1 and AFAS-2 in the inoperable channel shall be placed in the bypassed condition. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

b With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed in ACTION 13.

ACTION 21 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

FUNCTIONAL UNIT	TRIP VALUE	ALLOWABLE VALUES
5. CONTAINMENT SUMP RECIRCULATION (RAS)		
a. Manual RAS (Trip Buttons)	Not Applicable	Not Applicable
b. Refueling Water Tank – Low	5.67 feet above tank bottom	4.62 feet to 6.24 feet above tank bottom
c. Automatic Actuation Logic	Not Applicable	Not Applicable
6. LOSS OF POWER		
a. (1) 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	≥ 3120 volts	≥ 3120 volts
(2) 480 V Emergency Bus Undervoltage (Loss of Voltage)	≥ 360 volts	≥ 360 volts
b. (1) 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	≥ 3848 volts with < 10-second time delay	≥ 3848 volts with < 10-second time delay
(2) 480 V Emergency Bus Undervoltage (Degraded Voltage)	≥ 432 volts	≥ 432 volts
7. AUXILIARY FEEDWATER (AFAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. SG 2A & 2B Level Low	≥ 19.0%	≥ 18.0 %
8. AUXILIARY FEEDWATER ISOLATION		
a. Steam Generator ΔP – High	≤ 275 psid	89.2 to 281 psid
b. Feedwater Header ΔP – High	≤ 150.0 psid	56.0 to 157.5 psid

TABLE 4.3-2

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. SAFETY INJECTION (SIAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Containment Pressure – High	SFCP	SFCP	SFCP	1, 2, 3
c. Pressurizer Pressure – Low	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic	N.A.	N.A.	SFCP(1), SFCP(3)	1, 2, 3, 4
2. CONTAINMENT SPRAY (CSAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Containment Pressure – High-High	SFCP	SFCP	SFCP	1, 2, 3
c. Automatic Actuation Logic	N.A.	N.A.	SFCP(1), SFCP(3)	1, 2, 3, 4
3. CONTAINMENT ISOLATION (CIAS)				
a. Manual CIAS (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Safety Injection SIAS	N.A.	N.A.	SFCP	1, 2, 3, 4
c. Containment Pressure – High	SFCP	SFCP	SFCP	1, 2, 3
d. Containment Radiation – High	SFCP	SFCP	SFCP	1, 2, 3
e. Automatic Actuation Logic	N.A.	N.A.	SFCP(1), SFCP(3)	1, 2, 3, 4
4. MAIN STEAM LINE ISOLATION				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3
b. Steam Generator Pressure – Low	SFCP	SFCP	SFCP	1, 2, 3
c. Containment Pressure – High	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic	N.A.	N.A.	SFCP(1), SFCP(3)	1, 2, 3, 4
5. CONTAINMENT SUMP RECIRCULATION (RAS)				
a. Manual RAS (Trip Buttons)	N.A.	N.A.	SFCP	N.A.
b. Refueling Water Tank – Low	SFCP	SFCP	SFCP	1, 2, 3
c. Automatic Actuation Logic	N.A.	N.A.	SFCP(1), SFCP(3)	1, 2, 3

TABLE 3.3-10

ACCIDENT MONITORING INSTRUMENTATION

	INSTRUMENT	REQUIRED NUMBER OF CHANNELS	MINIMUM CHANNELS OPERABLE
1.	Containment Pressure	2	1
2.	Reactor Coolant Outlet Temperature – T_{Hot} (Wide Range)	2	1
3.	Reactor Coolant Inlet Temperature – T_{Cold} (Wide Range)	2	1
4.	Reactor Coolant Pressure – Wide Range	2	1
5.	Pressurizer Water Level	2	1
6.	Steam Generator Pressure	2/steam generator	1/steam generator
7.	Steam Generator Water Level – Narrow Range	1/steam generator	1/steam generator
8.	Steam Generator Water Level – Wide Range	1/steam generator*	1/steam generator*
9.	Refueling Water Tank Water Level	2	1
10.	Auxiliary Feedwater Flow Rate (Each pump)	1/pump*	1/pump*
11.	Reactor Cooling System Subcooling Margin Monitor	2	1
12.	PORV Position/Flow Indicator	2/valve***	1/valve**
13.	PORV Block Valve Position Indicator	1/valve**	1/valve**
14.	Safety Valve Position/Flow Indicator	1/valve***	1/valve***
15.	Containment Sump Water Level (Narrow Range)	1****	1****
16.	Containment Water Level (Wide Range)	2	1
17.	Incore Thermocouples	4/core quadrant	2/core quadrant
18.	Reactor Vessel Level Monitoring System	2*****	1*****

* These corresponding instruments may be substituted for each other.

** Not required if the PORV block valve is shut and power is removed from the operator.

*** If not available, monitor the quench tank pressure, level and temperature, and each safety valve/PORV discharge piping temperature at least once every 12 hours.

**** The non-safety grade containment sump water level instrument may be substituted.

***** Definition of OPERABLE: A channel consists of eight (8) sensors in a probe of which four (4) sensors must be OPERABLE.

LIMITING CONDITION FOR OPERATION

> **NOTE**
> The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

3.4.2.2 All pressurizer code safety valves shall be OPERABLE with a lift setting of ≥ 2410.3 psig and ≤ 2560.3 psig.

APPLICABILITY: MODES 1, 2, 3, and 4 with all RCS cold leg temperatures > 230°F.

ACTION:

a. With one pressurizer code safety valve inoperable, either restore the inoperable valve to OPERABLE status within 15 minutes or be in HOT STANDBY within 6 hours and in HOT SHUTDOWN within the next 6 hours.

b. With two or more pressurizer code safety valves inoperable, be in HOT STANDBY within 6 hours and in HOT SHUTDOWN with all RCS cold leg temperatures at ≤ 230°F within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.4.2.2 Verify each pressurizer code safety valve is OPERABLE in accordance with the INSERVICE TESTING PROGRAM. Following testing, as-left lift settings shall be within +/- 1% of 2500 psia.

3/4.4.4 PORV BLOCK VALVES

LIMITING CONDITION FOR OPERATION

3.4.4 Each Power Operated Relief Valve (PORV) Block valve shall be OPERABLE. No more than one block valve shall be open at any one time.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With one or more block valve(s) inoperable, within 1 hour or in accordance with the Risk Informed Completion Time Program either restore the block valve(s) to OPERABLE status or close the block valve(s) and remove power from the block valve(s); otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With both block valves open, close one block valve within 1 hour, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.4 Each block valve shall be demonstrated OPERABLE in accordance with the Surveillance Frequency Control Program by operating the valve through one complete cycle of full travel unless the block valve is closed with power removed in order to meet the requirements of Action a. or b. above.

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3/4.5.1 SAFETY INJECTION TANKS (SITs)

LIMITING CONDITION FOR OPERATION

3.5.1 Each Reactor Coolant System safety injection tank shall be OPERABLE with:

a. The isolation valve open,

b. A contained borated water volume of between 1420 and 1556 cubic feet,

c. A boron concentration of between 1900 and 2200 ppm of boron, and

d. A nitrogen cover-pressure of between 500 and 650 psig.

NOTE
When in MODE 3 with pressurizer pressure is less than 1750 psia, at least three safety injection tanks shall be OPERABLE, each with a minimum pressure of 235 psig and a maximum pressure of 650 psig and a contained water volume of between 1250 and 1556 cubic feet with a boron concentration of between 1900 and 2200 ppm of boron. With all four safety injection tanks OPERABLE, each tank shall have a minimum pressure of 235 psig and a maximum pressure of 650 psig and a contained water volume of between 833 and 1556 cubic feet with a boron concentration of between 1900 and 2200 ppm of boron.

APPLICABILITY: MODES 1, 2 and 3 with pressurizer pressure ≥ 1750 psia.

ACTION:

a. With one SIT inoperable due to boron concentration not within limits, or due to an inability to verify the required water volume or nitrogen cover-pressure, restore the inoperable SIT to OPERABLE status with 72 hours; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With one SIT inoperable due to reasons other than those stated in ACTION-a, restore the inoperable SIT to OPERABLE status within 24 hours; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.5.1.1 Each safety injection tank shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by:

1. Verifying that the borated water volume and nitrogen cover-pressure in the tanks are within their limits, and

2. Verifying that each safety injection tank isolation valve is open.

3/4.5.2 ECCS SUBSYSTEMS - OPERATING

LIMITING CONDITION FOR OPERATION

3.5.2 Two independent Emergency Core Cooling System (ECCS) subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE high pressure safety injection pump,

b. One OPERABLE low pressure safety injection pump, and

c. An independent OPERABLE flow path capable of taking suction from the refueling water tank on a Safety Injection Actuation Signal and automatically transferring suction to the containment sump on a Recirculation Actuation Signal, and

> **NOTE**
> One ECCS subsystem charging pump shall satisfy the flow path requirements of Specification 3.1.2.2.a or 3.1.2.2.d. The second ECCS subsystem charging pump shall satisfy the flow path requirements of Specification 3.1.2.2.b or 3.1.2.2.e.

d. One OPERABLE charging pump.

APPLICABILITY: MODES 1, 2, and 3 with pressurizer pressure ≥ 1750 psia.

ACTION:

a. 1. With one ECCS subsystem inoperable only because its associated LPSI train is inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

2. With one ECCS subsystem inoperable for reasons other than condition a.1., restore the inoperable subsystem to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected safety injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

CONTAINMENT SYSTEMS

CONTAINMENT AIR LOCKS

LIMITING CONDITION FOR OPERATION

3.6.1.3 Each containment air lock shall be OPERABLE with:

a. Both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed, and

b. An overall air lock leakage rate in accordance with the Containment Leakage Rate Testing Program.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

NOTE
If the inner air lock door is inoperable, passage through the OPERABLE outer air lock door is permitted to effect repairs to the inoperable inner air lock door. No more than one airlock door shall be open at any time.

a. With one containment air lock door inoperable:

1. Maintain at least the OPERABLE air lock door closed and either restore the inoperable air lock door to OPERABLE status within 24 hours or lock the OPERABLE air lock door closed.

2. Operation may then continue until performance of the next required overall air lock leakage test provided that the OPERABLE air lock door is verified to be locked closed at least once per 31 days.

3. Otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

b. With one or both containment air lock(s) inoperable, except as the result of an inoperable air lock door, maintain at least one air lock door closed in the affected air lock(s) and restore the inoperable air lock(s) to OPERABLE status within 24 hours or in accordance with the Risk Informed Completion Time Program; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

CONTAINMENT SYSTEMS

CONTAINMENT VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.7 Each containment purge supply and exhaust isolation valve shall be OPERABLE and:

a. Each 48-inch containment purge supply and exhaust isolation valve shall be sealed closed.

b. The 8-inch containment purge supply and exhaust isolation valves may be open for purging and/or venting as required for safety related purposes such as:

1. Maintaining containment pressure within the limits of Specification 3.6.1.4.

2. Reducing containment atmosphere airborne radioactivity and/or improving air quality to an acceptable level for containment access.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With a 48-inch containment purge supply and/or exhaust isolation valve(s) open or not sealed closed, close and/or seal close the open valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With an 8-inch containment purge supply and/or exhaust isolation valve(s) open for reasons other than those stated in Specification 3.6.1.7.b, close the open 8-inch valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With a containment purge supply and/or exhaust isolation valve(s) having a measured leakage rate exceeding the limits of Surveillance Requirements 4.6.1.7.3 and/or 4.6.1.7.4, within 24 hours either restore the inoperable valve(s) to OPERABLE status or isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve with resilient seals or blind flange, verify the affected penetration flowpath is isolated, and perform Surveillance Requirement 4.6.1.7.3 or 4.6.1.7.4 for resilient seated valves closed to isolate the penetration flowpath, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

1. Closed and de-activated automatic valve(s) with resilient seals used to isolate the penetration flowpath(s) shall be tested in accordance with either Surveillance Requirement 4.6.1.7.3 for 48-inch valves at least once per 6 months or Surveillance Requirement 4.6.1.7.4 for 8-inch valves at least once per 92 days.

> **NOTE**
> Verification of isolation devices by administrative means is acceptable when they are located in high radiation areas or they are locked, sealed, or otherwise secured by administrative means.

2. Verify the affected penetration flowpath is isolated once per 31 days following isolation for isolation devices outside containment and prior to entering MODE 4 from MODE 5 for isolation devices inside containment if not performed within the previous 92 days.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY AND COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two containment spray trains and two containment cooling trains shall be OPERABLE.

APPLICABILITY: Containment Spray System: MODES 1, 2, and MODE 3 with Pressurizer Pressure ≥ 1750 psia.

Containment Cooling System: MODES 1, 2, and 3.

ACTION:

1. Modes 1, 2, and 3 with Pressurizer Pressure ≥ 1750 psia:

   a. With one containment spray train inoperable, restore the inoperable spray train to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 54 hours.

   b. With one containment cooling train inoperable, restore the inoperable cooling train to OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.

   c. With one containment spray train and one containment cooling train inoperable, concurrently implement ACTIONS a. and b. The completion intervals for ACTION a. and ACTION b. shall be tracked separately for each train starting from the time each train was discovered inoperable.

NOTE

Action not applicable when second containment spray train intentionally made inoperable.

   d. With two containment spray trains inoperable, within 1 hour verify TS 3.7.7, "CREACS," is met, and restore at least one containment spray train to OPERABLE status within 24 hours; otherwise, be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.

   e. With two containment cooling trains inoperable, restore one cooling train to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.

   f. With any combination of three or more trains inoperable, enter LCO 3.0.3 immediately.

2. Mode 3 with Pressurizer Pressure < 1750 psia:

   a. With one containment cooling train inoperable, restore the inoperable cooling train to OPERABLE status within 72 hours; otherwise be in MODE 4 within the next 6 hours.

   b. With two containment cooling trains inoperable, enter LCO 3.0.3 immediately.

CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 The containment isolation valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more of containment isolation valve(s) inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours or in accordance with the Risk Informed Completion Time Program, or

b. Isolate each affected penetration within 4 hours or in accordance with the Risk Informed Completion Time Program by use of at least one deactivated automatic valve secured in the isolation position, or

c. Isolate each affected penetration within 4 hours or in accordance with the Risk Informed Completion Time Program by use of at least one closed manual valve or blind flange; or

d. Be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

SURVEILLANCE REQUIREMENTS

4.6.3.1 The containment isolation valves shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of a cycling test and verification of isolation time.

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

a. Two feedwater pumps, each capable of being powered from separate OPERABLE emergency busses, and

b. One feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one auxiliary feedwater pump steam supply inoperable, restore the inoperable auxiliary feedwater pump steam supply to OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With one auxiliary feedwater pump inoperable, restore the auxiliary feedwater pump to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

c. With one auxiliary feedwater pump steam supply inoperable and one motor-driven auxiliary feedwater pump inoperable, either restore the inoperable auxiliary feedwater pump steam supply OR restore the inoperable motor-driven auxiliary feedwater pump to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

d. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

NOTE

LCO 3.0.3 and all other LCO Actions requiring MODE changes are suspended until one AFW pump is restored to OPERABLE status.

e. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status.

f. LCO 3.0.4.b is not applicable.

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by:

1. Verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

MAIN STEAM LINE ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.5 Each main steam line isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

MODE 1 - With one main steam line isolation valve inoperable but open, POWER OPERATION may continue provided the inoperable valve is restored to OPERABLE status within 4 hours; otherwise, be in at least MODE 2 within the next 6 hours.

MODES 2, 3 and 4 - With one or both main steam isolation valve(s) inoperable, subsequent operation in MODES 2, 3 or 4 may proceed provided:

1. The inoperable main steam isolation valves are closed within 8 hours, and
2. The inoperable main steam isolation valves are verified closed once per 7 days.

Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.5 Each main steam line isolation valve shall be demonstrated OPERABLE by verifying full closure within 6.75 seconds when tested pursuant to the INSERVICE TESTING PROGRAM.

PLANT SYSTEMS

3/4.7.3 COMPONENT COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

NOTE
When CCW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves shall be verified to be consistent with the appropriate power supply at least once per 24 hours. Upon receipt of annunciation for improper alignment of the pump 2C motor power in relation to any of its motor-operated discharge valves positions, restore proper system alignment within 2 hours.

3.7.3 At least two independent component cooling water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With only one component cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

SURVEILLANCE REQUIREMENTS

4.7.3 At least two component cooling water loops shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by verifying that each valve (manual, power-operated or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position.

b. In accordance with the Surveillance Frequency Control Program during shutdown by verifying that each automatic valve servicing safety-related equipment actuates to its correct position on an SIAS test signal.

3/4.7.4 INTAKE COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

> **NOTE**
> When ICW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves must be verified to be consistent with the appropriate power supply at least once per 24 hours.

3.7.4 At least two independent intake cooling water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With only one intake cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

SURVEILLANCE REQUIREMENTS

4.7.4 At least two intake cooling water loops shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed or otherwise secured in position, is in its correct position.

b. In accordance with the Surveillance Frequency Control Program during shutdown, by verifying that each automatic valve servicing safety-related equipment actuates to its correct position on a SIAS test signal.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. Two separate engine-mounted fuel tanks containing a minimum volume of 238 gallons of fuel each,

2. A separate fuel storage system containing a minimum volume of 42,500 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one offsite circuit of 3.8.1.1.a inoperable, except as provided in Action f. below, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the offsite circuit to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

NOTE
If the absence of any common-cause failure cannot be confirmed, Surveillance Requirement 4.8.1.1.2.a.4 shall be completed regardless of when the inoperable EDG is restored to OPERABILITY.

b. With one diesel generator of 3.8.1.1.b inoperable, demonstrate the OPERABILITY of the A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and if the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless it can be confirmed that the cause of the inoperable EDG does not exist on the remaining EDG; restore the diesel generator to OPERABLE status within 14 days or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN. Additionally, within 4 hours from the discovery of concurrent inoperability of required redundant feature(s) (including the steam driven auxiliary feed pump in MODE 1, 2, and 3), declare required feature(s) supported by the inoperable EDG inoperable if its redundant required feature(s) is inoperable.

ACTION: (Continued)

NOTE
If the absence of any common-cause failure cannot be confirmed, Surveillance Requirement 4.8.1.1.2.a.4 shall be completed regardless of when the inoperable EDG is restored to OPERABILITY.

c. With one offsite A.C. circuit and one diesel generator inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and if the EDG became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless it can be confirmed that the cause of the inoperable EDG does not exist on the remaining EDG. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN. Restore the other A.C. power source (offsite circuit or diesel generator) to OPERABLE status in accordance with the provisions of Section 3.8.1.1 ACTION Statement a or b, as appropriate, with the time requirement of that ACTION Statement based on the time of the initial loss of the remaining inoperable A.C. power source. Additionally, within 4 hours from the discovery of concurrent inoperability of required redundant feature(s) (including the steam driven auxiliary feed pump in MODE 1, 2, and 3), declare required feature(s) supported by the inoperable EDG inoperable if its redundant required feature(s) is inoperable.

ACTION: (Continued)

d. With two of the required offsite A.C. circuits inoperable, restore one of the inoperable offsite sources to OPERABLE status within 24 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite source, follow ACTION Statement a. with the time requirement of that ACTION Statement based on the time of the initial loss of the remaining inoperable offsite A.C. circuit.

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in the at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN. Following restoration of one diesel generator unit, follow ACTION Statement b. with the time requirement of that ACTION Statement based on the time of initial loss of the remaining inoperable diesel generator.

f. With one Unit 2 startup transformer (2A or 2B) inoperable and with a Unit 1 startup transformer (1A or 1B) connected to the same A or B offsite power circuit and administratively available to both units, then should Unit 1 require the use of the startup transformer administratively available to both units, Unit 2 shall demonstrate the operability of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter. Restore the inoperable startup transformer to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

g. LCO 3.0.4.b is not applicable to diesel generators.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE in accordance with the Surveillance Frequency Control Program by verifying correct breaker alignments, indicated power availability; and

b. Demonstrated OPERABLE in accordance with the Surveillance Frequency Control Program by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by:

q. Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of frequencies of those Surveillance Requirements for which the frequency is controlled by the program.

b. Changes to the frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 4.0.2 and 4.0.3 are applicable to the frequencies established in the Surveillance Frequency Control Program.

r. Component Cyclic or Transient Limit Program

The Program provides controls to track the FSAR, Section 3.9, cyclic and transient occurrences to ensure that components are maintained within the design limits.

s. Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b: Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0-A, November 2006. The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODES 1 and 2;

c. When a RICT is being used, any plant configuration change within the scope of the Configuration Risk Managment Program must be considered for the effect on the RICT.

   1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

   2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

   3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. Use of a RICT is not permitted for entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.

e. If the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

1. Numerically accounting for the increased possibility of CCF in the RICT calculation, or

2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

6.9 REPORTING REQUIREMENTS

ROUTINE REPORTS

6.9.1 In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following reports shall be submitted to the NRC.

STARTUP REPORT

6.9.1.1 A summary report of plant startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier; and (4) modifications that may have significantly altered the nuclear, thermal or hydraulic performance of the plant.

6.9.1.2 The startup report shall address each of the tests identified in the FSAR and shall include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described. Any additional specific details required in license conditions based on other commitments shall be included in this report.

6.9.1.3 Startup reports shall be submitted within (1) 90 days following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) 9 months following initial criticality, whichever is earliest. If the Startup Report does not cover all three events (i.e., initial criticality, completion of startup test program, and resumption or commencement of commercial operation), supplementary reports shall be submitted at least every three months until all three events have been completed.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 247 AND 199

TO RENEWED FACILITY OPERATING LICENSES NOS. DPR-67 AND NPF-16

FLORIDA POWER AND LIGHT COMPANY, ET AL.

ST. LUCIE PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-335 AND 50-389

1.0 INTRODUCTION

By license amendment request (LAR) dated December 5, 2014 (Reference 1); as supplemented by letters dated July 8 (Reference 2), and July 22, 2016 (Reference 3); February 25, 2017 (Reference 4); February 1 (Reference 5), March 15 (Reference 6); June 7 (Reference 7), September 18 (Reference 8), November 9 (Reference 9), and November 30, 2018 (Reference 10)(collectively referred to as the LAR, as supplemented); Florida Power & Light Company (FPL or the licensee) requested changes to the Technical Specifications (TSs) for St. Lucie Plant, Unit Nos. 1 and 2 (St. Lucie 1 and 2), which are contained in Appendix A of Renewed Facility Operating Licenses DPR-67 and NPF-16. The licensee originally proposed to adopt, with plant-specific variations, Technical Specification Task Force (TSTF) Traveler TSTF-505, Revision 1, "Provide Risk-Informed Extended Completion Times – RITSTF [Risk Informed TSTF] Initiative 4b" (Reference 11). The NRC published in the *Federal Register* (FR) a notice of availability of the model safety evaluation (SE) for plant-specific adoption of TSTF-505, Revision 1 on March 15, 2012 (77 FR 15399).

On February 22 and 23, 2016, the U.S. Nuclear Regulatory Commission (NRC) staff and its contractors from the Pacific Northwest National Laboratory participated in a regulatory audit at the NextEra Energy Offices in Juno Beach, Florida. The NRC staff performed the audit to ascertain the information needed to support its review of the application and develop requests for additional information (RAIs), as needed. The NRC staff's summary of this audit was issued on June 14, 2018 (Reference 12). By electronic mail (e-mail) dated March 28 (Reference 13), April 13 (Reference 14), and May 27, 2016 (Reference 15), the NRC sent the licensee RAIs. By letters dated July 8 and July 22, 2016, the licensee responded to the RAIs.

By letter dated November 15, 2016 (Reference 16), the staff informed the TSTF of its decision to suspend NRC approval of TSTF-505, Revision 1 because of concerns identified during the review of plant-specific license amendment requests for adoption of the traveler. The NRC staff's letter also stated that it would continue reviewing applications already received and site-specific proposals to address the staff's concerns. By letter dated February 15, 2017, the licensee supplemented its application to address the staff's concerns in the letter dated November 15, 2016. By e-mails dated October 4, 2017 (Reference 17), and February 1, 2018 (Reference 18), the NRC sent the licensee RAIs. By letters dated February 1, March 15, and

June 7, 2018, the licensee responded to the RAIs. From May 22 through June 7, 2018, the NRC staff conducted an audit via an online reference portal provided by the licensee. The purpose of the audit was to review the final report developed using, "Appendix X to Nuclear Energy Institute (NEI) 05-04, NEI 07-12 and NEI 12-13, 'Close-Out of Facts and Observations'" (Reference 19), for additional information related to facts and observations (F&Os) identified in Enclosure 2, Attachment A of the LAR. The NRC staff's summary of this audit was issued on July 23, 2018 (Reference 20). By letter dated September 18, 2018, the licensee provided additional information in response to the NRC staff's audit.

The licensee's letters dated September 18, November 9, and November 30, 2018, provided clarifying information that did not expand the scope of the application and did not change the NRC staff's original proposed no significant hazards consideration determination, as published in the FR on August 14, 2018 (83 FR 40350).

2.0 REGULATORY EVALUATION

2.1. Description of Risk-Informed Completion Times (RICTs) in Technical Specifications

Paragraphs 1.19 of the St. Lucie 1 and 2 TSs each define operable/operability thusly:

> OPERABLE - OPERABILITY
>
> 1.19 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).

As noted in the TS, terms that have a TS definition appear in capitalized type and are applicable throughout the TS. This SE uses the same convention, thus the terms OPERABLE and OPERABILITY refer to the definition in TS 1.19, as shown above.

The TSs contain limiting conditions for operation (LCOs), which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO is not met (e.g., if the associated system is not OPERABLE, as defined in TS 1.19), the licensee must shut down the reactor or follow any remedial or required action (e.g., testing, maintenance, or repair activity) permitted by the TSs until the condition can be met.

Paragraphs 1.1 of the St. Lucie 1 and 2 TSs each define ACTION thusly: "ACTION shall be that part of a specification which prescribes remedial measures required under designated conditions." The ACTIONS are condition-specific and therefore include descriptions of the reasons the LCO is not met. The licensee must take the ACTIONS under designated conditions within specified completion times (CTs). Upon expiration of an ACTION's CT, the TSs require the licensee to exit the TS's operational mode of applicability or follow other prescribed remedial actions, such as shutting down the reactor.

On May 17, 2007 (Reference 21), the NRC staff approved Topical Report NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTSs) Guidelines" (Reference 22), subject to the limitations and conditions set forth in the staff's SE for NEI 06-09. NEI 06-09, Revision 0-A provides a methodology for modifying selected required actions to provide an optional RICT. NEI 06-09, Revision 0-A provides a methodology for extending CTs and thereby delay exiting the operational mode of applicability or taking remedial actions if risk is assessed and managed within the limits and programmatic requirements established by a RICT Program. NEI 06-09, Revision 0-A includes the NRC staff's SE but does not incorporate the NRC staff positions, limitations, and conditions into the guidance described in the document. Accordingly, NEI 06-09, Revision 0-A is acceptable for referencing by licensees proposing to amend their TSs to implement RMTS when the NRC staff positions, limitations, and conditions described in the NRC staff's SE dated May 17, 2007, are met.

TSTF-505, Revision 1 provided guidance for requesting license amendments to adopt RICTs in accordance with NEI 06-09, Revision 0-A if the licensee elects to assess and manage risk in accordance with a RICT Program. TSTF-505, Revision 1 proposed the addition of a new program, "Risk-Informed Completion Time Program," to the Administrative Controls section of the TSs that describes the requirements for extending selected CTs and that references NEI 06-09, Revision 0-A as the basis for extending the completion times. TSTF-505, Revision 1 proposed new optional CTs for TSs within the scope of the traveler that permit continued operation beyond the existing CTs within the same required action. Use of the new completion time requires risk to be assessed, monitored, and managed as measured by the configuration-specific core damage frequency (CDF) and large early release frequency (LERF), using processes and limits specified in NEI 06-09, Revision 0-A. Use of the new completion time also requires compensatory measures, or risk management actions (RMAs), and quantitative evaluation of risk sources if probabilistic risk assessment (PRA) models are not available. TSTF-505, Revision 1 also proposed new conditions, required actions, and CTs to address conditions not currently addressed in TSs.

2.2 <u>Licensee's Proposed Changes</u>

The licensee proposed to add a new program, "Risk Informed Completion Time Program," in Section 6.0, "Administrative Controls," of the St. Lucie 1 and 2 TSs, which would require adherence to NEI 06-09, Revision 0-A. The proposed new RICT Program would exclude use of a RICT for any configuration that represents a loss of a specified safety function or inoperability of all required trains of a system required to be operable. The new TS for each unit would state:

> <u>Risk Informed Completion Time Program</u>
>
> This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b: Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0-A, November 2006. The program shall include the following:
>
> a. The RICT may not exceed 30 days;
>
> b. A RICT may only be utilized in MODES 1 and 2;
>
> c. When a RICT is being used, any plant configuration change within the scope of the Configuration Risk Management Program must be considered for the effect on the RICT.

1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. Use of a RICT is not permitted for entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.

e. If the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

1. Numerically accounting for the increased possibility of CCF in the RICT calculation, or

2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

2.2.1 Revision of ACTION Requirements to Incorporate RICT Program

The licensee requested to revise the CTs for the TS required actions in the following list by providing the option to calculate RICTs. In its supplements dated February 15, 2017; February 1, March 15, June 7, and September 18, 2018, the licensee removed proposed new TS ACTIONS for configurations that currently would require entry into TS 3.0.3 or that represent a loss of function. The following list reflects proposed changes for St. Lucie 1 and 2, as supplemented by the licensee's letters dated February 15, 2017; February 1, March 15, June 7, and September 18, 2018.

<u>TS 3/4.3.1, Reactor Protective Instrumentation</u>

- Table 3.3-1, Functional Unit 1, ACTION 1 would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable channel to OPERABLE.

<u>TS 3/4.3.2, Engineered Safety Features Actuation System (ESFAS) Instrumentation</u>

- Table 3.3-3, Functional Units 1.a, 3.a, 4.a and 5.a ACTION 8 and Functional Units 1.a, 2.a, 2.b. 2.c, 3.e, 4.d, and 5.c ACTION 12 (St. Lucie 1 and 2, respectively), would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable channel to OPERABLE.
- Table 3.3-3, Functional Unit 2.b, ACTIONs 10a, 10b, and 10c (St. Lucie 1), and 18a, 18b, and 18c (St. Lucie 2), would be replaced with ACTIONS 10A and 10B for St. Lucie 1, and 18A and 18B for St. Lucie 2. New ACTIONs 10A and 18A would

consolidate previous ACTIONs 10a and 10b, and 18a and 18b, respectively. New ACTIONs 10B and 18B would incorporate previous ACTIONs 10c and 18c, respectively, and would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable channel to OPERABLE.

- Table 3.3-3, Functional Unit 5.b, ACTIONs 13 and 19 (St. Lucie 1 and 2, respectively), would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable channel to OPERABLE. Additionally, ACTION 19 would be revised to replace the words "can not" with "cannot."
- Table 3.3-3, Functional Unit 6, ACTION 17 (St. Lucie 2), would be replaced with ACTIONs 17A and 17B. Existing ACTION 17 would be renumbered as ACTION 17A and would continue to apply to Functional Unit 6.a.1. New ACTION 17B would state the following and apply to Functional Units 6.a.2, 6.b.1, and 6.b.2:

> With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or place the inoperable channel in the tripped condition and verify that the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

- Table 3.3-3, Functional Units 7.a and 7.b, ACTIONs 11 and 15 (St. Lucie 1 and 2, respectively) would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable channel to OPERABLE.
- Table 3.3-3, Functional Units 7.c, 8.a, and 8.b, ACTIONs 14c and 20c (St. Lucie 1 and 2, respectively), would be renumbered as ACTIONs 15 and 21 (St. Lucie 1 and 2, respectively) and revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable channel to OPERABLE.

TS 3/4.4.12 (St. Lucie 1) and TS 3/4.4.4 (St. Lucie 2), PORV Block Valves

- LCO 3.4.12, ACTION and LCO 3.4.4, ACTION a, would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable block valve(s) to OPERABLE.

TS 3/4.5.2, ECCS [Emergency Core Cooling System] Subsystems – Operating

- LCO 3.5.2 - ACTIONs a.1 and a.2 would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable ECCS subsystem to OPERABLE.

TS 3/4.6.1.3, Containment Air Locks

- LCO 3.6.1.3, ACTION b would be revised, as follows (deletions shown in stricken text and additions underlined):

> With ~~the~~ one or both containment air ~~lock~~ lock(s) inoperable, except as the result of an inoperable air lock door, maintain at least one air lock door closed~~;~~ in the affected air lock(s) and restore the inoperable air lock to OPERABLE status within 24 hours or in accordance with the Risk Informed Completion Time Program; otherwise ~~or~~ be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the

following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

TS 3/4.6.2.1, Containment Spray and Cooling Systems

- LCO 3.6.2.1, ACTION 1.a would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable containment spray train to OPERABLE.
- LCO 3.6.2.1, ACTIONs 1.b and 1.e would be revised to allow the option of calculating a RICT to be applied to the action to restore an inoperable containment cooling train to OPERABLE.

TS 3/4.6.3, Containment Isolation Valves

- LCO 3.6.3.1, ACTION a (St. Lucie 1), and LCO 3.6.3, ACTION a (St. Lucie 2) would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable valve(s) to OPERABLE.
- LCO 3.6.3.1, ACTIONs b and c (St. Lucie 1), and LCO 3.6.3, ACTIONs b and c (St. Lucie 2) would be revised to allow the option of calculating a RICT to be applied to the action to isolate the affected penetration.

TS 3/4.7.1.2, Auxiliary Feedwater System

- LCO 3.7.1.2, ACTION a would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable auxiliary feedwater (AFW) pump steam supply to OPERABLE.
- LCO 3.7.1.2 ACTION b would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable AFW pump to OPERABLE.

TS 3/4.7.3, Component Cooling Water System

- LCO 3.7.3.1, ACTION (St. Lucie 1) and LCO 3.7.3, ACTION (St. Lucie 2) would be revised to allow the option of calculating a RICT to be applied to the action to restore at least two Component Cooling Water (CCW) loops to OPERABLE.

TS 3/4.7.4, Intake Cooling Water System

- LCO 3.7.4.1, ACTION (St. Lucie 1) and LCO 3.7.4, ACTION (St. Lucie 2) would be revised to allow the option of calculating a RICT to be applied to the action to restore at least two Intake Cooling Water (ICW) loops to OPERABLE.

TS 3/4.8.1, Electrical Power Systems – Alternating Current Sources - Operating

- LCO 3.8.1.1, ACTION a would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable offsite circuit to OPERABLE.
- LCO 3.8.1.1, ACTION b would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable diesel generator to OPERABLE.
- LCO 3.8.1.1, ACTION c would be revised to allow the option of calculating a RICT to be applied to the action to restore either the inoperable offsite circuit or inoperable diesel generators to OPERABLE.
- LCO 3.8.1.1, ACTION d would be revised to allow the option of calculating a RICT to be applied to the action to restore one of the inoperable offsite circuits to OPERABLE.
- LCO 3.8.1.1, ACTION f would be revised to allow the option of calculating a RICT to be applied to the action to restore the inoperable startup transformer to OPERABLE.

2.2.2 Changes to TS 3/4.7.1.5

The licensee proposed to make the following changes to TS 3/4.7.1.5:

LCO 3.7.1.5, Main Steam Isolation Valves

- In the ACTION statement applicable to MODE 1 for both units, the licensee proposed to replace "HOT STANDBY" with "MODE 2."
- For St. Lucie 1, the licensee proposed to replace the ACTION statement applicable to MODES 2 and 3 with the following statement:

> With one or both main steam isolation valve(s) inoperable, subsequent operation in MODES 2 or 3 may continue provided:
>
> 1. The inoperable main steam isolation valves are closed within 8 hours, and
>
> 2. The inoperable main steam isolation valves are verified closed once per 7 days.
>
> Otherwise, be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 24 hours.

- For St. Lucie 2, the licensee proposed to replace the ACTION statement applicable to MODES 2, 3, and 4 with the following statement:

> With one or both main steam isolation valve(s) inoperable, subsequent operation in MODES 2, 3 or 4 may proceed provided:
>
> 1. The inoperable main steam isolation valves are closed within 8 hours, and
>
> 2. The inoperable main steam isolation valves are verified closed once per 7 days.
>
> Otherwise, be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 24 hours.

2.2.3 Editorial changes

In addition to the above, the licensee proposed to make the following editorial changes to the St. Lucie 1 and 2 TSs:

TS 3/4.1.2.2 and 3/4.3.2.1 (St. Lucie 2 only)

- LCO 3.1.2.2.c and LCO 3.1.2.2.f; Table 3.3-3, Functional Unit 5.b; Table 3.3-4, Functional Unit 5.b; Table 4.3-2, Functional Unit 5.b; and Table 3.3-10, Instrument 9 would be revised to replace "refueling water storage tank" with "refueling water tank."
- Table 3.3-3, Functional Unit 1.d, would be revised to delete the hyphen from "Automatic Actuation – Logic."

TS 3/4.4.2 (St. Lucie 2 only)

- Reformat footnote *, which states, "The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure." as a NOTE to be located above LCO 3.4.2.2.

TS 3/4.5.1

- Revise TS title to state (inserted text shown underlined), "SAFETY INJECTION TANKS (SITs)."
- St. Lucie 1: Relocate the text stating "with pressurizer pressure ≥ 1750 psia" from footnote * to the Applicability section and delete the footnote.
- St. Lucie 2: Relocate the text stating "with pressurizer pressure ≥ 1750 psia" from footnote * to the Applicability section. Revise remaining text in the footnote, as shown below (inserted text shown underlined), and reformat as a NOTE to be located after LCO 3.5.1.d:

> When in Mode 3 with pressurizer pressure ~~is~~ less than 1750 psia, at least three safety injection tanks shall be OPERABLE, each with a minimum pressure of 235 psig and a maximum pressure of 650 psig and a contained water volume of between 1250 and 1556 cubic feet with a boron concentration of between 1900 and 2200 ppm of boron. With all four safety injection tanks OPERABLE, each tank shall have a minimum pressure of 235 psig and a maximum pressure of 650 psig and a contained water volume of between 833 and 1556 cubic feet with a boron concentration of between 1900 and 2200 ppm of boron.

TS 3/4.5.2

- Reformat footnote *, which states, "One ECCS subsystem charging pump shall satisfy the flow path requirements of Specification 3.1.2.2.a or 3.1.2.2.d. The second ECCS subsystem charging pump shall satisfy the flow path requirements of Specification 3.1.2.2.b or 3.1.2.2.e," as a NOTE to be located after LCO 3.5.2.c.
- Transfer the text from footnote ** to the end of the APPLICABILITY statement, such that the revised statement would read, "MODES 1, 2, and 3 with pressurizer pressure ≥ 1750 psia [pounds per square inch absolute]."
- Reformat St. Lucie 2, LCO 3.5.2.c, such that the wording properly aligns.

TS 3/4.6.1.3

- Reformat footnote *, which states, "If the inner air lock door is inoperable, passage through the OPERABLE outer air lock door is permitted to effect repairs to the inoperable inner air lock door. No more than one airlock door shall be open at any time," as a NOTE to be located before ACTION a.

TS 3/4.6.1.7 (St. Lucie 2 only)

- Reformat footnote *, which states, "The footnote states: Verification of isolation devices by administrative means is acceptable when they are located in high radiation areas or they are locked, sealed, or otherwise secured by administrative means," as a NOTE to be located before ACTION c.2.
- Revise ACTION c.2 to state (inserted text is shown underlined), "Verify the affected penetration flowpath is isolated once per 31 days following isolation for isolation devices [...]."

TS 3/4.7.3 (St. Lucie 2)

- Reformat footnote * as a NOTE to be located before LCO 3.7.3. Footnote * states the following:

> When CCW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves shall be verified to be consistent with the appropriate power supply at least once per 24 hours. Upon receipt of annunciation for improper alignment of the pump 2C motor power in relation to any of its motor-operated discharge valves positions, restore proper system alignment within 2 hours.

TS 3/4.7.4 (St. Lucie 2)

- Reformat footnote *, which states, "When ICW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves must be verified to be consistent with the appropriate power supply at least once per 24 hours," as a NOTE to be located before LCO 3.7.4.

TS 3/4.8.1

- Reformat footnote * as a NOTE to be located before both ACTIONs b and c. In addition, the licensee would revise the wording of the reformatted NOTE to state the following (deleted words shown by stricken text, inserted words show in underline):

> If the absence of any common-cause failure cannot be confirmed, ~~this test~~ Surveillance Requirement 4.8.1.1.2.a.4 shall be completed regardless of when the inoperable EDG is restored to OPERABILITY.

- St. Lucie 2: Revise "Surveillance Requirement 4.8.1.1.2a.4" in ACTIONs b and c to state, "Surveillance Requirement 4.8.1.1.2.a.4."

2.3 Regulatory Review

The staff considered the following regulatory requirements, policy statements, and guidance during its review of the proposed changes.

Regulatory Requirements

Under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.92(a), determinations on whether to grant a license amendment are guided by the considerations that govern the issuance of initial licenses to the extent applicable and appropriate. Both the common standards for licenses in 10 CFR 50.40(a), and those specifically for issuance of operating licenses in 10 CFR 50.57(a)(3), provide that there must be "reasonable assurance" that the activities at issue will not endanger the health and safety of the public.

The regulatory requirements related to the content of the TSs are contained in 10 CFR 50.36, "Technical Specifications." Section 50.36 of 10 CFR requires TSs to include the following categories related to station operation: (1) safety limits, limiting safety systems settings, and control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notification; and (8) written reports. Section 50.36(c)(2)(i) states, in part:

> Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

The remedial actions must provide the requisite reasonable assurance that the activities will not endanger the health and safety of the public, and the Commission's regulations will be met.

Section 50.36(c)(5) states, in part, that administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.

Section (h)(2) 10 CFR 50.55a, "Protection and Safety Systems," requires, in part, compliance with the requirements in Institute of Electrical and Electronics Engineers (IEEE) Standard (Std) 279–1971, "Criteria for Protection Systems for Nuclear Power Generating Stations," for nuclear power plants with construction permits issued after January 1, 1971, but before May 13, 1999. For nuclear power plants with construction permits issued before January 1, 1971, the regulation requires, in part, compliance with the plant-specific licensing basis.

The St. Lucie 1 construction permit was issued on July 1, 1970, and the St. Lucie 2 construction permit was issued on May 2, 1977. The St. Lucie 1 Updated Final Safety Analysis Report (UFSAR) (Reference 23), Section 7.2 "Reactor Protective System," which describes the plant-specific design basis, states, in part, that:

> The system is designed on the following bases to assure performance of its protective function:
>
> a. The system is designed in compliance with AEC [Atomic Energy Commission] requirements as delineated in, "General Design Criteria for Nuclear Power Plants," (Appendix A of 10 CFR 50, July 15, 1971) presented in Section 3.1.1 [of the UFSAR].
> b. Instrumentation, function and operation of the system conforms to the specific requirements of IEEE Standard 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations."

St. Lucie 2 complies with IEEE Std 279–1971.

Based on the changes request, the following clauses from IEEE 279-1971 apply to this review:

- Clause 4.2 "Single Failure Criterion" of the IEEE 279-1971 requires:

  > Any single failure within the protection system shall not prevent proper protection system action when required.

- Clause 4.11 "Channel Bypass or Removal from Operation" of the IEEE 279-1971 requires that:

    The system shall be designed to permit any one channel to be maintained, and when required, tested or calibrated during power operation without initiating a protective action at the systems level. During such operation the active parts of the system shall of themselves continue to meet the single failure criterion.

    Exception: "One-out-of-two" systems are permitted to violate the single failure criterion during channel bypass provided that acceptable reliability of operation can be otherwise demonstrated.

Section 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants" (i.e., the Maintenance Rule), of 10 CFR requires licensees to monitor the performance or condition of SSCs against licensee established goals in a manner sufficient to provide reasonable assurance that these SSCs are capable of fulfilling their intended functions. Paragraph 50.65(a)(4) requires the assessment and management of the increase in risk that may result from a proposed maintenance activity.

St. Lucie 2 was licensed to Appendix A, "General Design Criteria [GDC] for Nuclear Power Plants," to 10 CFR Part 50. GDC 17, "Electric Power Systems" provides, in part, that an onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents. The onsite electrical power sources, including the batteries, and the onsite electrical distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Appendix A, to 10 CFR Part 50, GDC 22, "Protection System Independence," provides, in part, that design techniques, such as functional diversity or diversity in component design and principles of operation, shall be used to the extent practical to prevent loss of the protection function.

The construction permit for St. Lucie 1 was issued prior to the 1971 publication of Appendix A to 10 CFR Part 50. As such, St. Lucie 1 is not licensed to the current GDC. Although not licensed to the GDC, Section 8.1.2 of the St. Lucie 1 UFSAR states that the St. Lucie 1 electrical power systems meet the requirements of GDC 17. Regarding GDC 22, Section 3.1 of the St. Lucie 1 UFSAR provides a summary of the design basis relevant to GDC 22. That summary states, in part, that:

> The protection systems conform to the provisions of the Institute of Electrical and Electronic Engineers (IEEE) Criteria for Protection Systems for Nuclear Power Generating Stations, IEEE 279-1971. Four independent measurement channels complete with sensors, sensor power supplies, signal conditioning units and bistable trip units are provided for each protective parameter monitored by the protection systems. The measurement channels are provided with a high degree of independence by separate connections of the channel sensors to the process

> systems. Power to the channels is provided by independent emergency power supply buses.
>
> The protective system is functionally tested to ensure satisfactory operation prior to installation in the plant. Environmental and seismic qualifications are also performed utilizing type tests and specific equipment tests.

Policy Statements

In the Commission's "Final Policy Statement: Technical Specifications for Nuclear Power Plants," dated July 22, 1993 (58 FR 39132), the NRC addressed the use of Probabilistic Safety Analysis (PSA, currently referred to as Probabilistic Risk Assessment or PRA) in Standard Technical Specifications (STSs). In this 1993 publication, the NRC stated:

> The Commission believes that it would be inappropriate at this time to allow requirements which meet one or more of the first three criteria [of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36] to be deleted from Technical Specifications based solely on PSA (Criterion 4). However, if the results of PSA indicate that Technical Specifications can be relaxed or removed, a deterministic review will be performed.
>
> The Commission Policy in this regard is consistent with its Policy Statement on "Safety Goals for the Operation of Nuclear Power Plants," 51 FR 30028, published on August 21, 1986. The Policy Statement on Safety Goals states in part, "[...] probabilistic results should also be reasonably balanced and supported through use of deterministic arguments. In this way, judgments can be made [...] about the degree of confidence to be given these [probabilistic] estimates and assumptions. This is a key part of the process for determining the degree of regulatory conservatism that may be warranted for particular decisions. This defense-in-depth approach is expected to continue to ensure the protection of public health and safety."
>
> The Commission will continue to use PSA, consistent with its policy on Safety Goals, as a tool in evaluating specific line-item improvements to Technical Specifications, new requirements, and industry proposals for risk-based Technical Specification changes.

Approximately 2 years later, the NRC provided additional detail concerning the use of PRA in the "Final Policy Statement: Use of Probabilistic Risk Assessment in Nuclear Regulatory Activities," dated August 16, 1995 (60 FR 42622). In this publication, the Commission stated:

> The Commission believes that an overall policy on the use of PRA methods in nuclear regulatory activities should be established so that the many potential applications of PRA can be implemented in a consistent and predictable manner that would promote regulatory stability and efficiency. In addition, the Commission believes that the use of PRA technology in NRC regulatory activities should be increased to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach. [...]

PRA addresses a broad spectrum of initiating events by assessing the event frequency. Mitigating system reliability is then assessed, including the potential for multiple and common cause failures. The treatment therefore goes beyond the single failure requirements in the deterministic approach. The probabilistic approach to regulation is, therefore, considered an extension and enhancement of traditional regulation by considering risk in a more coherent and complete manner. [...]

Therefore, the Commission believes that an overall policy on the use of PRA in nuclear regulatory activities should be established so that the many potential applications of PRA can be implemented in a consistent and predictable manner that promotes regulatory stability and efficiency. This policy statement sets forth the Commission's intention to encourage the use of PRA and to expand the scope of PRA applications in all nuclear regulatory matters to the extent supported by the state-of-the-art in terms of methods and data. [...]

Therefore, the Commission adopts the following policy statement regarding the expanded NRC use of PRA:

(1) The use of PRA technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy.

(2) PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements, regulatory guides, license commitments, and staff practices. Where appropriate, PRA should be used to support the proposal for additional regulatory requirements in accordance with 10 CFR 50.109 (Backfit Rule). Appropriate procedures for including PRA in the process for changing regulatory requirements should be developed and followed. It is, of course, understood that the intent of this policy is that existing rules and regulations shall be complied with unless these rules and regulations are revised.

(3) PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review.

(4) The Commission's safety goals for nuclear power plants and subsidiary numerical objectives are to be used with appropriate consideration of uncertainties in making regulatory judgments on the need for proposing and backfitting new generic requirements on nuclear power plant licensees.

Regulatory Guidance

NUREG-1432, Revision 4, Volume 1, "Standard Technical Specifications – Combustion Engineering Plants" (Reference 24). Although the St. Lucie 1 and 2 TSs are not based on the guidance in NUREG-1432, the STSs provide an acceptable method for licensees of Combustion Engineering plants to meet the NRC's requirements in 10 CFR 50.36.

Regulatory Guide (RG) 1.174, Revision 3, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (Reference 25), describes an acceptable risk-informed approach for assessing the nature and impact of proposed permanent licensing basis changes by considering engineering issues and applying risk insights. This RG also provides risk acceptance guidelines for evaluating the results of such evaluations.

RG 1.177, Revision 1, "An Approach for Plant-Specific, Risk-Informed Decision-making: Technical Specifications" (Reference 26), describes an acceptable risk-informed approach specifically for assessing proposed TS changes. RG 1.177, Revision 1 identifies a three-tiered approach for a licensee's evaluation of the risk associated with a proposed TS CT change, as follows.

- Tier 1 assesses the risk impact of the proposed change in accordance with acceptance guidelines consistent with the Commission's Safety Goal Policy Statement, as documented in RG 1.174 and RG 1.177. The first tier assesses the impact on plant risk as expressed by on the change in core damage frequency (ΔCDF) and change in large early release frequency (ΔLERF). It also evaluates plant risk while equipment covered by the proposed CT is out of service, as represented by incremental conditional core damage probability (ICCDP) and incremental conditional large early release probability (ICLERP). The limits for ICCDP and ICLERP are consistent with the criteria for incremental core damage probability (ICDP) and incremental large early release probability (ILERP) from the Nuclear Management and Resources Council (NUMARC) 93-01, Revision 4A, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" (Reference 27), guidance for managing the risk of on line maintenance activities. ICDP and ILERP are the limits on which licensee will base the RICT. This guidance was endorsed by the NRC staff in RG 1.160, Revision 3, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" (Reference 28), for compliance with the Maintenance Rule, 10 CFR 50.65(a)(4). Tier 1 also addresses PRA quality, including the technical adequacy of the licensee's plant specific PRA for the subject application. Cumulative risk of the proposed TS change is considered with uncertainty/sensitivity analysis with respect to the assumptions related to the proposed TS change.

- Tier 2 identifies and evaluates any potential risk significant plant equipment outage configurations that could result if equipment, in addition to that associated with the proposed license amendment, is removed from service simultaneously, or if other risk significant operational factors, such as concurrent system or equipment testing, are also involved. The purpose of this evaluation is to ensure that there are appropriate restrictions in place such that risk significant plant equipment outage configurations will not occur when equipment associated with the proposed completion time is implemented.

- Tier 3 addresses the licensee's configuration risk management program (CRMP) to ensure that adequate programs and procedures are in place for identifying risk-significant plant configurations resulting from maintenance or other operational activities and appropriate compensatory measures are taken to avoid risk-significant configurations that may not have been considered when the Tier 2 evaluation was performed. Compared with Tier 2, Tier 3 provides additional coverage to ensure risk-significant plant equipment outage configurations are identified in a timely manner and that the risk impact of out-of-service equipment is appropriately evaluated prior to performing any maintenance activity over extended periods of plant operation. Tier 3 guidance can be satisfied by the Maintenance Rule, which requires a licensee to assess and manage the increase in risk that may result from activities such as surveillance testing and corrective and preventive maintenance, subject to the guidance provided in RG 1.177, Section 2.3.7.1 and the adequacy of the licensee's program and PRA model for this application. The CRMP ensures that equipment removed from service prior to or during the proposed extended completion time will be appropriately assessed from a risk perspective.

RG 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (Reference 29), describes an acceptable approach for determining whether the quality of the PRA, in total or the parts that are used to support an application, is sufficient to provide confidence in the results, such that the PRA can be used in regulatory decision making for light water-reactors. RG 1.200 provides regulatory guidance for assessing the technical adequacy of a PRA. RG 1.200, Revision 2 endorses, with clarifications and qualifications, the use of the American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) Standard, RA-Sa-2009, "Addenda to ASME RA-S-2008 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications" (i.e., the PRA Standard)" (Reference 30).

General guidance for evaluating the technical basis for proposed risk-informed changes is provided in NUREG-0800, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition," Chapter 19, Section 19.2, "Review of Risk Information Used to Support Permanent Plant Specific Changes to the Licensing Basis: General Guidance" (Reference 31). Guidance on evaluating PRA technical adequacy is provided in the SRP, Chapter 19, Section 19.1, Revision 3, "Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed License Amendment Requests after Initial Fuel Load" (Reference 32). More specific guidance related to risk-informed TS changes is provided in SRP, Section 16.1, Revision 1, "Risk-Informed Decisionmaking: Technical Specifications" (Reference 33), which includes changes to TS CTs as part of risk-informed decision making. Section 19.2 of the SRP references the same criteria as RG 1.177, Revision 1 and RG 1.174, Revision 3, and states that a risk-informed application should be evaluated to ensure that the proposed changes meet the following key principles:

1. The proposed change meets the current regulations unless it is explicitly related to a requested exemption;

2. The proposed change is consistent with the defense-in-depth philosophy;

3. The proposed change maintains sufficient safety margins;

4. When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement; and

5. The impact of the proposed change should be monitored using performance measurement strategies.

NEI 06-09, Revision 0-A provides a methodology for modifying selected required actions to provide an optional RICT and extending completion times, thereby delay exiting the operational mode of applicability or taking remedial actions if risk is assessed and managed within the limits and programmatic requirements established by a RICT Program or a configuration risk management program. NEI 06-09, Revision 0-A uses processes that are consistent with the requirements of 10 CFR 50.65(a)(4).

3.0 TECHNICAL EVALUATION

The licensee's adoption of the methodology in NEI 06-09, Revision 0-A incorporates the document by reference in the Administrative Controls section of the TS and modifies selected Required Action CTs to permit extending the CTs, provided risk is assessed and managed as described in NEI 06-09, Revision 0-A. In accordance with NEI 06-09, Revision 0-A, PRA methods are used to justify each extension to a Required Action CT based on the specific plant configuration that exists at the time of the applicability of the Required Action and are updated when plant conditions change. The licensee's application for the changes in accordance with NEI 06-09, Revision 0-A included documentation regarding the technical adequacy of the PRA models used in the CRMP, consistent with RG 1.200.

Most TSs identify one or more Conditions for which the LCO may not be met, to permit a licensee to perform required testing, maintenance, or repair activities. Accordingly, each Condition has an associated Required Action for restoration of the LCO or for other actions, each with some fixed time interval, referred to as the CT, which identifies the time interval permitted to complete the Required Action. Upon expiration of the CT, the licensee is required to shut down the reactor or follow the Required Action(s) stated in the ACTIONS requirements. The RICT Program provides the necessary administrative controls to permit extension of CTs and thereby delay reactor shutdown or Required Actions, if risk is assessed and managed within specified limits and programmatic requirements. The specified safety function or performance level of TS required equipment is unchanged, and the Required Action(s), including the requirement to shut down the reactor are also unchanged, only the CTs for the Required Actions are extended by the RICT Program.

3.1 Review of Key Principles

Revision 1 of RG 1.177 and RG 1.174, Revision 3 identify five key principles to be applied to risk informed changes to the TSs. Each of these principles are addressed in NEI 06-09, Revision 0-A. The NRC staff's evaluation of the licensee's proposed use of RICTs against these key safety principles is discussed below.

3.1.1 Key Principle 1: Compliance with Current Regulations

The regulations at 10 CFR 50.36(c)(2)(i) state, in part:

> Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

When the necessary redundancy is not maintained (e.g., one train of a two-train system is inoperable), the TSs permit a limited period of time to restore the inoperable train to OPERABLE status and/or take other remedial measures. If these actions are not completed within the CT, the TSs normally require that the plant exit the mode of applicability for the LCO (by, for example, shutting down). With one train of a two-train system inoperable, the TS safety function is accomplished by the remaining OPERABLE train. In the current TSs, the CT is specified as a fixed time period (termed the "front stop"). The addition of the option to determine the CT in accordance with the RICT Program would allow an evaluation to determine a configuration specific CT. The evaluation would be done in accordance with the methodology prescribed in NEI 06-09, Revision 0-A and TS 6.8.4. The RICT is limited to a maximum of 30 days (termed the "back stop") and is not permitted for entry into a configuration that represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE. The CTs in the current TSs were established using experiential data, risk insights, and engineering judgement. The RICT Program provides the necessary administrative controls to permit extension of CTs and thereby delay reactor shutdown or Required Actions, if risk is assessed and managed appropriately within specified limits and programmatic requirements.

When the necessary redundancy is not maintained and the system loses the capability to perform its safety function(s) without any further failures (e.g., two trains of a two train system are inoperable), there is a TS loss of specified function and the plant must exit the mode of applicability for the LCO, or take remedial actions, as specified in the TSs. A configuration-specific RICT may not be determined and used following a TS loss of specified safety function because the system has lost the capability to perform its safety function(s). With the incorporation of the RICT Program, the required performance levels of equipment specified in LCOs are not changed. Only the required CT for the Required Actions are modified by the RICT Program.

The modified TS will continue to include items in the category of limiting conditions for operation, as required by 10 CFR 50.36(c)(2). The limiting conditions for operation (i.e., "the lowest functional capability or performance levels of equipment required for safe operation of the facility" as stated in 10 CFR 50.36(c)(2)(i)) are not changed by the incorporation of the option to calculate a RICT. As allowed by 10 CFR 50.36(c)(2)(i), the TS continue to state remedial actions to be taken when an LCO is not met. Therefore, the NRC staff concludes that the TSs, as modified, continue to satisfy the requirements in 10 CFR 50.36(c)(2).

3.1.1.1 Key Principle 1 Conclusions

Based on the discussion provided above, the NRC staff finds that the proposed changes meet the first key principle of RG 1.174, Revision 3, and RG 1.177, Revision 1, in that the change meets the current regulations.

3.1.2 Key Principle 2: Evaluation of Defense-in-Depth

Defense-in-depth is an approach to designing and operating nuclear facilities that prevents and mitigates accidents that release radiation or hazardous materials. The key is creating multiple independent and redundant layers of defense to compensate for potential human and mechanical failures so that no single layer, no matter how robust, is exclusively relied upon. Defense-in-depth includes the use of access controls, physical barriers, redundant and diverse key safety functions, and emergency response measures.

As discussed throughout RG 1.174, consistency with the defense-in-depth philosophy is maintained by the following:

- Preserve a reasonable balance among the layers of defense.

- Preserve adequate capability of design features without an overreliance on programmatic activities as compensatory measures.

- Preserve system redundancy, independence, and diversity commensurate with the expected frequency and consequences of challenges to the system, including consideration of uncertainty.

- Preserve adequate defense against potential CCFs.

- Maintain multiple fission product barriers.

- Preserve sufficient defense against human errors.

- Continue to meet the intent of the plant's design criteria.

The proposed change represents a robust technical approach that preserves a reasonable balance among avoidance of core damage, avoidance of containment failure, and consequence mitigation. The three-tiered approach to risk-informed TS CT changes in RG 1.177 (described in Section 2.3 of this SE) provides additional assurance that defense-in-depth will not be significantly impacted by such changes to the licensing basis. The licensee is proposing no changes to the design of the plant or any operating parameter, no new operating configurations, and no new changes to the design-basis in the proposed changes to the TSs.

The effect of the proposed changes will be that the RICT Program will allow CTs to vary based on the risk significance of the given plant configuration (i.e., the equipment out-of-service at any given time) provided that the system(s) retain(s) the capability to perform the applicable safety function(s) without any further failures (e.g., one train of a two-train system is inoperable). The licensee may not use a configuration-specific RICT if the system has lost the capability to perform its safety function(s). These restrictions on TS loss of specified safety function or inoperability of all required trains of a system ensure that consistency with the defense-in-depth philosophy is maintained by following existing guidance when the capability to perform TS safety function(s) is lost.

The proposed RICT Program uses plant-specific operating experience for component reliability and availability data. Thus, the allowances permitted by the RICT Program are directly reflective of actual component performance in conjunction with component risk significance. In some cases, the RICT Program may use RMAs to reduce calculated risk in some configurations. Where credited in the PRA, these actions are incorporated into station procedures or work instructions and have been modeled using appropriate human reliability considerations. Application of the RICT Program determines the risk significance of plant configurations. It also permits the operator to identify the equipment that has the greatest effect on the existing configuration risk. With this information, the operator can manage the out-of-service duration and determine the consequences of removing additional equipment from service.

The application of the RICT Program places high value on key safety functions and works to ensure they remain a top priority over all plant conditions. The RICT will be applied to extend CTs on key electrical power distribution systems. Failures in electrical power distribution systems can simultaneously affect multiple safety functions; therefore, potential degradation to defense in depth during the extended CTs are discussed further below.

3.1.2.1 *Use of Compensatory Measures to Retain Defense-in-Depth*

Application of the RICT Program provides a structure to assist the operator in identifying effective compensatory actions for various plant maintenance configurations to maintain and manage acceptable risk levels. Topical Report (TR) NEI 06-09, Revision 0-A addresses potential compensatory actions and RMA measures by stating, in generic terms, that compensatory measures may include but are not limited to the following:

- Reduce the duration of risk-sensitive activities.
- Remove risk-sensitive activities from the planned work scope.
- Reschedule work activities to avoid high risk-sensitive equipment outages or maintenance states that result in high-risk plant configurations.
- Accelerate the restoration of out-of-service equipment.
- Determine and establish the safest plant configuration.

Section 2.3.1 of NEI 06-09, Revision 0-A states:

> For plant configurations in which the [risk management action time (RMAT)] either has been exceeded (emergent event) or is anticipated to be exceeded (either planned condition or emergent event), appropriate compensatory risk management actions shall be identified and implemented. For preplanned maintenance activities for which a RICT will be entered, RMAs shall be implemented at the earliest appropriate time.

Therefore, quantitative risk analysis, the qualitative considerations, and the prohibition on loss of all trains of a required system assure a reasonable balance of defense-in-depth is maintained to ensure protection of public health and safety. The NRC staff finds that this proposed change is consistent with the second key safety principle of RG 1.177 and is, therefore, acceptable.

3.1.2.2 *Evaluation of Electrical Power Systems*

St. Lucie 1 and 2 are designed such that the safety functions are maintained assuming a single failure within the electrical power system. By incorporating an electrical power supply perspective, this concept is further reflected in a number of principal design criteria for St. Lucie. Single failure requirements are typically suspended for the time that a plant is not meeting an LCO (i.e., in an ACTION statement). This section considers the plant configurations, from a defense-in-depth perspective.

As discussed in the St. Lucie 1 and 2 UFSARs, the normal source of auxiliary alternating current (AC) power for plant start-up or shutdown is from the incoming off-site transmission lines through the plant switchyard and start-up transformers. The start-up transformers step down the 230 kilovolt (kV) incoming line voltage to 6.9 kV and 4.16 kV for auxiliary system use. During normal plant operation, AC power is provided from the main generator through the unit auxiliary transformers. In the event of a complete loss of the normal offsite AC power sources (i.e., Loss of Offsite Power (LOSP)), station on-site emergency AC power system will be supplied by the onsite emergency diesel generators (EDGs) and station batteries. In the event that all offsite and onsite power sources fail, one EDG is able to operate the minimum selected loads such that both units are maintained in a safe, hot standby condition. Power would be transferred to an opposite unit 4.16 kV Class 1E distribution buses via a station blackout (SBO) cross-tie. This SBO cross-tie connects the two safety related "swing" 4.16 kV buses 1AB and 2AB.

The licensee requested to use the RICT Program to extend the existing CTs for the following TS 3.8, "Electrical Power Systems," conditions. The NRC staff's evaluation of the proposed changes considered a number of potential plant conditions allowed by the proposed RICTs. The NRC staff also considered the available redundant or diverse means to respond to various plant conditions. In these evaluations, the NRC staff examined the safety significance of different plant conditions resulting in both shorter and longer CTs. The plant conditions evaluated are discussed in more detail below.

Multiple configurations are allowed at a plant when implementing the RICT Program. All systems are governed by multiple programs and processes in the plant licensing basis that may prohibit certain configurations. Furthermore, the RICT has limitations in place on the use and application of multiple trains in one system being out of service and the risk values have absolute limits for voluntary entry. The RICT estimate is an approximation based on the licensee's assumptions of the plant configuration. The RICT value may change due to other PRA input and changes to the plant configuration. The RICT Program can result in up to 30 days to restore the required offsite circuit to OPERABLE status.

3.1.2.2.1 TS 3.8.1.1 ACTION a – One-of-Two Offsite Circuits Inoperable

The licensee requested to use the RICT Program to extend the existing CT of 72 hours for this condition. The proposed CT to restore the required offsite circuit to OPERABLE status is 72 hours or in accordance with the RICT. The RICT estimate for this condition (as provided in Enclosure 1 of the LAR dated December 5, 2014) is 3 days for St. Lucie 1 and 4 days for St. Lucie 2.

Assuming that ACTION a (one of two required offsite circuits inoperable) is the only applicable Condition in TS 3.8.1.1 for the plant configuration, the associated loads will be powered by the remaining offsite power circuit (via its associated Start-up Transformer). The EDGs provide additional power sources.

In addition to the TS required actions, the RICT Program requires the licensee to employ RMAs at the earliest time possible, but no later than the calculated RMAT. Section 3.1.4.3 of this SE provides further discussion of the RMAs and RMAT. In Enclosure 12 of the December 5, 2014, LAR, the licensee described its procedure to develop and implement RMAs. By letters dated March 15, 2018, and June 7, 2018, the licensee provided examples of RMAs that are considered during an offsite circuit RICT to provide additional assurance of adequate defense-in-depth:

(1) Perform 1-OSP-100.01(- 100.13), as it pertains to periodic tests, checks, and calibrations for Unit 1.

(2) Perform 2-OSP-100.01(- 100.13), as it pertains to periodic tests, checks, and calibrations for Unit 2.

(3) Ensure AB bus aligned to other Offsite circuit.

(4) Perform fleet procedure OP-AA-102-1003 for guarding equipment as applicable.

As stated in Table E1.1 of the letter dated March 15, 2018, the design success criteria for this condition is one-of-two circuits available. Therefore, upon the loss of one offsite power circuit, the plant has sufficient power to achieve safe plant shutdown and/or to mitigate the consequences of a design-basis accident via the remaining offsite power circuit via the start-up transformer with an additional source via the EDG. Because the remaining credited offsite power circuit and the additional power circuit (available via the EDG and the SBO crosstie) could power the safety-related loads and still shut down the plant safely, the NRC staff finds that there is reasonable assurance of defense-in-depth upon declaring one offsite circuit inoperable.

The design margins present in the remaining equipment will not be affected due to the loss of one of the offsite circuits since the use of the RICT Program does not affect the design of the plant. Therefore, the design margin in the remaining operable equipment will not be affected.

3.1.2.2.2 TS 3.8.1.1 ACTION b – One EDG Inoperable

The existing CT for this condition is 14 days. The proposed CT to restore the EDG to OPERABLE status is 14 days or in accordance with the RICT. The RICT estimate for this condition (as provided in Enclosure 1 of the original LAR dated December 5, 2014) is 22 days for St. Lucie 1 and 14 days for St. Lucie 2. The RICT estimate is an approximation based on the licensee's assumptions of the plant configuration.

Assuming that ACTION b (one EDG inoperable) is the only applicable Condition in TS 3.8.1.1 for the plant configuration, the associated loads will be powered by either of the two offsite power circuits. In the event that all offsite and onsite power sources fail, except for one Unit EDG, power will be transferred from the only operating Unit EDG to the other Unit 4.16 kV Class 1E distribution buses via the SBO cross-tie. The emergency portion of the 4.16 kV system is arranged into two redundant load groups (A and B). Each of these load groups consists of the complement of safety related equipment needed to achieve safe plant shutdown and/or to mitigate the consequences of a design-basis accident. Therefore, in the event of a LOSP while having one EDG inoperable, the other 4.16 kV train can safely shut down the plant.

In addition to the TS Required Actions, the RICT Program requires the licensee to employ RMAs at the earliest time possible, but no later than the calculated RMAT. RMAs and RMAT are further discussed in Section 3.1.4.3 of this SE. In Enclosure 12 of the LAR, the licensee described its procedure to develop and implement RMAs. The licensee provided examples of RMAs that are considered during an EDG RICT to ensure adequate defense-in-depth:

(1) Evaluate the condition of the offsite power supply, switchyard, and the grid prior to entering a RICT, and implement the RMAs below during times of high grid stress conditions, such as during high demand conditions.

(2) Defer switchyard activities, such as of discretionary maintenance on the main, auxiliary, or startup transformers associated with the unit.

(3) Defer maintenance that affects the reliability of the trains associated with the operable EDGs.

(4) Defer planned maintenance activities on station blackout mitigating systems, and treat those systems as protected equipment.

(5) Contact the dispatcher on a periodic basis to provide information on EDG status and the power needs of the facility, and to obtain grid status.

(6) Implement 10 CFR 50.65(a)(4) fire-specific RMAs associated with the impacted EDG.

Because the remaining EDG and required offsite power circuit, as well as the offsite power available via the SBO cross-tie, are available to provide power to the safety-related loads and still shut down the plant safely, the NRC staff finds that there is reasonable assurance of defense-in-depth upon declaring one required offsite circuit inoperable and one EDG inoperable.

The design margins present in the remaining equipment will not be affected due to the loss of one EDG since the use of the RICT Program does not affect the design of the plant. Therefore, the design margin in the remaining operable equipment will not be affected.

3.1.2.2.3 TS 3.8.1.1 ACTION c – One-of-Two Offsite Alternating Current Circuits and One-of-Two EDG Sets

The licensee has requested to use the RICT Program to extend the existing CT of 12 hours for this condition. The proposed CT to restore either the inoperable required offsite circuit or the inoperable EDG is 12 hours, or in accordance with the RICT. The RICT estimate for this condition (as provided in Enclosure 1 of the LAR dated December 5, 2014) is 3 days for St. Lucie 1, and 2 days for St. Lucie 2.

Assuming no other inoperable equipment under TS 3.8.1.1 but one required offsite circuit inoperable and one EDG inoperable, the loads will be powered by the remaining required offsite circuit and the remaining EDG. A single startup transformer is adequately sized to accommodate the outage auxiliary loads of both units. Each EDG consists of the complement of safety related equipment needed to achieve safe plant shutdown and/or to mitigate the consequences of a design-basis accident. The SBO crosstie provides an additional power source. As stated in Table E1.1 of the letter dated March 15, 2018, the design success criteria for this condition is one-of-two circuits, and one-of-two EDG trains operable. Therefore, upon the loss of one required offsite circuit and one EDG inoperable, the plant is capable of providing power to the Class 1E buses via the remaining required offsite power circuit and the remaining EDG, with an additional layer of defense-in-depth provided by the SBO cross-tie.

Section 3.1.4.3 of this SE provides further discussion of RMAs and RMAT. In the LAR, Enclosure 12, the licensee described its procedure to develop and implement RMAs. By letters dated March 15, 2018, and June 7, 2018, the licensee provided examples of RMAs that are considered during a required offsite circuit and EDG RICT to provide additional assurance of adequate defense-in-depth:

(1) Perform 1-OSP-100.01(- 100.13), as it pertains to periodic tests, checks, and calibrations for St. Lucie 1.

(2) Perform 2-OSP-100.01(- 100.13), as it pertains to periodic tests, checks, and calibrations for St. Lucie 2.

(3) Ensure AB bus aligned to Other Offsite circuit.

(4) Perform fleet procedure OP-AA-102-1003 for guarding equipment as applicable.

(5) Perform 2-OSP-59.01A/B, as it pertains to EDG Monthly Surveillance for St. Lucie 2.

(6) Guard other EDG.

Because the remaining EDG and required offsite power circuit, as well as the offsite power available via the SBO crosstie, are available to provide power to the safety-related loads and still shut down the plant safely, the NRC staff finds that there is reasonable assurance of defense-in-depth upon declaring one required offsite circuit inoperable and one EDG inoperable.

The design margins present in the remaining equipment will not be affected due to the loss of one EDG and a required offsite power since the use of the RICT Program does not affect the design of the plant. Therefore, the design margin in the remaining operable equipment will not be affected.

3.1.2.2.4 TS 3.8.1.1 ACTION d – Two Required Offsite Alternating Current Circuits Inoperable

The licensee has requested to use the RICT Program to extend the existing CT of 24 hours for this condition. The proposed CT to restore the two required offsite circuits to OPERABLE status is 24 hours, or in accordance with the RICT. The RICT estimate for this condition (as provided in Enclosure 1 of the LAR dated December 5, 2014) is 3 days for St. Lucie 1, and 2 days for St. Lucie 2.

Assuming that ACTION d (two required offsite circuits inoperable) is the only applicable condition in TS 3.8.1.1 for the plant configuration, the loads will be powered by the two Class 1E EDGs. The SBO cross-tie provides an additional power source. As stated in Table E1.1 of the LAR dated December 5, 2014, the design success criteria for this condition is one-of-two circuits available. Therefore, upon the loss of both offsite power circuits, the plant is capable of providing power to the Class 1E buses via the EDGs, with an additional layer of defense-in-depth provided by the SBO cross-tie.

Section 3.1.4.3 of this SE provides further discussion of RMAs and RMAT. In Enclosure 12 of its December 5, 2014, letter, the licensee described its procedure to develop and implement RMAs. By letter dated March 15, 2018, the licensee provided examples of RMAs that are considered during a two required offsite circuits RICT to provide additional assurance of adequate defense-in-depth:

(1) Ensure both EDGs are operable.

(2) Guard both EDGs.

Because the remaining EDGs and the power circuit available via the SBO cross-tie could provide power to the safety-related loads and still shut down the plant safely, the NRC staff finds that there is reasonable assurance of defense-in-depth upon declaring two offsite circuits inoperable.

The design margins present in the remaining equipment will not be affected due to the loss of the two credited offsite power circuits since the use of the RICT Program does not affect the design of the plant. Therefore, the design margin in the remaining operable equipment will not be affected.

3.1.2.2.5 TS 3.8.1.1 ACTION f – One of the St. Lucie 1 Startup Transformers (1A or 1B) Inoperable and a St. Lucie 2 Startup Transformer (2A or 2B)/One of the St. Lucie 2 Startup Transformers (2A or 2B) Inoperable and a St. Lucie 1 Startup Transformer (1A or 1B) Connected to the Same A or B Offsite Power Circuit

The licensee has requested to use the RICT Program to extend the existing CT of 72 hours for this condition. The proposed CT to restore the required offsite circuit to OPERABLE status is 72 hours, or in accordance with the RICT. The RICT estimate for this condition (as provided in Enclosure 1 of the LAR dated December 5, 2014) is 3 days for St. Lucie 1 and 4 days for St. Lucie 2.

Assuming that ACTION f is the only applicable Condition in TS 3.8.1.1 for the plant configuration, the associated loads will be powered by the remaining offsite power circuit and the EDGs provide additional power sources.

In addition to the TS required actions, the RICT Program requires the licensee to employ RMAs at the earliest time possible, but no later than the calculated RMAT. Section 3.1.4.3 of this SE provides further discussion of the RMAs and RMAT. In Enclosure 12 of the December 5, 2014, LAR, the licensee described its procedure to develop and implement RMAs. By letters dated March 15, 2018, and June 7, 2018, the licensee provided examples of RMAs that are considered during the RICT to provide additional assurance of adequate defense-in-depth:

(1) Complete 0-NOP-53.02, "Removal and Restoration of Startup Transformers Mode 1."

(2) No load threatening actives shall be allowed to occur while a startup transformer is out-of-service [OOS].

(3) Guard equipment per OP-AA-102-1003, "Guarded Equipment, for 1A [B] S/U Transformer and 2A [B] S/U Transformer being Degraded/OOS."

(4) Perform 2-OSP-100.01(- 100.13), as it pertains to periodic tests, checks, and calibrations for St. Lucie 2.

(5) Protect all other components in the offsite circuits. Ensure AB bus aligned to other Offsite circuit.

(6) Perform 2-OSP-59.01A/B, as it pertains to EDG Monthly Surveillance for St. Lucie 2.

(7) Guard other SUT and both EDGs per OP-AA-102-1003, "Guarded Equipment."

As stated in Table E1.1 of the letter dated March 15, 2018, the design success criteria for this condition is one-of-two circuits available. Therefore, upon the loss of one offsite power circuit, the plant has sufficient power to achieve safe plant shutdown and/or to mitigate the consequences of a design-basis accident via the remaining offsite power circuit via the start-up transformer with an additional source via the EDG. Because the remaining credited offsite power circuit, the EDG, and the SBO crosstie could power the safety-related loads and still shut down the plant safely, the NRC staff finds that there is reasonable assurance of defense-in-depth upon declaring one offsite circuit inoperable.

The design margins present in the remaining equipment will not be affected due to the loss of one of the units' startup transformers and the other unit startup transformer connected to the same offsite since the use of the RICT Program does not affect the design of the plant. Therefore, the design margin in the remaining operable equipment will not be affected.

3.1.2.2.4 Electrical Systems Conclusion

The NRC staff reviewed the licensee's proposed TS changes and supporting documentation. Based on the evaluations above, the staff finds that while the redundancy is not maintained (e.g., one train of a two train system is inoperable), the CT extensions in accordance with the RICT Program are acceptable because (a) the capability of the systems to perform their safety functions (assuming no additional failures) is maintained, and (b) the licensee's demonstration of identifying and implementing compensatory measures or RMAs, in accordance with the RICT Program, are appropriate to monitor and control risk.

The NRC staff concludes that the proposed changes are consistent with the defense-in-depth philosophy with respect to the requirements in GDC 17 concerning availability, capacity, and capability of the electrical power systems concerning availability, high reliability, testability, independence, fail safe, and function diversity of the instrumentation and control systems. Therefore, the NRC staff concludes that the proposed changes are acceptable and consistent with the principle of defense-in-depth.

3.1.2.3 Evaluation of Instrumentation and Control (I&C) Systems

The licensee has requested to use the RICT Program to extend the existing CT for the following TS conditions. The NRC staff's evaluation of the proposed changes considered various potential plant conditions allowed by the new TSs and considered what redundant or diverse means were available to assist the licensee in responding to various plant conditions. The plant conditions evaluated are discussed in more detail below.

The NRC staff followed the guidance in RG 1.174 and RG 1.177 to assess the proposed changes consistency with the defense-in-depth criteria. The applicable criteria to the affected St. Lucie I&C systems are:

- System redundancy, independence, and diversity are maintained commensurate with the expected frequency and consequences of challenges to the system (e.g., there are no risk outliers).
- Defenses against potential CCF are maintained and the potential for the introduction of new common cause failure mechanisms is assessed.
- The intent of the plant's design criteria is maintained.

Section 7.2 of the St. Lucie 1 UFSAR describes that the reactor protective system (RPS) is designed to assure adequate protection of the fuel, fuel cladding, and reactor coolant pressure boundary during anticipated operational occurrences. The RPS consists of sensors, amplifiers, logic, and other equipment necessary to monitor selected nuclear steam supply system parameters and to effect reliable and rapid reactor shutdown if any one or a combination of parameters deviates from a preselected operating range. The system functions to protect the core and reactor coolant system pressure boundary.

The St. Lucie 1 RPS consists of four trip paths operating through the coincidence logic matrices. Four independent measurement channels normally monitor each parameter that can initiate a reactor trip. Individual channel trips occur when the measurement reaches a preselected value. The channel trips are combined in six 2-out-of-2 logic matrices. Each 2-out-of-2 logic matrix provides trip signals to four 1-out-of-6 logic units, each of which causes a trip. This design implements a *de facto* 2-out-of-4 trip coincidence logic. The trip logic design for each individual reactor trip signal varies. The coincidence logics for all affected trip signals are explained in detail in Section 3.1.2.3.1, below.

The St. Lucie 1 ESFAS consists of devices and circuitry needed to actuate the safety signals listed in St. Lucie 1 TS Table 3.3-2. As described in Section 7.3 of the St. Lucie 1 UFSAR, each of the ESFAS consist of four measurement channels for each input parameter, two logic matrix systems, and two actuation channels. The coincidence logics for all of the affected safety signals are explained in detail in Section 3.1.2.3.2, below.

The St. Lucie 2 RPS and ESFAS have very similar designs with St. Lucie 1. Some relevant design differences are discussed in detail in Sections 3.1.2.3.3 and 3.1.2.3.4, below.

For each instrument, the NRC staff verified that in all applicable operating modes, the affected protective feature would perform its intended function by ensuring the ability to detect and mitigate the associate event or accident when the CT of a channel is extended. The following sections summarize the NRC staff's evaluation with respect to the defense-in-depth principle for the functions identified in the LAR, as supplemented.

3.1.2.3.1 St. Lucie 1 Reactor Protective Instrumentation

The St. Lucie 1 LCO 3.3.1.1 requires that "[a]s a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE." The licensee proposed to apply an option to calculate RICT to ACTION 1. ACTION 1 is applicable to Functional Unit 1, "Manual Reactor Trip."

<u>St. Lucie 1 Table 3.3-1, Functional Unit 1, ACTION 1</u>

The licensee proposed to revise ACTION 1 for Functional Unit 1 to state:

> With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in HOT STANDBY within the next 6 hours and/or open the protective system trip breakers.

According to the St. Lucie 1 TS Table 3.3-1, Functional Unit 1 consists of two channels and only one channel is required to fulfill the manual trip function, although the required Minimum Channels OPERABLE is two. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE required, one channel remains OPERABLE and is available to perform the manual trip function. Based on this information, the NRC staff finds that this one operable channel can fulfill the manual trip function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 1 of the supplement dated March 15, 2018, the licensee identified a number of diverse means that exist to accomplish the reactor trip function, including automatic reactor trips, manual actuation of the motor generator (MG) set output breakers, MG set load contactors, or reactor trip breakers. Therefore, the diversity to this manual trip function exists and remains unchanged under the proposed changes.

The NRC staff concludes that the proposed RICT for the inoperable instrumentation does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected function. The NRC staff finds this change is consistent with the defense-in-depth philosophy and is, therefore, acceptable.

3.1.2.3.2 St. Lucie 1 ESFAS Instrumentation

The St. Lucie 1 LCO 3.3.2.1 requires that "[t]he Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4." The licensee proposed to apply an option to RICTs to the following ACTIONS:

<u>ACTION 8</u>

The licensee proposed to revise ACTION 8 to state:

> With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 8 is applicable to the following Functional Units:

- Functional Unit 1.a, "Safety Injection Actuation System (SIAS) – Manual (Trip Buttons)"
- Functional Unit 2.a, "Containment Spray Actuation System (CSAS) – Manual (Trip Buttons)"
- Functional Unit 3.a, "Containment Isolation System (CIS) – Manual (Trip Buttons)"
- Functional Unit 4.a, "Main Steam Line Isolation System (MSIS) – Manual (Trip Buttons)"
- Functional Unit 5.a, "Containment Sump Recirculation Actuation System (RAS) – Manual (Trip Buttons)"

The NRC staff's evaluation of the proposed change to ACTION 8, as it relates to the affected Functional Units, follows.

Functional Unit 1.a

Functional Unit 1.a consists of two channels while only one channel is required to fulfill the manual function of the SIAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the SIAS function. However, the redundancy of this function would be degraded from 1-out-of-2 to 1-out-of-1.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity of the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 2.a

Functional Unit 2.a consists of two channels, while only one channel is required to fulfill the manual function of the CSAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the CSAS function. However, the redundancy of this function would be degraded from 1-out-of-2 to 1-out-of-1.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 3.a

Functional Unit 3.a consists of two channels, while only one channel is required to fulfill the manual function of the CIS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the CIS function. However, the redundancy of this function would be degraded from 1-out-of-2 to 1-out-of-1.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 4.a

Functional Unit 4.a consists of two channels per steam generator (SG), while only one channel per SG is required to fulfill the manual function of the MSIS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the SIAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 5.a

Functional Unit 5.a consists of two channels, while only one channel is required to fulfill the manual function of the RAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the RAS function. However, the redundancy of this function would be degraded from 1-out-of-2 to 1-out-of-1.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

ACTIONs 10A and 10B

ACTIONs 10a, 10b, and 10c are applicable to CSAS Functional Unit 2.b, "Containment Pressure – High-High." The licensee proposed to redesignate ACTIONs 10a and 10b as a single ACTION 10A. The redesignated ACTION would still apply to Functional Unit 2.b. The NRC staff finds the proposed change editorial in nature and, therefore acceptable.

In addition, the licensee proposed to redesignate ACTION 10c as ACTION 10B and revise it to state:

> With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

The revised ACTION 10B would remain applicable to Functional Unit 2.b

Functional Unit 2.b consists of four channels and the Minimum Channels OPERABLE is three. With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, two channels remain operable. The NRC staff finds under this condition, the Functional Unit 2.b can still fulfill the CSAS safety function. However, the redundancy of this function would be degraded from 2-out-of-4 to 1-out-of-2.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

ACTION 11

The licensee proposed to revise ACTION 11 to state:

> With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

ACTION 11 is applicable to the following Functional Units:

- Functional Unit 7.a, "Auxiliary Feedwater (AFAS) – Manual (Trip Buttons)"
- Functional Unit 7.b, "AFAS – Automatic Actuation Logic"

The NRC staff's evaluation of the proposed change to ACTION 11, as it relates to the affected Functional Units, follows.

Functional Unit 7.a

Functional Unit 7.a. consists of four channels per SG and two channels per SG are required to actuate the manual AFAS signal.

With the number of OPERABLE channels one less than the Total Number of Channels, three channels remain OPERABLE for the affected SG. The NRC staff finds that these three operable channels can fulfill the manual AFAS function, with one channel in redundancy. However, the redundancy of this function is degraded from 2-out-of-4 to 2-out-of-3.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 7.b

Functional Unit 7.b. consists of four channels per SG and two channels per SG are required to actuate the automatic AFAS signal.

With the number of OPERABLE channels one less than the Total Number of Channels, three channels remain OPERABLE for the affected SG. The NRC staff finds that these three operable channels can fulfill the manual AFAS function, with one channel in redundancy. However, the redundancy of this function is degraded from 2-out-of-4 to 2-out-of-3.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

<u>ACTION 13</u>

ACTION 13 is applicable to RAS Functional Unit 5.b, "Refueling Water Tank – Low." The licensee proposed to revise ACTION 13 to state:

> With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:
>
> a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If OPERABILITY can not be restored within 48 hours or in accordance with the Risk Informed Completion Time Program, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
>
> b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.

For Functional Unit 5.b, the Total Number of Channels is four and only two channels are required to fulfill this RAS function. With the number of OPERABLE channels one less than the Total Number of Channels, three channels remain OPERABLE. The NRC staff finds that three operable channels can fulfill the RAS function, with one channel in redundancy. However, the redundancy of this function is degraded from 2-out-of-4 to 2-out-of-3.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

ACTION 15

The licensee proposed to redesignate ACTION 14.c as ACTION 15 and revise it to state:

> With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 15 would be applicable to the following Functional Units:

- Functional Unit 7.c, "AFAS – SG Level (1A/1B) – Low"
- Functional Unit 8.a, "Auxiliary Feedwater Isolation – SG 1A – SG 1B Differential Pressure"
- Functional Unit 8.b, "Auxiliary Feedwater Isolation – Feedwater Header 1A – 1B Differential Pressure"

The NRC staff's evaluation of the proposed change to ACTION 15, as it relates to the affected Functional Units, follows.

Functional Unit 7.c

Functional Unit 7.c. consists of four channels per SG. Two channels per SG are required to actuate the manual AFAS signal, and the required number of the Minimum Channels OPERABLE is three.

With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, two channels remain OPERABLE for the affected SG. The NRC staff finds that the two remaining operable channels can perform the manual AFAS function. Given that one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour, the coincidence logic of this Functional Unit becomes 1-out-of-2 afterwards.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 8.a

Functional Unit 8.a consists of four channels per SG and two channels per SG are required to actuate the auxiliary feedwater isolation signal. The required number of the Minimum Channels OPERABLE is three.

With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, two channels remain OPERABLE for the affected SG. The NRC staff finds that the two remaining operable channels can perform this Functional Unit safety function. In addition, given that one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour, the coincidence logic of this Functional Unit becomes 1-out-of-2 afterwards.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 8.b

Functional Unit 8.b consists of four channels per SG. Two channels per SG are required to actuate the manual auxiliary feedwater isolation signal, and the required number of the Minimum Channels OPERABLE is three.

With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, two channels remain OPERABLE for the affected SG. The NRC staff finds that the two remaining operable channels can perform this safety function. In addition, given that one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour, the coincidence logic of this Functional Unit becomes 1-out-of-2 afterwards.

In Table 2 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

3.1.2.3.3 St. Lucie 2 Reactor Protective Instrumentation

The St. Lucie 2 LCO 3.3.1 requires that "[a]s a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE." The proposed to apply an option to calculate an RICT ACTION 1. ACTION 1 is applicable to Functional Unit 1, "Manual Reactor Trip."

<u>St. Lucie 2 Table 3.3-1, Functional Unit 1, ACTION 1</u>

The licensee proposed to modify ACTION 1 for Functional Unit 1 to state:

> With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed

> Completion Time Program, or be in HOT STANDBY within the next 6 hours and/or open the protective system trip breakers.

Functional Unit 1 consists of four channels, while two channels are required to fulfill the manual trip function. The required Minimum Channels OPERABLE is four. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE required, three channels remain OPERABLE. Based on this information, the NRC staff finds that Functional Unit 1 can perform the manual trip function with the redundancy degraded from 2-out-of-4 to 2-out-of-3.

In Table 3 of the supplement dated March 15, 2018, the licensee identified a number of diverse means that exist to accomplish the reactor trip function, including automatic reactor trips, manual actuation of the MG set output breakers, MG set load contactors, or reactor trip breakers. Therefore, the diversity to this manual trip function exists and remains unchanged under the proposed changes.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

3.1.2.3.3 St. Lucie 2 ESFAS Instrumentation

The St. Lucie 2 LCO 3.3.2 requires that "[t]he Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4." The licensee proposed to apply an option to RICTs to the following ACTIONS:

ACTION 12

The licensee proposed to revise ACTION 12 to state:

> With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 12 is applicable to the following Functional Units:

- Functional Unit 1.a, "SIAS – Manual (Trip Buttons)"
- Functional Unit 1.d, "SIAS – Automatic Actuation – Logic"
- Functional Unit 2.a, "CSAS – Manual (Trip Buttons)"
- Functional Unit 2.c, "CSAS – Automatic Actuation Logic"
- Functional Unit 3.a, "Containment Isolation (CIAS) – Manual CIAS (Trip Buttons)"
- Functional Unit 3.e, "CIAS – Automatic Actuation Logic"
- Functional Unit 4.d, "MSIS – Automatic Actuation Logic"
- Functional Unit 5.a, "RAS – Manual (Trip Buttons)"
- Functional Unit 5.c, "RAS – Automatic Actuation Logic"

The NRC staff's evaluation of the proposed change to ACTION 12, as it relates to the affected Functional Units, follows.

Functional Unit 1.a

Functional Unit 1.a consists of two channels. Only one channel is required to fulfill the manual function of the SIAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can perform the SIAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity of the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 1.d

Functional Unit 1.d consists of two channels and only one channel is required to fulfill the automatic actuation function of the SIAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can perform the SIAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 2.a

Functional Unit 2.a consists of two channels. Only one channel is required to fulfill the manual function of the CSAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can perform the CSAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 2.c

Functional Unit 2.c consists of two channels. Only one channel is required to fulfill the automatic actuation function of the CSAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the CSAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the affected functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 3.a

Functional Unit 3.a consists of two channels and only one channel is required to fulfill the manual function of the CIAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the CIAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 3.e

Functional Unit 3.e consists of two channels and only one channel is required to fulfill the automatic actuation function for CIAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the CIAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 4.d

Functional Unit 4.d consists of two channels and only one channel is required to fulfill the automatic actuation function for MSIS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the MSIS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 5.a

Functional Unit 5.a consists of two channels and only one channel is required to fulfill the manual function of the RAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the RAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 5.c

Functional Unit 5.c consists of two channels and only one channel is required to fulfill the automatic actuation function for RAS. With the number of OPERABLE channels one less than the Total Number of Channels, one channel remains OPERABLE. The NRC staff finds that this one operable channel can fulfill the RAS function. However, the redundancy of this function is degraded from 1-out-of-2 to 1-out-of-1.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

ACTION 15

The licensee proposed to revise ACTION 15 to state:

> With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

ACTION 15 is applicable to the following Functional Units:

- Functional Unit 7.a, "AFAS – Manual (Trip Buttons)"
- Functional Unit 7.b, "AFAS – Automatic Actuation Logic"

The NRC staff's evaluation of the proposed change to ACTION 15, as it relates to the affected Functional Units, follows.

Functional Unit 7.a

Functional Unit 7.a consists of four channels per SG and two channels per SG are required to actuate the manual AFAS signal.

With the number of OPERABLE channels one less than the Total Number of Channels, three channels remain OPERABLE for the affected SG. The NRC staff finds that these three operable channels can fulfill the manual AFAS function, with one channel in redundancy. However, the redundancy of this function is degraded from 2-out-of-4 to 2-out-of-3.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 7.b

Functional Unit 7.b consists of four channels per SG and two channels per SG are required to actuate the automatic AFAS signal.

With the number of OPERABLE channels one less than the Total Number of Channels, three channels remain OPERABLE for the affected SG. The NRC staff finds that these three operable channels can fulfill the manual AFAS function, with one channel in redundancy. However, the redundancy of this function is degraded from 2-out-of-4 to 2-out-of-3.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

ACTION 17

ACTION 17 is applicable to the following Functional Units:

- Functional Unit 6.a(1), "Loss of Power (LOV) – 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)"
- Functional Unit 6.a(2), "LOV – 480 V [volt] Emergency Bus Undervoltage (Loss of Voltage)"
- Functional Unit 6.b(1), "LOV – 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)"
- Functional Unit 6.b(2), "LOV – 480 V Emergency Bus Undervoltage (Degraded Voltage)"

The licensee proposed to redesignate ACTION 17 as ACTION 17A and remove applicability for Functional Units 6.a(2), 6.b(1), and 6.b(2). The redesignated ACTION would still apply to Functional Unit 6.a(1). The NRC staff finds the proposed change editorial in nature and, therefore acceptable.

In addition, the licensee proposed to create new ACTION 17B. Action 17B would state:

> With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or place the inoperable channel in the tripped condition and verify that the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

The new ACTION 17B would apply to Functional Units 6.a(2), 6.b(1), and 6.b(2). The NRC staff's evaluation of the proposed ACTION 17B, as it relates to the affected Functional Units, follows.

Functional Unit 6.a(2)

Functional Unit 6.a(2) consists of three channels per bus and two channels per bus are needed to actuate the LOV signal.

With the number of OPERABLE channels one less than the Total Number of Channels, two channels remain OPERABLE for the affected bus. The NRC staff finds that these three operable channels can fulfill the LOV function. However, the redundancy of this function is degraded from 2-out-of-3 to 2-out-of-2.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 6.b(1)

Functional Unit 6.b(1) consists of three channels per bus and two channels are needed to actuate the LOV signal.

With the number of OPERABLE channels one less than the Total Number of Channels, two channels remain OPERABLE for the affected bus. The NRC staff finds that these three operable channels can fulfill the LOV function. However, the redundancy of this function is degraded from 2-out-of-3 to 2-out-of-2.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 6.b(2)

Functional Unit 6.b(2) consists of three channels per bus. Two channels are needed to actuate the LOV signal. With the number of OPERABLE channels one less than the Total Number of Channels, two channels remain OPERABLE for the affected bus. The NRC staff finds that these three operable channels can perform the LOV function. However, the redundancy of this function is degraded from 2-out-of-3 to 2-out-of-2.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

<u>ACTIONs 18a, 18b, and 18c</u>

ACTIONs 18a, 18b, and 18c are applicable to CSAS Functional Unit 2.b, "Containment Pressure – High-High." The licensee proposed to redesignate ACTIONs 18a and 18b as a single ACTION 18A. The redesignated ACTION would still apply to Functional Unit 2.b. The NRC staff finds the proposed change editorial in nature and, therefore acceptable.

In addition, the licensee proposed to redesignate ACTION 18c as ACTION 18B and revise it to state:

> With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels

> has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

The revised ACTION 18B would remain applicable to Functional Unit 2.b

Functional Unit 2.b consists of four channels and the Minimum Channels OPERABLE is three. With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, two channels remain operable. The NRC staff finds that the two remaining operable channels can perform this Functional Unit safety function. In addition, given that one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour, the coincidence logic of this Functional Unit becomes 1-out-of-2 afterwards.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exist to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

<u>ACTION 19</u>

ACTION 19 is applicable to RAS Functional Unit 5.b, "Refueling Water Storage Tank – Low." The licensee proposed to revise ACTION 19 to state:

> With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:
>
> a. Within 1 hour the inoperable channel is placed in either the bypassed or tripped condition. If OPERABILITY cannot be restored within 48 hours or in accordance with the Risk Informed Completion Time Program, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
>
> b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

For Functional Unit 5.b, the Total Number of Channels is four and only two channels are required to fulfill this RAS function. With the number of OPERABLE channels one less than the Total Number of Channels, three channels remain OPERABLE. The NRC staff finds that three operable channels can perform the RAS function and with one channel in redundancy. However, the redundancy of this function is degraded from 2-out-of-4 to 2-out-of-3.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exists to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

ACTION 21

The licensee proposed to redesignate ACTION 20.c as ACTION 21 and revise it to state:

> With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, operation may proceed provided one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour. Restore one of the inoperable channels to OPERABLE status within 48 hours or in accordance with the Risk Informed Completion Time Program, or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 21 would be applicable to the following Functional Units:

- Functional Unit 7.c, "AFAS – SG Level (2A/2B) – Low"
- Functional Unit 8.a, "Auxiliary Feedwater Isolation – SG 2A – SG 2B Differential Pressure"
- Functional Unit 8.b, "Auxiliary Feedwater Isolation – Feedwater Header 2A – 2B Differential Pressure"

The NRC staff's evaluation of the proposed change to ACTION 15, as it relates to the affected Functional Units, follows.

Functional Unit 7.c

Functional Unit 7.c consists of four channels per SG and two channels per SG are required to actuate the manual AFAS signal. The required number of the Minimum Channels OPERABLE is three.

With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, two channels remain OPERABLE for the affected SG. The NRC staff finds that the two remaining operable channels can perform this Functional Unit safety function. In addition, given that one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour, the coincidence logic of this Functional Unit becomes 1-out-of-2 afterwards.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exist to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 8.a

Functional Unit 8.a consists of four channels per SG and two channels per SG are required to actuate the manual auxiliary feedwater isolation signal. The required number of the Minimum Channels OPERABLE is three.

With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, two channels remain OPERABLE for the affected SG. The NRC staff finds that the two remaining operable channels can perform this Functional Unit safety function. In addition, given that one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour, the coincidence logic of this Functional Unit becomes 1-out-of-2 afterwards.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exist to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

Functional Unit 8.b

Functional Unit 8.b consists of four channels per SG and two channels per SG are required to actuate the manual auxiliary feedwater isolation signal. The required number of the Minimum Channels OPERABLE is three.

With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, two channels remain OPERABLE for the affected SG. The NRC staff finds that the two remaining operable channels can perform this Functional Unit safety function. In addition, given that one of the inoperable channels has been bypassed and the other inoperable channel placed in the tripped condition within 1 hour, the coincidence logic of this Functional Unit becomes 1-out-of-2 afterwards.

In Table 4 of the supplement dated March 15, 2018, the licensee confirmed that more than one diverse means exist to accomplish the safety functions for each identified accident condition.

The NRC staff concludes that the proposed RICT for this Functional Unit does not impede accomplishing its safety function, as discussed above. Additionally, the proposed change does not alter the existing diversity to the affected functions. The NRC staff finds that this change is consistent with the defense-in-depth philosophy, and therefore acceptable.

3.1.2.3.5 I&C Systems Conclusion

The St. Lucie 1 and 2 TS 3.3, "Instrumentation," LCOs were developed to assure that the plants maintain necessary redundancy, and diversity, in compliance with the "single failure" design criterion, as defined in Clause 4.2 of IEEE 279-1971; "adequate bypass redundancy," as defined in Clause 4.11 of IEEE 279-1971; and the "adequate diversity" criterion, as defined in GDC 22.

As discussed in Sections 3.1.2.3.1 through 3.1.2.3.4, the I&C safety functions identified as part of the licensee's proposed changes maintain the capability to perform their safety functions when in a RICT. Therefore, the I&C system diversity configuration remains unchanged. Based on the evaluation presented above, the NRC staff concludes that the proposed changes to TS 3.3 meet protection system independence requirements as described in GDC 22.

Under certain TS Conditions, the single failure criterion cannot be met, because the inoperable channels can be functionally assumed to be bypassed. Based on IEEE 279-1971, Clause 4.11 exception provision, the "bypass single failure" criterion can be relaxed upon a reliability justification. The RICT Program provides the necessary administrative controls to permit extension of CTs and thereby delay reactor shutdown or Required Actions. If risk is assessed and managed appropriately within specified limits and programmatic requirements, the NRC staff considers that the affected system operation reliability remains acceptable and is consistent with overall system reliability and risk considerations. Therefore, the NRC staff concludes that the proposed changes to TS 3.3 meet the requirements defined in Clause 4.2 and Clause 4.11 of IEEE 279-1971.

The licensee confirmed in the LAR, as supplemented, that the proposed changes do not alter the design of the St. Lucie 1 and 2 system designs. Therefore, the NRC staff concludes that the proposed changes do not alter the ways in which St. Lucie 1 or 2 I&C systems fail and do not introduce new CCF modes. Therefore, system independence is maintained. The NRC staff finds that some proposed changes reduce the level of redundancy of the affected I&C systems, and this reduction may reduce the level of defense against some CCFs. However, as described above, the NRC staff finds that such reduction in redundancy and defense against CCF are acceptable because diversity is part of the design for the functions identified in the LAR, as supplemented.

Because the licensee did not propose any changes to the design basis, the independency and the fail-safe principle remain unchanged. The licensee stated in the LAR, as supplemented, that the proposed changes did not include any TS loss of function conditions. However, it is recognized that while in an ACTION statement, redundancy of the given protective feature will be temporarily reduced, and, accordingly, the system reliability will be reduced. In the LAR, as supplemented, the licensee stated in the description of proposed changes to the instrumentation and control systems that at least one diverse means (e.g., other automatic features or manual action) to accomplish the safety functions (e.g., reactor trip, safety injection, or containment isolation) remain available during the use of the RICT. The NRC staff reviewed the licensee's proposed TS changes to assess the availability of the diverse means to accomplish the safety function(s). The NRC staff finds that the availability of diverse protective features provide sufficient defense-in-depth to accomplish the safety functions, allowing for the extension of CTs in accordance with the RICT Program.

The NRC staff reviewed the licensee's proposed TS changes and supporting documentation. The NRC staff finds that while the I&C redundancy is reduced, the CT extensions implemented in accordance with the RICT Program are acceptable because: (a) the capability of the I&C systems to perform their safety functions is maintained, (b) diverse means to accomplish the safety functions exist, and (c) the licensee will identify and implement risk management actions to monitor and control risk in accordance with the RICT Program.

3.1.2.4 <u>Key Principle 2 Conclusions</u>

The LAR, as supplemented, proposes to modify the TS requirements to permit extending selected CTs using the RICT Program in accordance with NEI 06-09, Revision 0-A. The NRC staff has reviewed the licensee's proposed TS changes and supporting documentation. The

NRC staff finds that extending the selected CTs with the RICT Program following loss of redundancy, but maintaining the capability of the system to perform its safety function, is an acceptable reduction in defense in depth provided that the licensee identifies and implements compensatory measures as appropriate during the extended CT.

As discussed above, the NRC staff further evaluated key safety functions in the proposed CT extensions and concluded that (1) the changes maintain the intent of the design criteria; (2) the specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences preserving system redundancy, independence, and diversity commensurate with the expected frequency, consequences of challenges to the system, and uncertainties; and (3) sufficient capacity and capability is maintained to assure that containment integrity and other vital functions are maintained in the event of postulated accidents preserving the independence of barriers.

The NRC staff concludes that the proposed extension of selected CTs with the RICT program is consistent with the defense in depth philosophy concerning availability, capacity, and capability of the electrical power systems, and requirements in IEEE 279-1971, GDC 22, and the applicable plant-specific design bases concerning availability, high reliability, testability, independence, fail safe, and function diversity of the I&C systems. Therefore, NRC staff finds that this proposed change meets the second key safety principle of RG 1.177 and is, therefore, acceptable. Additionally, the NRC staff concludes that the proposed changes are consistent with the defense-in-depth philosophy as described in RG 1.174.

3.1.3 Key Principle 3: Evaluation of Safety Margins

Section 2.2.2 of RG 1.177, Revision 1, states, in part, that sufficient safety margins are maintained when:

- Codes and standards ... or alternatives approved for use by the NRC are met...
- Safety analysis acceptance criteria in the final safety analysis report (FSAR) are met or proposed revisions provide sufficient margin to account for analysis and data uncertainties.

In its letter dated February 25, 2017, as supplemented by letter dated February 1, 2018, the licensee stated that the "[u]se of a RICT is not permitted for entry into a configuration that represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE." In its February 1, 2018, RAI response, the licensee further stated that all proposed TS changes in the original application that had included the use of RICT for conditions involving a loss of function had been withdrawn. Further, the licensee is not proposing in this application to change any quality standard, material, or operating specification.

Acceptance criteria for operability of equipment are not changed and use of the RICT only when the system(s) retain(s) the capability to perform the applicable safety function(s) ensure that the current safety margins are retained. Safety margins are also maintained if PRA functionality is determined for the inoperable train that would result in an increased CT. Credit for PRA functionality, as described in NEI 06-09, Revision 0-A, is limited to the inoperable train, loop, or component. The reduced but available functionality may support further increase in the CT consistent with available safety margin. The specified safety function is still being met by the operable train and, therefore, requires no evaluation of PRA functionality to meet the design basis success criteria.

3.1.3.1 Key Principle 3 Conclusions

As discussed above, the NRC staff finds that the design-basis analyses for St. Lucie 1 and 2 remain applicable. Although the licensee will be able to have design-basis equipment out of service longer than the current TS allow and the likelihood of successful fulfillment of the function will be decreased when redundant train(s) are not available, the capability to fulfill the function will be retained when the available equipment functions as designed. Any increase in unavailability because less equipment is available for a longer time is included in the RICT evaluation. Therefore, safety margins are not affected adversely by the implementation of the RICT Program. Based on the above, the NRC staff concludes that the proposed change meets the third key safety principle of RG 1.177 and is acceptable.

3.1.4 Key Principle 4: Change in Risk Consistent with the Commission's Safety Goal Policy Statement

Proposed TS Section 6.8.4.r (St. Lucie 1) and TS Section 6.8.4.s (St. Lucie 2) state that the RICT "must be implemented in accordance with NEI 06-09, Revision 0-A, "Risk-Informed Technical Specification Initiative 4b: Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0-A, November 2006." The NRC staff evaluated whether the change in risk from implementing the RICT Program is small and consistent with the intent of the Commission's Safety Goal Policy Statement. The NRC staff evaluated the licensee's proposed changes against the three-tiered approach in RG 1.177, Revision 1 for a licensee's evaluation of the risk associated with a proposed TS CT change. The results of the staff's review are discussed below.

3.1.4.1 Tier 1: PRA Capability and Insights

The first tier evaluates the impact of the proposed changes on plant operational risk. The Tier 1 review involves two aspects: (1) the technical acceptability of the PRA models and their application to the proposed changes, and (2) a review of the PRA results and insights described in the licensee's application.

3.1.4.1.1 PRA Acceptability

The objective of the PRA acceptability review is to determine whether the St. Lucie 1 and 2 PRA used to implement the RICT Program is of sufficient scope, level of detail, and technical adequacy for this application.

The NRC staff reviewed the licensee's resolutions/dispositions to peer review facts and observations (F&Os) for the internal events PRA (IEPRA), including internal flooding, and the Fire PRA provided in the LAR and its supplements. External hazards information was also reviewed. The objective of the PRA quality review is to determine whether the St. Lucie 1 and 2 PRA used to implement the RICT Program is of sufficient scope, level of detail, and technical adequacy for this application.

IEPRA (including Internal Flooding)

The licensee's evaluation of the technical adequacy of its IEPRA model included a combination of peer reviews and self-assessments. The St. Lucie 1 and 2 IEPRA full-scope peer review was performed in July 2002 by the Combustion Engineering Owners Group using NEI 00-02, Revision A.3 (Reference 34), which pre-dated the ASME/ANS PRA standard and RG 1.200. A focused-scope peer review associated with LERF was performed by the Pressurized Water Reactor Owner's Group in July 2009 using the combined PRA standard, ASME/ANS-RA-Sb-2005 (Reference 35), as clarified by RG 1.200, Revision 1 (Reference 36). The licensee performed the following focused-scope peer reviews using the combined PRA standard, ASME/ANS-RA-Sa-2009, as clarified by RG 1.200, Revision 2: (1) the CCF methodology and data in August 2009; (2) the human reliability analysis (HRA), data, and internal flood technical elements in April 2011; and (3) interfacing system loss-of-coolant accident (ISLOCA) methodology and data in December 2013.

The licensee completed a self-assessment in March 2014 to identify potential gaps between the peer reviews and self-assessments performed using earlier revisions of the PRA standard and the current PRA ASME standard, ASME/ANS RA-Sa-2009, as clarified by RG 1.200, Revision 2. The assessment concluded that no gaps were identified relative to ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, Revision 2, except those associated with the December 2013 ISLOCA focused-scope peer review. Additionally, after the LAR submittal, the licensee conducted an Independent Assessment F&O closure review for the internal events, internal flooding and fire, finding-level F&Os, which the NRC staff observed (Reference 37).

The NRC staff reviewed each peer review F&O resolution provided in the LAR, as supplemented, and requested supplemental information regarding the resolution to some of the F&Os, each of which is discussed below.

F&O AS-06 stated that scenarios that involve loss of all Main Feedwater (MFW) and AFW are conservatively modeled because the use of condensate pumps to provide low-pressure feed is not credited. In PRA RAI 01.a regarding F&O AS-06, the NRC staff requested the licensee to clarify how not crediting the condensate pumps impacts the RICT quantification. In response to PRA RAI 01.a, the licensee clarified that this modeling conservatism would increase the risk impact associated with plant configurations where these scenarios are important and that the effect would be a reduction in the associated RICT. The NRC staff concludes this disposition is acceptable for this application because the licensee demonstrated that the existing model increases the change in risk for affected sequences that prevents non-conservative RICT estimates.

F&O IE-01 stated that the LOSP frequency used in the PRA was derived from early generic industry data and introduces a "high degree of conservatism" into the PRA. In PRA RAI 01.b regarding F&O IE-01, the NRC staff requested the licensee clarify how over-estimation of LOSP frequency impacts the calculation of a RICT. In response to PRA RAI 01.b, the licensee explained that the current evaluation for LOSP frequency replaced the early generic industry data, which introduced the high degree of conservatism, with more recent data. The licensee further clarified that, as a result, this issue no longer has an impact on the RICT Program. The NRC staff concludes this resolution is acceptable for this application because the licensee replaced outdated LOSP frequency estimates with more recent data.

F&O IE-04 stated that the PRA did not address multiple 120-V AC instrument bus failure initiating events. The licensee's disposition to this F&O stated that, "[m]ultiple instrument bus failures are judged to be a low probability," but did not justify this conclusion, particularly for RICT calculations, where one or more buses may be unavailable as part of the TS condition. Therefore, in PRA RAI 01.c, the NRC staff requested the licensee to provide justification for the conclusion that multiple instrument bus failures are judged to be a low probability and to clarify the impact to the RICT estimates. In response to PRA RAI 01.c, the licensee explained that the model does not consider multiple simultaneous failure of two or more buses due to low probability. The response further stated that "the low frequency of the single instrument bus initiating event (about 9E-04/year), and the fact that historical plant-specific data updates since the Individual Plant Examinations submittal have not identified such failures." In the response to RAI-01.c.R1, which requested further clarification about why the CCF contribution from the instrument buses is very small, the licensee clarified that the instrument buses are powered by inverters that can be manually aligned to the different buses. The licensee stated that the model includes CCF of the inverters, instead of CCF for the buses themselves, and that the CCF of the inverters feeding the buses bounds the CCF of the buses. The NRC staff concludes that this modeling is acceptable for this application based on the licensee's statement that the CCF of the inverters feeding the buses bounds the CCF of the buses, and therefore the CCF failure of the buses as initiating events are accounted for in the PRA.

F&O HR-G6-1 stated that "the dependency analysis that was performed did not have a reasonableness check of the combined human failures provided." The F&O also explained that a number of Human Error Probabilities (HEP) combinations from the PRA had resulted in probabilities in the range of 1E-10/year to 1E-16/year. The underestimation of minimum joint probabilities could result in non-conservative RICTs of varying degrees for different inoperable SSCs. Therefore, in PRA RAI 05, the NRC staff requested the licensee to describe the HRA dependency analysis to provide justification for any joint human error probabilities (JHEPs) less than 1E-06/year for the internal events PRA and less than 1.0E-05/year for the Fire PRA, consistent with acceptable guidance in NUREG-1792 (Reference 38). In response to PRA RAI 05, the licensee stated that the St. Lucie Internal Events and Fire PRA models both employ a JHEP floor consistent with the NRC-accepted guidance. For the internal events, the licensee summarized the justification for five JHEPs less than 1.0E-06/year that now have a minimum value of about 1E-10/year; and stated that there are no Fire PRA JHEPs less than 1E-05/year. The NRC staff concludes this issue is resolved because the licensee's PRA models apply a minimum JHEP value, or justifies any lower values, consistent with NRC-accepted guidance.

F&O AS-04 (Supporting Requirement (SR) AS-A5) stated that a modeling assumption that the rupture of the refueling water tank would also fail shutdown cooling seemed overly conservative. The licensee explained that a review of its procedures and plant practices rendered this scenario as not credible. As part of the Independent Assessment Team review of the original F&O and the licensee's disposition, the team identified a logic error at the gate where failure of the refueling water tank would fail emergency boration. The licensee proposed an implementation item to be completed prior to RICT Program implementation to revise the logic associated with Safety Injection setpoints and entry to Shutdown Cooling. The NRC staff concludes this resolution is acceptable because the licensee will use logic that will accurately model the plant, consistent with established procedures prior to implementation of the RICT Program.

F&O AS-06 (SR AS-A3) instructed the licensee to consider adding low pressure feed (using condensate pumps) to the model for accident sequences involving loss of all MFW and AFW. The licensee dispositioned the F&O by stating that total loss of MFW and AFW is about 3% of CDF and adding credit in low pressure feed would be a "neutral benefit." The Independent Assessment Team stated that there was no documentation to support the licensee's disposition of the F&O. The licensee proposed an implementation item to be completed prior to RICT Program implementation to revise the model to credit Low Pressure Feed to the SGs. The NRC staff concludes this resolution is acceptable because the licensee will use the Independent Assessment Team's proposed solution to credit the scenario before implementation of the RICT Program.

F&O AS-12 (SR AS-A5) stated that, following certain ranges of loss-of-coolant-accident (LOCA) break sizes, crediting shutdown cooling as long term cooling instead of recirculation for the sumps or some other backup water source was not properly evaluated nor justified. The licensee explained that, under certain conditions, recirculation cooling following certain ranges of LOCA sizes is procedurally not allowed and physically not possible. The Independent Assessment Team did not accept the licensee explanation as sufficient to close the F&O, but indicated a better definition of the relevant LOCA sizes and additional justification may be acceptable. The licensee proposed an implementation item to be completed prior to RICT Program implementation to reevaluate the scenario, and to repeat the Appendix X F&O closeout reviews until a mutually satisfactory evaluation allows the F&O to be closed. The NRC staff concludes this resolution is acceptable because resolution requires a complex, plant-specific evaluation that is best performed by the licensee and reviewed using the close interaction provided by the F&O closeout process.

F&O AS-13 (SR AS-A2) stated that the licensee modeled power-operated relief valve lifting only during loss of secondary side heat removal and loss of load with no anticipatory trip. The peer review further observed that the fault tree for anticipatory trip only contained a single basic event. To disposition the F&O, the licensee stated that scenarios other than the two identified by the peer reviewers were included in the PRA. The Independent Assessment Team confirmed the presence of additional scenarios that led to power-operated relief valve lifting, but found that the anticipatory trip still only contained a single, undeveloped event. The licensee proposed an implementation item to be completed prior to RICT Program implementation to revise the working model with increased details associated with anticipatory trip function. The NRC staff concludes this resolution is acceptable because the licensee will use peer reviewed PRA modeling techniques to complete the missing function and resolve the F&O before implementation of the RICT Program.

F&O SL-CCF-12 (SR IE-A6) stated that the CCF of intake cooling water (ICW) traveling screens and strainers plugging as contributors to the loss of ICW initiator fault tree are missing from the model and no explanation for their absence is provided. The licensee stated that ICW traveling screen and strainer plugging was added to the PRA but was not added to the ICW initiator fault tree to eliminate double counting of the CCF events. The Independent Assessment Team did not accept this explanation noting that guidance is available to properly model the same CCF events in both initiating event fault trees and subsequent support system fault trees and, therefore, did not close the F&O. The licensee proposed an implementation item to be completed prior to RICT Program implementation to reevaluate how CCFs are included in the initiating event fault trees and to repeat the Appendix X F&O closeout reviews until a mutually satisfactory evaluation allows the F&O to be closed. The NRC staff concludes this resolution is acceptable because resolution requires additional evaluation, which is best performed by the licensee and reviewed using the close interaction provided by the F&O closeout process.

Based on its review of the provided information on the IEPRA, the NRC staff concludes that the licensee has demonstrated that the IEPRA was reviewed consistent with the guidance in RG 1.200, Revision 2; that it has been reviewed against the applicable SRs in ASME/ANS-RA-Sa 2009; and that, after completion of the implementation items listed in Attachment 1 to the licensee's letters dated September 18, 2018 (L-2018-150), and November 9, 2018 (L-2018-201), the licensee's IEPRA is technically adequate to support the RICT Program, including RICT calculations.

Fire PRA

The licensee evaluated the technical adequacy of the St. Lucie Fire PRA model by conducting a full-scope peer review using the NEI 07-12 peer review process (Reference 39) and Part 4 (Fire PRA) of the current PRA ASME standard, ASME/ANS RA-Sa-2009, as clarified by RG 1.200, Revision 2. As described in Enclosure 2, Table E2-B1 of the LAR, the licensee resolved each F&O by assessing the impact of the F&O on the Fire PRA, as it pertains to the LAR. The NRC staff previously reviewed the technical adequacy of the Fire PRA during its review of the licensee's request to adopt National Fire Protection Association (NFPA) 805 (Reference 40). The NRC staff's review of that request concluded that the St. Lucie Fire PRA possessed sufficient technical adequacy that its quantitative results can be used to demonstrate that the change in risk due to the transition to NFPA 805 meets the acceptance guidelines in RG 1.174. The NRC staff considered the resolution of Fire PRA issues, as documented during the earlier review of the Fire PRA for the request to adopt NFPA 805, as part of its review of this current LAR. The NRC staff evaluated each F&O and the licensee's respective resolution in Enclosure 2 of this LAR to determine whether they had any significant impact on the application.

The F&Os and corresponding dispositions for the Fire PRA peer review provided in Table E2-B1 of the LAR are the same as those provided in Table V-3 of the licensee's request to adopt NFPA 805 (Reference 41). In PRA RAI 02.a, the NRC staff requested clarification that the Fire PRA used for RICT calculations is the same as the one approved for NFPA 805. In response to the RAI, the licensee stated that the Fire PRA that will be used to support RICT calculations will be the same Fire PRA determined to be acceptable for the NFPA 805 transition. Changes described to the NFPA 805 Fire PRA need not be completed before the end of the second refueling outage after the May 28, 2015, issuance of the NFPA 805 license amendments. As discussed above, the NRC staff's review of the request to adopt NFPA 805 concluded that the licensee had demonstrated that the Fire PRA had been reviewed consistent with the guidance in RG 1.200, Revision 2, that it had been reviewed against the applicable SRs in ASME/ANS-RA-Sa 2009, and that it was technically adequate to support the risk calculations required for that program. As such, the NRC staff finds that the changes to the Fire PRA are currently scheduled for completion by the NFPA 805 license condition and that no RICT Program-specific implementation items or license conditions are necessary.

The CDF and LERF values provided in Table E5-1 of the LAR were based upon full implementation of NFPA 805 and related plant modifications. In PRA RAI 09, the NRC staff requested an estimate of what the risk is expected to be when the RICT Program is implemented, and that incomplete NFPA 805 modifications not be included in the estimate. Alternatively, the licensee could formulate a license condition that the RICT Program would not be implemented until the modifications are complete. In response to PRA RAI 09, the licensee stated that the CDF and LERF will be estimated at the time of the implementation of the RICT Program and the program will only be implemented when the total CDF and LERF remain below 1E-04/year and 1E-5/year respectively, meeting the limitations and conditions in NEI 06-09, Revision 0-A for implementation of a RICT Program.

In a letter dated July 1, 2016 (Reference 42), subsequent to the approval of the St. Lucie 1 and 2 NFPA 805 amendments, the NRC staff retired NFPA 805 Frequently Asked Question (FAQ) 08-0046 "Incipient Fire Detection Systems." This retirement reduced the PRA credit that could be taken for the Very Early Warning Fire Detection System (VEWFDS). In the letter, the NRC staff directed licensees who credited the installation of VEWFDS using the methods in FAQ 08-0046 to evaluate the impact on their PRA in accordance with their licensing bases. By letter dated November 17, 2016 (Reference 43), the NRC staff informed the industry that, "[i]f a licensee is performing a periodic or interim PRA update, performing a fire risk evaluation in support of self-approval, or submitting a future risk informed license amendment request, the staff's expectation is that they will assess the impact of new operating experience and information on their PRA analyses and incorporate the change as appropriate per RG 1.200, Revision 2." In December 2016, the NRC staff published new guidance on modeling VEWFDS in NUREG-2180, "Determining the Effectiveness, Limitations, and Operator Response for Very Early Warning Fire Detection Systems in Nuclear Facilities (Delores-VEWFIRE)" (Reference 44), which replaced the retired FAQ 08-0046.

In PRA RAI 09.R1b, the NRC staff requested clarification of: (1) the licensee's intent to incorporate the methodology in NUREG-2180, (2) when the updated modeling would occur, and (3) an estimate of the risk impact of the updated modeling. In response to PRA RAI 09.R1b, the licensee stated that the NUREG-2180 methodology would be incorporated into the Fire PRA model RICTs as part of the next Fire PRA maintenance update. The licensee also provided risk estimates after incorporating the new guidance for VEWFDS showing that the total CDF and LERF estimates are expected to remain below 1E-04/year and 1E-05/year, respectively. In response to PRA RAI 16, which requested a list of activities that must be completed prior to RICT Program implementation, the licensee provided an implementation item and associated license condition stating that "all hazards CDF and LERF estimates achieved using NRC accepted methods will be less than 1E-04 per year and 1E-05 per year, respectively."

The NRC staff's review of the technical adequacy of the Fire PRA for the licensee's NFPA 805 amendments concluded that the St. Lucie Fire PRA possessed sufficient technical adequacy and that its quantitative results can be used to demonstrate that the change in risk due to the transition to NFPA 805 and to support future self-approval of fire protection program changes meets the acceptance guidelines in RG 1.174. The NRC staff has evaluated the supplemental information about the F&O responses provided in this LAR, as supplemented, and concluded that the licensee has adequately resolved all issues and, therefore, that the Fire PRA is technically adequate to support the RICT Program, including RICT calculations.

<u>Other External Hazards</u>

The licensee provided its assessment of external hazards risk for the RICT Program in Enclosure 4 of the LAR. The licensee stated that it followed the NUREG-1855, Revision 0 (Reference 45) process for identifying and assessing the significance of external hazards that are not evaluated in the PRA model. This assessment evaluated the following external hazards identified in NUREG-1855:

- Aircraft impacts
- External flooding
- Extreme winds and tornadoes (including generated missiles)
- External fires
- Accidents from nearby facilities
- Pipeline accidents (e.g., natural gas)
- Release of chemicals stored at the site
- Seismic events
- Transportation accidents
- Turbine-generated missiles

In Table E4-1 of the LAR, the licensee described an external events hazard evaluation based on the Individual Plant Examination of External Events (IPEEE) study, updated with the latest information for each hazard for the site. In response to PRA RAI 06.a, the licensee provided additional information about the seismic and external flooding evaluations. In response to PRA RAI 17, the licensee provided additional information on seismic and extreme winds and tornados. Bounding quantitative estimates of the seismic risk are provided in response to PRA RAI 09.R1b. External flooding and extreme winds and tornado risk estimates are not proposed to be used in the RICT evaluations and were not provided. The licensee stated that the total seismic risk will be added to each RICT risk increase and that all other external hazards can be screened from further quantitative inclusion in the RICT Program.

External Flooding

The licensee stated that the external flooding evaluation included flooding from hurricanes, storm surges, waves, erosion, and probable maximum precipitation. Other potential flooding hazards including tsunami, dam failures, and flooding from streams and rivers are either not applicable or were screened out based on the hazard not being a significant contributor to risk.

The LAR stated that potential external flood waters do not enter a structure containing safety-related equipment, or that the credited equipment is above the design basis flooding level (i.e., the design conforms to the SRP criteria and there are no vulnerabilities). PRA RAI 06.a referenced a November 19, 2014, NRC inspection report (Reference 46) that identified a number of failures to implement required flood protection measures. In response to PRA RAI 06.a, the licensee stated that they implemented immediate corrective actions, including repair of flood seals, improved flood response procedures, additional site walkdowns of flood protection features, improved internal and external flood barrier integrity. Based on this response, the NRC staff concludes that the RICT evaluation can assume that St. Lucie 1 and 2 currently conform to the SRP criteria.

Based on the flooding scenarios reported in the LAR, the only hazard scenario that might affect the plant for which prior warning would not be available is precipitation. Prior warning is assumed to provide time to avoid risk from the hazard. The LAR stated that, with respect to the maximum probable precipitation in the SRP, additional evaluation of higher rainfall intensities over shorter periods also demonstrated no adverse impact to plant structures and systems. The licensee concluded that no unique PRA model for external flooding scenarios is required in order to assess configuration risk for the RICT Program.

Section 2.4.3.2 of the St. Lucie 1 UFSAR states that, "[d]ue to the extremely shallow nature of the estuarine river adjacent to the site-and to the flat terrain, the hydrological flood flow characteristics are dominated by surge flooding and the associated hurricane winds." Additionally, in response to PRA RAI 17, the licensee stated that it will examine the applicability of the screening criteria on case-by-case basis for RICT calculations in which a particular configuration is viewed to be impacted and, therefore, any configurations highly susceptible to external flooding events would be identified. The NRC staff finds that no unique PRA models for flooding are necessary to support RICT calculation for St. Lucie 1 and 2. This is because the licensee's description of the site characteristics, its evaluation of the flooding risk, and the examination of the applicability of the screening criteria on a case-by-case basis indicate that the risk contribution from flooding is low. Additionally, any configuration for which the risk might not be low, will be identified.

Extreme winds and tornadoes

The licensee states that, consistent with the SRP design criteria, all Category 1 structures are designed to withstand tornado-based wind speeds of 380 mph, and non-Category 1 structures are similarly designed. The licensee further stated that external missile generation will not result in a loss of safe-shutdown capability by design or protection of SSCs to withstand missile impact. The licensee stated that while the St. Lucie 2 structures conform to the SRP design criteria, some structures for St. Lucie 1 might not. Therefore, the hazard frequency (i.e., the frequency of damage) was evaluated for the St. Lucie 1 Diesel Oil tank, Component Cooling Water and Intake Cooling Water piping and found to be acceptably low (<1E-6/year failure frequency due to external missile impacts). The licensee further states that there are no significant failure modes of important SSCs due to high winds or missile impacts. With respect to extreme winds, the response to PRA RAI 17 stated that procedures at St. Lucie 1 and 2 include monitoring and tracking of high winds, hurricane, and tornado hazards. These procedures also require controlled shutdown to be initiated 30 minutes following warning issuance by National Hurricane Center in Miami. Prior warning is assumed to provide time to avoid any risk from the hazard. NUREG/CR-4461, Revision 2, "Tornado Climatology of the Contiguous United States" (Reference 47), estimates that wind speeds of 208 mph or greater will occur with a frequency of 1E-07/year at the St. Lucie 1 and 2 site. This speed is significantly less that the design basis wind speed of 380 mph. Although missiles from lower wind speeds can damage SSCs, the SSC must be struck by the missile and the area of the SSCs (aside from the tanks and piping discussed above) are generally quite small. The licensee concluded that no unique PRA model for extreme winds and tornadoes is required in order to assess configuration risk for the RICT Program.

The NRC finds this acceptable because if the risk is negligible, it will not affect the RICT calculation. Additionally, in response to PRA RAI 17, the licensee stated that it will examine the applicability of the screening criteria on case-by-case basis for RICT calculations in which a particular configuration is viewed as being impacted. Therefore, any configurations highly susceptible to extreme winds and tornadoes events should be identified.

Seismic

In response to PRA RAI 06.a, the licensee clarified that the updated seismic information, which included an updated seismic CDF, includes the latest publication of Electric Power Research Institute (EPRI) Ground Motion Response Spectra data for the site, and updated plant-level fragility curve obtained by using the High Confidence of Low Probability of Failure. The total bounding seismic risk is reported in the response to PRA RAI 9.R1b. The licensee clarified that it will add the bounding seismic contribution to all changes in risk for all RICT calculations. During RICTs for SSCs credited in the design basis to mitigate seismic events, this methodology is neutral because seismic-induced failure of redundant SSCs in the seismic risk value is assumed to be fully correlated. Therefore, the seismic risk will not increase if one of the redundant SSCs is unavailable (i.e., simultaneous failure of all redundant trains is the failure probability in the seismic PRA). During RICTs for SSCs not credited during a seismic event but which could be used when credited SSCs fail, this is a non-conservative assumption because their failure from a seismic event during the RICT should be included in the risk increase, but it is not. During RICTs for SSCs that are not useful during a seismic event, this is a conservative assumption because the total seismic risk is present at all times and therefore is not a risk increase associated with the plant configuration during the RICT.

The licensee proposed to include the total seismic risk as a contribution to the risk increase for every RICT estimate. The NRC staff finds that the proposed method is acceptable because the completed analysis indicates that the seismic risk at the site is low and the uncertainty in the frequency/magnitude of the event and its impact of the plant means that additional analysis and rigor will not necessarily yield a more accurate estimate of the already low risk. Additionally, in response to PRA RAI 17, the licensee stated that it will examine the applicability of the screening criteria on case-by-case basis for a RICT calculation in which a particular configuration is viewed to be impacted and, therefore, any configurations highly susceptible to external flooding events should be identified.

Shutdown Risk

A shutdown risk assessment is not applicable to this LAR, because the RICT Program only applies to Modes 1 and 2.

PRA Acceptability Conclusions

Based on the NRC staff's review of the licensee's submittal and assessments, the NRC staff concludes that the St. Lucie 1 and 2 PRA models for internal events (including internal flooding) and fire events that will be used to implement the RICT Program satisfy the guidance of RG 1.200. The NRC staff based this conclusion on the findings that the PRA models conform sufficiently to the applicable industry PRA standards for internal events (including internal flooding) and fires at an appropriate capability category, considering the licensee's acceptable disposition of the peer review findings and the NRC staff review.

The licensee (1) has reviewed the PRA using endorsed guidance and adequately resolved all identified issues, (2) will address remaining issues through implementation items, (3) has established a periodic update and review process to update the PRA and associated CRMP model to incorporate changes made to the plant and PRA methods and data consistent with the RICT Program, as discussed in Section 3.1.4.1.7 of this SE, and (4) will calculate RICTs using NRC-accepted PRA methods. Therefore, the NRC staff concludes that the licensee has and will maintain a PRA that is technically adequate to support implementation of the RICT Program.

3.1.4.1.2 Scope of the PRA

NEI 06-09, Revision 0-A requires a quantitative assessment of the potential impact on risk due to impacts from internal and external events, including internal fires, floods, and other significant external events. By providing up-to-date external hazard information, the licensee has demonstrated that the risk is dominated by internal events and fire risk and that each hazard is not significant to the RICT Program.

As discussed in Section 3.1.4.1.1 of this SE, the St. Lucie 1 and 2 PRA used for the RICT Program includes PRA models for internal events (including internal flooding) and internal fire events. As discussed in the LAR and its supplements and in Section 3.1.4.1.1 of this SE, external flooding, high winds and tornadoes, and seismic are each evaluated. All other external hazards have been evaluated as described in the LAR and determined not to be applicable or to have negligible frequency at the St. Lucie 1 and 2 site.

The licensee will add the total seismic risk to the risk increase in every RICT calculation as a generally conservative estimate of the risk increase. For most configurations, the NRC staff finds that seismic risk increase, if any, would be small. Therefore, using the total seismic risk as the risk increases is a conservative assumption. For configurations that might be exceptionally sensitive to seismic, external flooding, and tornado missiles (e.g., barriers that might be disabled), the licensee stated in its response to PRA RAI 17 that "[t]he screening criteria upon which these hazards are screened would be examined for applicability on case-by-case basis for a RICT calculation in which a particular configuration is viewed to be impacted." The NRC staff finds that this treatment of external hazards is acceptable because all external hazards that are excluded from the RICT calculations are screened using NRC guidance and because the screening criteria will be re-evaluated for applicability during each RICT calculation.

3.1.4.1.3 PRA Modeling

To evaluate a RICT for a given TS LCO action statement requirement, the specific systems or components involved should be modeled, or capable of being modeled, in the PRA. For each TS LCO to which the RICT Program is proposed to apply, the licensee identified that: (1) the system is included in the St. Lucie 1 and 2 PRA models or, if not modeled in the PRA, is addressed either in the LAR or in response to an RAI; (2) the success criteria used in the PRA models are consistent with the St. Lucie 1 and 2 licensing basis or acceptable plant-specific analyses used to support the PRA are justified consistent with the RG 1.200 PRA review process; and (3) the CRMP provides the capability to select the system as out-of-service, in order to calculate a RICT, and that the CRMP is maintained consistent with the baseline PRA model.

NEI 06-09, Revision 0-A, Section 2.3.1 describes how and when a RICT is calculated. All SSCs that are failed and modeled are assigned the failed state in the applicable PRA model. SSCs that are not explicitly modeled may be failed by failing surrogate events that are modeled or, if excluded from the risk model as having no risk impact, need not be included in the calculation. PRA functional can be used if an SSC is inoperable but still can perform its function as modeled in the PRA.

In PRA RAI 03, the NRC staff requested the licensee clarify the statements in the LAR regarding the PRA Success Criteria associated with LCO 3.6.1.7 (St. Lucie 2 Containment Ventilation), stating, "[t]he PRA Model includes a large, pre-existing containment leak; this would be bounding for the risk associated with an inoperable air lock door closed, and can be used as a bounding surrogate." The disposition for PRA functionality associated with LCO 3.6.3.1 (Containment Isolation Valves) and LCO 3.6.1.3 (Containment Air Locks) also refer to use of this leak event in the PRA as a surrogate. The NRC staff requested the licensee to explain how much leakage will be assumed for the "large pre-existing containment leak" event and justify that it will bound the leakage that would occur for inoperable SSCs associated with LCOs 3.6.1.3, 3.6.1.7, and 3.6.3.1. In response to the RAI, the licensee clarified that the "large pre-existing containment leak" basic event results in all core damage scenarios going directly to a large early release. The licensee further explained that this approach is bounding because in the actual plant containment, options would still exist, such as redundant isolation valves. Additionally, the licensee indicated that the containment leaks are set to a "100% LERF large breach event," which would be a conservative bounding surrogate for smaller breaches. The NRC concludes this issue is resolved because the surrogate breach (for all leaks including an inoperable air lock door) is set to "100% LERF large breach event" and the additional conservatism associated with containment redundancy is not fully modeled.

In PRA RAI 04, the NRC staff requested additional information regarding the LAR disposition for PRA functionality associated with manual trip functions in LCOs 3.3.1.1. The disposition stated that operator failures to manually initiate the trip functions will be used as surrogate events "to conservatively bound the risk increase associated with [these] function[s]." The NRC staff requested the licensee to explain what assumptions will be made to estimate HEPs for the operator failures that will be used as surrogate events for failure of trip function logic in the PRA and to justify that the HEPs for these surrogate events will bound the failure probabilities of the replaced circuits and hardware. In its response, the licensee explained that LCO 3.3.1.1 will be evaluated using a surrogate human failure event with a HEP of 1.0. The NRC staff concludes this issue is resolved because use of a HEP of 1.0 conservatively bounds the risk increase associated with failure of trip function logic in RICT calculations.

The St. Lucie 1 and 2 PRA model serves as the model used by the CRMP tool, which is used to perform the RICT calculations. The CRMP tool models a zero-maintenance baseline PRA and the actual plant configuration. In order to translate the baseline St. Lucie 1 and 2 PRA model for use in the CRMP model, adjustments must be made to the baseline PRA model. These adjustments are described in Enclosure 8 of the LAR, Section 8-2.0. The CRMP tool used to perform the RICT calculations provides a user interface which supports the RICT Program by providing a method to evaluate the plant configuration. The St. Lucie 1 and 2 quality assurance practices of the PRA model and the CRMP model are discussed in Section 3.1.4.1.7, Administrative Controls, of this SE.

In PRA RAI 07, the NRC staff requested the licensee to provide a discussion of the changes made to the baseline PRA model to produce the CRMP model and how it ensures that these changes are appropriate and comprehensive. In response to PRA RAIs 07 and 07.01, the licensee explained that the baseline model is configured to remove mutually exclusive maintenance-events logic, and altering flag file and alignment events to allow the risk monitoring software to perform configuration-specific risk analyses.

In PRA RAI 10, the NRC staff requested the licensee to explain how operator actions used as surrogates in RICT calculations fully model each different failure mode, both full and partial, of the equipment being represented by the actions. In its response to PRA RAI 10, the licensee clarified that when TS conditions are in effect for the manual reactor trip or associated ESFAS functions, the associated operator actions in the PRA are set to logical TRUE, which fails the manual actuation functions. Additionally, the licensee explained that when TS conditions for containment airlocks, containment ventilation, and containment isolation valves are modeled by using a surrogate event labeled "large pre-existing containment leak" (as discussed in response to PRA RAI 03) and setting that event to logical TRUE. As discussed in the response to PRA RAI 03, this event is a "100% LERF large breach event." The NRC concludes this issue is resolved because setting events to logical TRUE in the above circumstances is conservative in associated RICT calculations.

In PRA RAI 11, the NRC staff stated that instrumentation is often not modeled in detail in PRAs, and in some cases, is only modeled as a single, generic basic event, generally representing all trains. Therefore, the NRC staff requested that the licensee describe how instrumentation is modeled in sufficient detail in their PRA to appropriately model the effects of different numbers of instrumentation trains unavailable. In response to PRA RAI 11, the licensee explained that when the PRA does not include sufficiently detailed modeling of the instrument channels, the RICT is conservatively calculated by assuming a bounding failure of other equipment or failure of an operator action. The licensee further clarified that some instrumentation is not within the proposed scope of the RICT Program, that some instrumentation is modeled in the PRA at the individual channel level, and that instrumentation within RICT Program for which individual channels are not included in the PRA will be modeled by assuming a bounding failure. Lastly, specifically related to "Function 2b – CSAS – Containment Pressure – High-High" in LAR

Table E1-1, the licensee indicated that the PRA model includes the equipment associated with this function, and inoperability of this equipment can be directly assessed to calculate a RICT given that four containment pressure channels are modeled in the PRA. The NRC staff concludes this issue is resolved because the licensee will evaluate instrumentation in the PRA at a sufficient level of detail to support RICT calculations or apply bounding failures.

In PRA RAI 13, the NRC staff requested additional information regarding the treatment of CCF for planned maintenance. The NRC staff notes that, according to RG 1.177, Appendix A, Section A-1.3.1.1; "[i]f the component is down because it is brought down for maintenance, the CCF contributions involving the component should be modified to remove the component and to only include failures of the remaining components." Accordingly, the NRC staff requested the licensee to explain how the CCF contribution is addressed in the PRA models and how the models are adjusted when a component from a CCF group of three or more components is removed for preventative maintenance. In response to PRA RAI 13, the licensee explained that for a three-train system, there would one CCF basic event for each 2-out-of-3 SSC failure combination, and a CCF basic event for the failure of 3-out-of-3 SSCs. The licensee explained that it does not adjust the contribution of CCFs for planned maintenance. Leaving all 2-out-of-3 and the 3-out of-3 CCF basic events in the model is conservative but this impact is offset to some extent because the 2-out-of-2 CCF tends to be greater than the 3-out-of-3 CCFs. The licensee stated that its treatment of CCF when an SSC is removed from service has an "imperceptible" impact on the RICT calculations. The NRC staff notes that the licensee's method is a straightforward, simplifying calculation that has both conservative and non-conservative impacts. The NRC staff also notes that CCF probability estimates are very uncertain and retaining precision in calculations using these probabilities will not necessarily improve the accuracy of the results. Therefore, the NRC staff concludes that the licensee's method is acceptable because it does not systematically and purposefully produce non-conservative results and because the calculations reasonably include CCFs consistent with the accuracy of the estimates.

In PRA RAI 14, the NRC staff requested additional information regarding Evaluation of Common Cause for Emergent Failures. According to Section A-1.3.2.1 of Appendix A to RG 1.177, when a component fails, the CCF probability for the remaining redundant components should be increased to represent the conditional failure probability due to CCF of these components, in order to account for the possibility that the first failure was caused by a CCF mechanism. In response to PRA RAI 14, the licensee stated that it would revise the TS RICT Program description to describe the treatment of CCFs. The added RICT Program requirement states that the licensee will either account for the increased CCF in the RICT calculation or implement RMAs not already credited in the RICT calculation that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practical reduce the frequency of the initiating events that challenge the function(s) performed by the inoperable SSCs. The NRC staff finds that the first option is acceptable because it quantitatively incorporates the potential common cause failure into the estimated RICT consistent with guidance on including common cause failures in RG 1.177. The NRC staff finds the second option is acceptable because identifying the redundant and/or diverse SSCs and developing RMAs targeting the function(s) provides adequate additional confidence that the function(s) will be available while investigation into the potential for common cause failure is completed.

In PRA RAI 18, the NRC staff described differences between proposed changes to the St. Lucie 1 and St. Lucie 2 TSs and differences between units in the example estimated RICTs for certain LCOs presented in Enclosure 1, Table E1-2 of the LAR. Accordingly, NRC staff requested clarification about whether separate baseline PRA models exist that incorporate the differences between units and whether the RICT Program utilizes separate CRMP models for each unit. In response to PRA RAI 18, the licensee explained that each unit has its own independent PRA and CRMP model that will be used for the unit RICT calculations. The licensee explained that the units share limited systems and components, but that the CRMP model for each unit includes the shared components, and therefore, the CRMP models can be used independently from each other.

The NRC staff reviewed the licensee's information and concluded that the scope of SSCs to which the RICT Program are applied are appropriately included in the PRA models and in the CRMP. Furthermore, the St. Lucie 1 and 2 PRA models have been peer reviewed and the F&Os dispositioned as discussed in Section 3.1.4.1.1 of this SE. Therefore, the NRC staff finds that the licensee's PRA modeling is consistent with NEI 06-09, Revision 0-A guidance subject to the conditions in Section 4.0 of this SE.

3.1.4.1.4 Assumptions

Using a PRA to evaluate TS changes requires consideration of a number of assumptions and associated model uncertainty within the PRA that can have a significant influence on the ultimate acceptability of the proposed changes.

Enclosure 9 of the LAR states that the detailed process of identifying, characterizing, and qualitative screening of model uncertainties is found in Section 5.3 of NUREG-1855. NUREG-1855 references EPRI TR 1016737, "Treatment of Parameter and Model Uncertainty for Probabilistic Risk Assessment" (Reference 48), which provides specific methods for identifying key sources of model uncertainty within the context of the significant contributors to the various risk metrics that are relevant to a particular application.

Table E9-1 of the LAR includes potential key assumptions identified in the peer reviews and additional plant-specific and generic key assumptions that were identified by the licensee in a 2013 Uncertainty Notebook that is part of the PRA documentation. The licensee briefly discusses and then dispositions the impact of each identified key assumption on the RICT Program. Three assumptions regarding unmodeled—(1) human induced initiating events, (2) CCFs for electrical buses and panels, and (3) internal flood barriers—were determined to be unimportant because their impact would be mitigated by RMAs. The licensee identified the remaining assumptions as slightly conservative, neutral, and slightly non-conservative assumptions, but for each assumption concluded that they do not significantly affect the RICT calculation and that no additional considerations are required.

Based on the identification and disposition of the significant PRA assumptions consistent with NUREG-1855 and EPRI TR 1016737, the NRC staff finds that the licensee has satisfied the intent of RG 1.177, Revision 1 (Section 2.3.4), and that the assumptions for risk evaluation of extended CTs are appropriate for this application.

3.1.4.1.5 Sensitivity and Uncertainty Analyses

Risk-informed analyses of TS changes can be affected by uncertainties regarding the assumptions made during the PRA model development and application. Typically, the risk resulting from TS CT changes is relatively insensitive to many uncertainties because the uncertainties tend to affect similarly both the base case and the changed case. The licensee considered PRA modeling assumptions and uncertainties and their potential impact on the

RICT Program and identified, as necessary, the applicable RMAs to limit the impact of these uncertainties.

The licensee reported three sensitivity studies, one on the impact of using HEP floor values, one of the uncertainty in fire-caused LERF, and one on updating the VEWFDS methodology from FAQ 08-0048 to NUREG-2180, but did not identify any additional assumptions for which a sensitivity study was performed. The licensee reported that the results of the sensitivity studies to support closure of F&Os did not indicate that any change in the selection of parameters or assumptions was necessary.

The NRC staff's review determined that the licensee performed an adequate assessment to identify the potential sources of uncertainty, and the identification of the key assumptions and sources of uncertainty was appropriate and consistent with NUREG-1855 and EPRI TR 1016737. Therefore, the NRC staff finds that the licensee has satisfied the intent of RG 1.177, Revision 1 (Section 2.3.5), and RG 1.174, Revision 3 (Section 2.2.2), and that the treatment of model uncertainties for risk evaluation of extended CTs is appropriate for this application and consistent with the guidance identified in NEI 06-09, Revision 0-A.

3.1.4.1.6 PRA Results and Insights

The proposed change implements a process to determine RICTs, rather than specific changes to individual TS CTs. TR NEI 06-09, Revision 0-A requires periodic assessment of the risk incurred due to operation beyond the front-stop CTs due to implementation of a RICT Program and comparison to the guidance of RG 1.174 for small increases in risk.

Further, NEI 06-09, Revision 0-A requires that configuration risk be assessed to determine the RICT and establishes the criteria for ICDP and ILERP on which to base the RICT. An ICDP of 1E-5/year and an ILERP of 1E-6/year are used as the risk measures for calculating individual RICTs. These limits are consistent with NUMARC 93-01, Revision 4A. The use of these limits in NEI 06-09, Revision 0-A aligns the TS CTs with the risk management guidance used to support plant programs for the Maintenance Rule, and the NRC staff accepted these supplemental risk acceptance guidelines for RMTS programs in its approval of NEI 06-09, Revision 0-A.

TR NEI 06-09, Revision 0-A, as modified by the limitations and conditions in the NRC staff's SE, requires that the cumulative impact of implementation of an RMTS be periodically assessed and shown to result in: (1) a total risk impact below 1E-5/year for changes to CDF, (2) a total risk impact below 1E-6/year for changes to LERF, and (3) the total CDF and total LERF must be reasonably shown to be less than 1E-4/year and 1E-5/year, respectively. The licensee stated in response PRA RAI 09.R1b that the estimated total CDF and LERF meet the 1E-4/year CDF and 1E-5/year LERF criteria of RG 1.174, consistent with NEI 06-09, Revision 0-A and that these guidelines will be satisfied whenever a RICT is implemented.

The licensee has incorporated NEI 06-09, Revision 0-A in the proposed RICT Program to be incorporated into St. Lucie 1 TS 6.8.4.r and St. Lucie 2 TS 6.8.4.s, and, therefore, calculates the RICT consistently with its criteria, and assesses the RICT Program to assure any risk increases are small per the guidance of RG 1.174. Therefore, the NRC staff finds that the licensee's RICT Program is consistent with NEI 06-09, Revision 0-A guidance and, therefore, acceptable.

3.1.4.1.7 Implementation of the RICT Program

Because NEI 06-09, Revision 0-A involves the real-time application of PRA results and insights by the licensee, the NRC staff reviewed the licensee's description of programs and procedures associated with implementation of the RICT Program in Attachment 1 (and its enclosures) of the LAR. The administrative controls on the PRA and on changes to the PRA should provide confidence that the PRA results are reasonable, and the administrative controls on the plant personnel using the RICT should provide confidence that the RICT Program will be appropriately applied.

The means for demonstrating the technical acceptability of the PRA models include assessment against the ASME/ANS PRA standards and RG 1.200, which includes guidance for performing peer reviews and focused-scope peer reviews. The technical adequacy of the PRA models is discussed by the licensee in Enclosure 2 of the LAR. In Enclosure 8 of the LAR, the licensee summarizes the changes made to the baseline PRA model for use in the on-line model. In Enclosure 10 of the LAR, the licensee describes the implementing programs and procedures and the associated personnel training.

Changes to the PRA are expected over time to reflect changes in PRA methods, and changes to the as-built, as-operated, and maintained plant to reflect the operating experience at the plant as specified in RG 1.200, Revision 2. Changes in PRA methods are addressed by the proposed License Condition discussed in Section 4.0 of this SE.

Changes to the as-built, as-operated, and maintained plant to reflect the operating experience at the plant are discussed in Enclosure 7 of the LAR. Enclosure 7 summarizes the PRA configuration control process delineates the responsibilities and guidelines for updating the full power internal event, internal flood, fire, and seismic PRA models, and includes both periodic and interim PRA model updates. The licensee stated that the process includes provisions for monitoring potential impact areas affecting the technical elements of the PRA models (e.g., due to plant changes, plant/industry operational experience, or errors or limitations identified in the model), assessing the individual and cumulative risk impact of unincorporated changes, and controlling the model and necessary computer files, including those associated with the CRMP model.

In PRA RAI 02.b and PRA RAI 02.b.R1, the NRC staff requested explanation of how the licensee's maintenance and change process ensures that the PRA models used for RICT estimates will be updated to ensure the model reflects the as-built, as-operated plant. In response to the RAIs, the licensee provided a list of information sources that are monitored for changes that could impact the PRA such as changes in design, maintenance policies, procedure changes, and plant and system operating experience. Each change is entered into a model change database along with an estimate of the total and cumulative risk impacts for that change. If the impact is considered minor, then it will be incorporated into the PRA models during the next scheduled model update, but if it constitutes a major impact, then a model change is "conducted promptly."

The licensee stated in Enclosure 8 of the LAR that the plant procedures specify that an acceptance test is performed after every CRMP model update. This test verifies proper translation of the baseline PRA models and acceptance of all changes made to the baseline PRA models into the CRMP model. This test also verifies correct mapping of plant components to the basic events in the CRMP model. The NRC staff concludes that the CRMP model used to calculate the RICTs is acceptable because the underlying PRA models will remain acceptable and the acceptance test will verify the CRMP model is consistent with the underlying baseline PRA.

Based on the proposed License Condition and the description of the PRA model update process, the NRC staff finds that the licensee's PRA maintenance and change process ensures that the CRMP models used in the RICT calculations will continue to use PRA methods acceptable to the NRC and that the PRA model will be updated as necessary to reflect the as-built and as-operated plant.

As described in Enclosure 10 of the LAR, the licensee has qualification and training programs for development, maintenance, and use of the CRMP model. The licensee identifies the attributes that the RICT Program procedures will address consistent with NEI 06-09, Revision 0-A. The licensee also identified the plant personnel that will be trained and the different types of training that the different plant personnel receive. This includes training for individuals who will be directly involved in the implementation of the RICT Program, as well as other individuals who may have some involvement with the RICT Program.

The NRC staff finds that the program described in Enclosure 10 of the LAR will establish appropriate programmatic and procedural controls for its RICT Program, consistent with the guidance of NEI 06-09, Revision 0-A. Training of plant personnel shall be provided throughout all levels of the organization, commensurate with each position's responsibilities within the RICT Program, as described in NEI 06-09, Revision 0-A. The licensed operators in the control room have responsibility for assuring compliance with the TS and the RICT Program training provided assures that the licensee's staff understands risk concepts and provides them with the necessary skills to determine the appropriate RICT when operating under an extended CT within the RICT Program.

The LAR, as supplemented, summarizes the administrative controls used to support implementation of the RICT Program including maintenance of the PRA models used by the program and the training for plant personnel throughout all levels of the organization. Therefore, the NRC staff finds that the licensee has appropriate administrative controls in place to assure proper implementation of the RICT Program.

3.1.4.2 Tier 2: Avoidance of Risk-Significant Plant Configurations

Tier 2 provides that a licensee should provide reasonable assurance that risk-significant plant equipment outage configurations will not occur when specific plant equipment is taken out-of-service in accordance with the proposed TS change.

NEI 06-09, Revision 0-A does not permit voluntary entry into high-risk configurations, which would exceed instantaneous CDF and LERF limits of 1E-3/year and 1E-4/year, respectively. It further requires implementation of RMAs when the actual or anticipated risk accumulation during a RICT will exceed one-tenth of the ICDP or ILERP limit. Such RMAs may include rescheduling planned activities to lower risk periods or implementing risk-reduction measures. The limits established for entry into a RICT and for RMA implementation are consistent with the guidance of NUMARC 93-01, Revision 4A, endorsed by RG 1.160, Revision 3, as applicable to plant maintenance activities. The RICT Program requirements and criteria are consistent with the principle of Tier 2 to avoid risk-significant configurations.

Based on the licensee's incorporation of NEI 06-09, Revision 0-A in the TS, and because the proposed changes are consistent with the guidance of RG 1.174, Revision 3 and RG 1.177, Revision 1, the NRC staff finds the licensee's Tier 2 program is acceptable and supports the proposed implementation of the RICT Program.

3.1.4.3 Tier 3: Risk-Informed Configuration Risk Management

The third tier provides that a licensee should develop a program that ensures that the risk impact of out-of-service equipment is appropriately evaluated prior to performing any maintenance activity.

TR NEI 06-09, Revision 0-A addresses Tier 3 guidance by requiring assessment of the RICT to be based on the plant configuration of all SSCs that might impact the RICT, including safety-related and non-safety-related SSCs. A plant configuration is considered risk-significant when the ICDP or the ILERP exceeds one-tenth of the risk on which the RICT is based, generally 1E-5 ICDP and 1E-6 ILERP. If a risk-significant plant configuration exists, then NEI 06-09, Revision 0-A, via the RICT Program in the TS, would require the licensee to implement compensatory measures and RMAs. Therefore, the NRC staff determined that the RICT Program provides an acceptable methodology to assess and address risk-significant configurations. The NRC staff also determined that the proposed changes will require reassessment of any plant configuration changes to be completed in a timely manner based on the more restrictive limit of any applicable TS action requirement or a maximum of 12 hours after the configuration change occurs.

Based on the licensee's incorporation of NEI 06-09, Revision 0-A in the TS, and because the proposed changes are consistent with the Tier 3 guidance of RG 1.177, Revision 1, the NRC staff finds that the proposed changes are acceptable.

3.1.4.4 Key Principle 4 Conclusions

The licensee has demonstrated the technical adequacy and scope of its PRA models, and that the models can support implementation of the RICT Program for determining CTs. Proper consideration of key assumptions and sources of uncertainty have been made. The risk metrics are consistent with the approved methodology of NEI 06-09, Revision 0-A and the RICT Program is controlled administratively through plant procedures and training. The RICT Program follows the NRC-approved methodology in NEI 06-09, Revision 0-A. The NRC staff concludes that the RICT Program satisfies the fourth key safety principle of RG 1.177 and is, therefore, acceptable.

3.1.5 Key Principle 5: Performance Measurement Strategies – Implementation and Monitoring Program

Regulatory Guides 1.174 and 1.177 establish the need for an implementation and monitoring program to ensure that extensions to TS CTs do not degrade operational safety over time and that no adverse degradation occurs due to unanticipated degradation or common-cause mechanisms. An implementation and monitoring program is intended to ensure that the impact of the proposed TS change continues to reflect the reliability and availability of SSCs impacted by the change. RG 1.174 states that monitoring performed in conformance with the Maintenance Rule, 10 CFR 50.65, can be used when the monitoring performed is sufficient for the SSCs affected by the risk-informed application. Enclosure 11 of the LAR states that the SSCs in the scope of the RICT Program are also in the scope of the Maintenance Rule. In addition, according to the proposed St. Lucie 1 TS 6.8.4.r.d and St. Lucie 2 TS 6.8.4.s.d, use of a RICT is not permitted for voluntary entry into a configuration that represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE. Therefore, the St. Lucie 1 and 2 RICT Program does not change the stated TS performance criteria (e.g., flow rate, response times, stroke times, setpoints, etc.).

NEI 06-09, Revision 0-A, Section 3.3.3 instructs the licensee to track the risk associated with all entries beyond the front-stop CT, and Section 2.3.1 provides a requirement for assessing cumulative risk, including a periodic evaluation of any increase in risk due to the use of the RMTS Program to extend the CTs. According to Enclosure 11 of the LAR, the licensee calculates cumulative risk at least every refueling cycle, but the recalculation period does not exceed 24 months, which is consistent with NEI 06-09, Revision 0-A. The licensee converts the cumulative ICDP and ILERP into total average annual values which are then compared to the limits of RG 1.174. If the RG 1.174 risk guidelines are exceeded, the licensee uses its corrective action program to ensure future plant operation is within the risk guidelines. This evaluation assures that RMTS Program implementation meets RG 1.174 guidance for small risk increases. Because the licensee is implementing NEI 06-09, Revision 0-A monitoring requirements without exceptions, the NRC staff concludes that the licensee complies with the RMTS monitoring program requirement.

The NRC staff concludes that the RICT Program satisfies the fifth key safety principle of RG 1.177 and RG 1.174 by, in part, monitoring the average annual cumulative risk increase, as described in NEI 06-09, Revision 0-A and using this average annual increase to ensure the program, as implemented, meets RG 1.174 guidance for small risk increases. This aspect of the RICT Program is, therefore, acceptable. Additionally, the NRC staff concludes that the RICT Program satisfies the fifth key safety principle of RG 1.177 and RG 1.174 because, in part, all the affected SSCs are within the Maintenance Rule program that can be used to monitor changes to the reliability and availability of these SSCs.

3.2 Evaluation of Other Proposed TS Changes

3.2.1 Addition of RICT Program to TS 6.8.4

The NRC staff reviewed the licensee's proposed addition of a new program, the RICT Program, to the Administrative Controls section of the TSs. The NRC staff evaluated the elements of the new program to ensure alignment with the requirements in 10 CFR 50.36(c)(5) and to ensure the programmatic controls are consistent with the RICT Program described in NEI 06-09, Revision 0-A.

The new RICT Program TS requires that the RICT Program be implemented in accordance with NEI 06-09, Revision 0-A. This is acceptable because NEI 06-09, Revision 0-A establishes a framework for an acceptable RICT Program.

The TS states that a RICT may not exceed 30 days. The NRC staff determined that 30-day backstop is appropriate because it allows sufficient time to restore SSCs to OPERABLE status while avoiding excessive out of service times for TS SSCs.

The TS states that the RICT may only be used in Modes 1 and 2. This provision ensures that the RICT is only used for determination of CDF and LERF for modes of operation modeled in the PRA.

The TS requires that while in a RICT, any change in plant configuration as defined in NEI 06-09, Revision 0-A be considered for the effect on the RICT. The TS also specifies time limits for determining the effect on the RICT. These time limitations are consistent with those specified in NEI 06-09, Revision 0-A.

The TS contains requirements for the treatment of CCFs for emergent conditions in which the common cause evaluation is not complete. The requirements are to either numerically account for the increased probability of CCF or to implement RMAs that support redundant or diverse SSCs that perform the functions of the inoperable SSCs and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

Key Principle 2 of risk-informed decision making is that the change is consistent with defense-in-depth philosophy. The seven considerations supporting the evaluation of the impact of the change on defense-in-depth are discussed in RG 1.174, including one to preserve adequate defense against potential CCF. The NRC staff finds that numerically accounting for an increased probability of failure will shorten the estimated RICT based on the particular SSCs involved thereby limiting the time when a CCF could affect risk. Alternatively, implementing actions that can increase the availability of other mitigating SSCs or decrease the frequency of demand on the affected SSCs will decrease the likelihood that a CCF could affect risk. The NRC staff concludes that both the quantitative and the qualitative actions minimize the impact of CCF and therefore support meeting Key Principle 2 as described in RG 1.174. These methods either limit the exposure time, help ensure the availability of alternate SSCs, or decrease the probability of plant conditions requiring the safety function to be performed. The NRC staff finds that these methods contribute to maintaining defense-in-depth because the methods limit the exposure time or ensure the availability of alternate SSCs.

The regulations in 10 CFR 50.36(c)(5) require the TS to contain administrative controls providing "provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner." The regulations do not provide detailed guidance for the contents of the Administrative Controls section of the TS. The NRC staff has determined that operation in accordance with the Administrative Controls section of the TS will assure operation of the facility in a safe manner when the facility is using the RICT Program. Therefore, the NRC staff has determined that the requirements of 10 CFR 50.36(c)(5) are satisfied.

3.2.2 Evaluation of proposed changes to TS 3/4.7.1.5

The licensee proposed changes to LCO 3.7.1.5 to more closely align with the STS contained in NUREG-1432, Revision 4. Specifically, the licensee proposed the following changes:

- In the ACTION statement applicable to MODE 1, the licensee proposed to replace "HOT STANDBY" with "MODE 2."
- For St. Lucie 1, the licensee proposed to replace the ACTION statement applicable to MODES 2 and 3 with the following statement:

> With one or both main steam isolation valve(s) inoperable, subsequent operation in MODES 2 or 3 may continue provided:
>
> 1. The inoperable main steam isolation valves are closed within 8 hours, and
>
> 2. The inoperable main steam isolation valves are verified closed once per 7 days.

Otherwise, be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 24 hours.

- For St. Lucie 2, the licensee proposed to replace the ACTION statement applicable to MODES 2, 3, and 4 with the following statement:

  With one or both main steam isolation valve(s) inoperable, subsequent operation in MODES 2, 3 or 4 may proceed provided:

  1. The inoperable main steam isolation valves are closed within 8 hours, and

  2. The inoperable main steam isolation valves are verified closed once per 7 days.

  Otherwise, be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 24 hours.

The existing ACTION that is applicable to MODE 1 operation requires that with one main steam line isolation valve inoperable, power operation may continue provided the inoperable valve is either restored to OPERABLE status or closed within 4 hours; otherwise be in Hot Standby (Mode 3) within the next 6 hours. The licensee proposed to change this requirement to be in Startup (Mode 2) if the valve is not either restored to OPERABLE status or closed within 4 hours.

The NRC staff reviewed this proposed change and determined that the change to require entry into Mode 2 was acceptable because the LCO specifies the appropriate remedial actions for operation in Mode 2 conditions with an inoperable main steam isolation valve (MSIV). The ACTION requirement for Mode 1 need not require transition to a lower mode of operation than Mode 2.

The licensee proposed changes to the ACTION for Mode 2 and Mode 3 (and Mode 4 for St. Lucie 2, only) to more closely align the St. Lucie 1 and 2 TSs with the STSs. The NRC staff requested that the licensee provide the basis for the selection of the 8-hour Allowed Outage Time for closing an inoperable valve in Modes 2 and 3. This time is considered a site-specific value in the STSs. The licensee's February 1, 2018, response stated that:

> The MSIVs function to ensure that no more than one steam generator will blow down in the event of a steam line rupture and to provide a containment isolation boundary. With one or both MSIVs inoperable in Mode 2 or 3, eight hours is a reasonable time to close the inoperable MSIV(s) considering the probability of an accident that would require closure of the MSIVs. The likelihood of occurrence of a steam line rupture, a postulated accident that is not expected to occur during the life of the plants, during the eight-hour period is low.
>
> With regard to the containment isolation function, the St. Lucie TS provide a four-hour completion time for inoperable containment isolation valves. However, the proposed completion time is greater than four hours because the MSIVs isolate a closed system that penetrates containment. The closed system provides a second barrier for containment isolation. In addition, providing a longer

completion time for penetrations consisting of one isolation valve and a closed system is consistent with NUREG-1432, "Standard Technical Specifications – Combustion Engineering Plants," where TS 3.6.3 provides a 72-hour completion time for an inoperable valve in a penetration consisting of one isolation valve and a closed system.

The NRC staff reviewed the licensee's response and determined that the licensee's justification for the selection of an 8-hour allowed outage time is sufficient because the remedial actions for an inoperable MSIV limited the period of time that operation could continue with an inoperable and open valve, and appropriately provided requirements to exit the mode of applicability of the LCO if the valves remain inoperable and open beyond the specified time limits.

The NRC staff finds that the TSs, as modified, continue to specify the remedial measures to be taken if one of the LCO requirements is not satisfied. Further, the NRC staff finds that there is reasonable assurance that operation in accordance with the revised TSs would not endanger the health and safety of the public or be inimical to the common defense and security. Therefore, the NRC staff concludes that the proposed changes satisfy the requirements of 10 CFR 50.36(c)(2) and are, therefore, acceptable.

3.2.3 Editorial Changes

The licensee proposed various editorial changes to the St. Lucie 1 and 2 TSs, as described in Section 2.2.3 of this SE. The NRC staff determined that these changes are editorial and administrative in nature, and do not change any of the technical aspects of the TSs. Therefore, the proposed changes are acceptable.

4.0 CHANGES TO THE OPERATING LICENSE

In its letter dated November 30, 2018, the licensee proposed the following changes to the St. Lucie 1 and 2 operating licenses:

> FPL is authorized to implement the RICT Program as approved in License Amendment No. XXX subject to the following conditions:
>
> 1. FPL will complete the following prior to implementation of the Risk Informed Completion Time Program:
>
>   a. The items listed in the table of implementation items in the enclosure to FPL letter L-2018-006, "Third Response to Request for Additional Information Regarding License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk Informed Extended Completion Times – RITSTF Initiative 4b'," February 1, 2018, and
>
>   b. The six implementation items listed in Attachment 1 to FPL letter L-2018-201, "Fourth Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b,'" November 9, 2018.
>
> 2. The risk assessment approach and methods, shall be acceptable to the NRC, be based on the as-built, as-operated, and maintained plant, and reflect the operating experience of the plant as specified in RG 1.200. Methods to assess the risk from

> extending the completion times must be PRA methods accepted as part of this license amendment, or other methods approved by the NRC for generic use. If the licensee wishes to change its methods, and the change is outside the bounds of this license condition, the licensee will seek prior NRC approval via a license amendment.

Prior approval would be required for a change to the RICT Program or the implementation of the RICT Program, as described in the TS Administrative Controls Section, and the implementation items in the licensee's letters dated, February 1, 2018 (L-2018-006), and November 9, 2018 (L-2018-201).

The proposed license condition contains a provision that risk assessment approaches and methods used shall be acceptable to the NRC. The St. Lucie 1 and 2 PRAs shall be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant, as specified in RG 1.200, Revision 2. Methods to assess the risk from extending the CTs must be PRA methods used to support this LAR, or other methods approved or to be approved by the NRC for generic use. As stated in the NRC staff's SE included in NEI 06-09, Revision 0-A:

> TR NEI 06-09, Revision 0, requires an evaluation of the PRA model used to support the RMTS against the requirements of RG 1.200, Revision 1, and ASME RA-S-2002, "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications", for capability Category II. This assures that the PRA model is technically adequate for use in the assessment of configuration risk. This capability category of PRA is sufficient to support the evaluation of risk associated with out of service SSCs and establishing risk-informed CTs.

Additionally, the NRC staff's SE included in NEI 06-09, Revision 0-A also states:

> As part of its review and approval of a licensee's application requesting to implement the RMTS, the NRC staff intends to impose a license condition that will explicitly address the scope of the PRA and non-PRA methods approved by the NRC staff for use in the plant-specific RMTS program. If a licensee wishes to change its methods, and the change is outside the bounds of the license condition, the licensee will need NRC approval, via a license amendment, of the implementation of the new method in its RMTS program. The focus of the NRC staff's review and approval will be on the technical adequacy of the methodology and analyses relied upon for the RMTS application.

This constraint appropriately requires the licensee to utilize the risk assessment approaches and methods previously approved by the NRC and/or incorporated in the RICT Program, and requires prior NRC approval for any change in PRA methods to assess risk that are outside those approval boundaries.

In the LAR, as supplemented, there were certain specific actions that the NRC staff identified as being necessary to support the conclusion that the implementation of the proposed program met the requirements of the RICT Program. The NRC staff finding on the acceptability of the implementation of the RICT Program for the TS LCOs in this SE is dependent on the completion of the implementation items identified in the licensee's February 1, 2018, and November 9, 2018, letters, and listed below:

Item	Implementation Date
Confirm that the all hazards CDF and LERF estimates achieved using NRC-accepted methods will be less than 1E-04 per year and 1E-05 per year, respectively.	Prior to implementation of the RICT Program
Model revision and associated documentation for F&O AS-04.	
Model revision and associated documentation for F&O AS-06.	
F&O AS-12 will be closed out in accordance with Appendix X to NEI 05-04, NEI 07-12, and NEI 12-13, "Close-out of Facts and Observations."	
Model revision and associated documentation for F&O AS-13.	
F&O SL-CCF-12 will be closed out in accordance with Appendix X to NEI 05-04, NEI 07-12, and NEI 12-13, "Close-out of Facts and Observations."	
Model revision and associated documentation for F&O FSS-A1-01.	

The NRC staff finds that this license condition, which includes the implementation items referenced above, is acceptable because it adequately implements the RICT Program using models, methods, and approaches consistent with applicable guidance that are acceptable to the NRC. For each implementation item, the licensee and the NRC staff have reached a satisfactory resolution involving the level of detail and main attributes that will be incorporated into the program upon completion. The NRC staff, through an onsite audit or during future inspections, may choose to examine the closure of the implementation items, with the expectation that any issues discovered during this review, or concerns with regard to adequate completion of the implementation item, would be tracked and dispositioned appropriately under the licensee's corrective action program and could be subject to appropriate NRC enforcement action.

5.0 SUMMARY

5.1 NRC Staff Findings and Conclusions

The NRC staff finds that the licensee's proposed implementation of the RICT Program for the identified scope of Required Actions is consistent with the guidance of NEI 06-09, Revision 0-A, subject to the limitations and conditions evaluated in Section 4.0 of this SE. The licensee's methodology for assessing the risk impact of extended CTs, including the individual CT extension impacts in terms of ICDP and ILERP, and the overall program impact in terms of ΔCDF and ΔLERF, is accomplished using PRA models of sufficient scope and technical adequacy based on consistency with the guidance of RG 1.200, Revision 2. For external hazards that do not have PRA models, the licensee will use bounding analyses in accordance with NEI 06-09, Revision 0-A guidance and Administrative Control TS and license condition provided in this SE.

The RICT calculation uses the PRA model appropriately translated into the CRMP tool, and the licensee has an acceptable process in place to ensure the PRA model continues to use acceptable methods and is appropriately updated to reflect changes to the plant or operating experience. In addition, the NRC staff finds that the proposed implementation of the RICT Program addresses the RG 1.177 principles on maintaining defense-in-depth philosophy and the safety margins to ensure that they are adequately maintained, and includes adequate administrative controls as well as performance monitoring programs.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the NRC staff notified the State of Florida official (Ms. Cynthia Becker, M.P.H., Chief of the Bureau of Radiation Control, Florida Department of Health) on April 22, 2019 (ADAMS Accession No. ML19113A024), of the proposed issuance of the amendments. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the use of facility components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding, which was published in the FR on August 14, 2018 (83 FR 40350), that the amendments involve no significant hazards consideration, and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

8.0 CONCLUSION

The Commission has concluded, based on the aforementioned considerations, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

9.0 REFERENCES

1 Jensen, Joseph, FPL, letter to NRC, "Application to Adopt TSTF-505, Revision 1, 'ProvideRisk-Informed Extended Completion Times – RITSTF Initiative 4B'," December 5, 2014 (ADAMS Accession No. ML14353A016).

2 Costanzo, Christopher, FPL, letter to NRC, "Response to Request for Additional Information Regarding License Amendment Request to Adopt TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4B'," July 8, 2016 (ADAMS Accession No. ML16193A659).

3 Costanzo, Christopher, FPL, letter to NRC, "Second Response to Request for Additional Information Regarding License Amendment to Adopt TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4B'," July 22, 2016 (ADAMS Accession No. ML16208A061).

4 Summers, Thomas, FPL, letter to NRC, "Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b'," February 25, 2017 (ADAMS Accession No. ML17058A181).

5 DeBoer, Daniel, FPL, letter to NRC, "Third Response to Request for Additional Information Regarding License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," February 1, 2018 (ADAMS Accession No. ML18032A614).

6 DeBoer, Daniel, FPL, letter to NRC, "Fourth Response to Request for Additional Information Regarding License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," March 15, 2018 (ADAMS Accession No. ML18074A116).

7 DeBoer, Daniel, FPL, letter to NRC, "Second Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," June 7, 2018 (ADAMS Accession No. ML18158A228).

8 DeBoer, Daniel, FPL, letter to NRC, "Third Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b'," September 18, 2018 (ADAMS Accession No. ML18261A354).

9 DeBoer, Daniel, FPL, letter to NRC, "Fourth Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b'," November 9, 2018 (ADAMS Accession No. ML18316A030).

10 DeBoer, Daniel, FPL, letter to NRC, "Resubmittal of Fourth Supplement to License Amendment Request to Adopt Risk Informed Completion Times TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b'," November 30, 2018 (ADAMS Accession No. ML18334A250).

11 Technical Specifications Task Force, letter to NRC, "Transmittal of TSTF-505, Revision 1, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b" Errata," June 14, 2011 (ADAMS Accession No. ML111650552).

12 Wentzel, Michael, NRC, to Mano Nazar, FPL, "St. Lucie Nuclear Plant, Units 1 and 2 - Summary of NRC Audit Regarding License Amendment Request to Adopt Risk-Informed Completion Times in Technical Specifications (CAC Nos. MF5372 and MF5373; EPID L-2014-LLA-0002)," June 14, 2018 (ADAMS Accession No. ML18151A434).

13 Buckberg, Perry, NRC, to Ken Frehafer, FPL, "Request for Additional Information - St. Lucie TSTF-505 EICB - MF5372 & MF5373," March 28, 2016 (ADAMS Accession No. ML16089A006).

14 Buckberg, Perry, NRC, to Ken Frehafer, FPL, "Request for Additional Information - St. Lucie TSTF-505 APLA - MF5372 & MF5373," April 13, 2016 (ADAMS Accession No. ML16105A456).

15 Buckberg, Perry, NRC, to Ken Frehafer, FPL, "Request for Additional Information - St. Lucie TSTF-505 APLA - MF5372 & MF5373," May 27, 2016 (ADAMS Accession No. ML16152A187).

16 McGinty, Timothy, and Boland, Anne, NRC, letter to Technical Specification Task Force, "Issues with Technical Specifications Task Force Traveler TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4B'," November 15, 2016 (ADAMS Accession No. ML16281A021).

17 Buckberg, Perry, NRC, to Ken Frehafer, FPL, "Request for Additional Information - St. Lucie RICT LAR - MF5372/MF5373," October 4, 2017 (ADAMS Accession No. ML17277A369).

18 Buckberg, Perry, NRC, to Ken Frehafer, FPL, "Request for Additional Information - St. Lucie RICT LAR I&C - (CACs MF5372/MF5373 EPID L-2014-LLA-0001)," February 1, 2018 (ADAMS Accession No. ML18033A014).

19 Giitter, Joseph and Mary Jane Ross-Lee, NRC, letter to Greg Krueger, NEI, "U.S. Nuclear Regulatory Commission Acceptance on Nuclear Energy Institute Appendix X to Guidance 05-04, 07-12, and 12-13, Close-Out of Facts and Observations (F&Os)," May 3, 2017 (ADAMS Accession No. ML17079A427).

20 Wentzel, Michael, NRC, Mano Nazar, FPL, "St. Lucie Plant, Unit Nos. 1 and 2 – Summary of Regulatory Audit in Support of License Amendment Request to Adopt Risk-Informed Completion Times in Technical Specifications (CAC Nos. MF5372 and MF5373; EPID L-2014-LLA-0001)," July 23, 2018 (ADAMS Accession No. ML18179A433).

21 Golder, Jennifer, NRC, letter to Biff Bradley, Nuclear Energy Institute, "Final SE for Nuclear Energy Institute (NEI) Topical Report NEI 06-09, 'Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines' (TAC No. MD4995)," May 17, 2007 (ADAMS Accession No. ML071200238).

22 Nuclear Energy Institute, Topical Report NEI 06-09, Revision 0-A, "Risk Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specification (RMTS)," October 12, 2012 (ADAMS Accession No. ML122860402).

23 FPL, "St. Lucie, Unit 1, Submittal of Amendment 29 to Updated Final Safety Analysis Report and License Renewal 10 CFR 54.37(b) Report," October , 2018 (ADAMS Accession No. ML18291A749).

24 NRC, NUREG-1432, Revision 4, Volume 1, "Standard Technical Specifications — Combustion Engineering Plants," April 2012 (ADAMS Accession No. ML12102A165).

25 NRC, Regulatory Guide 1.174, Revision 3, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," January 2018 (ADAMS Accession No. ML17317A256).

26 NRC, Regulatory Guide 1.177, Revision 1, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," May 2011 (ADAMS Accession No. ML100910008).

27 Nuclear Management and Resources Council 93-01, Revision 4A, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," April 2011 (ADAMS Accession No. ML11116A198).

28 NRC, Regulatory Guide 1.160, Revision 3, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," May 2012 (ADAMS Accession No. ML113610098).

29 NRC, Regulatory Guide 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," March 2009 (ADAMS Accession No. ML090410014).

30 American Society of Mechanical Engineers, ASME/ANS RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," Addendum A to RA-S-2008, February 2009.

31 NRC, NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” Section 19.2, “Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance,”, June 2007 (ADAMS Accession No. ML071700658).

32 NRC, NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” Section 19.1, Revision 3, “Determining the Technical Adequacy of Probabilistic Risk Assessment for Risk-Informed License Amendment Request After Initial Fuel Load,” September 2012 (ADAMS Accession No. ML12193A107).

33 NRC, NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” Section 16.1, Revision 1, “Risk-informed Decision Making: Technical Specifications,” March 2007 (ADAMS Accession No. ML070380228).

34 Nuclear Energy Institute, Topical Report NEI 00-02, Revision A.3, “Probabilistic Risk Assessment (PRA) Peer Review Guidance,” NEI 00-02, March 20, 2000 (ADAMS Accession No. ML003728023).

35 American Society of Mechanical Engineers, ASME/ANS RA-Sb-2005, “Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications,” Addendum to ASME RA-S-2002, December 2005.

36 NRC, Regulatory Guide 1.200, Revision 1, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities,” January, 2007 (ADAMS Accession No. ML070240001).

37 Rosenberg, Stacey, NRC, internal memorandum to Joseph Giitter, NRC, “Nuclear Regulatory Commission Report on Observations of Implementation of the Industry Independent Assessment Team Close-out of Facts and Observations after Appendix X Issued,” December 1, 2017 (ADAMS Accession No. ML17265A812).

38 NRC, NUREG-1792, “Good Practices for Implementing Human Reliability Analysis (HRA),” April 2005 (ADAMS Accession No. ML051160213).

39 Nuclear Energy Institute, Topical Report NEI 07-12, Revision 1, “Fire Probabilistic Risk Assessment (FPRA) Peer Review Process Guidelines,” July 2010 (ADAMS Accession No. ML102230070).

40 Buckberg, Perry, NRC, letter to Mano Nazar, Florida Power & Light Company, “St. Lucie Plant, Unit Nos. 1 and 2 - Issuance of Amendments Regarding Transition to a Risk-Informed, Performance-Based Fire Protection Program in Accordance with Title 10 of the Code of Federal Regulations Section 50.48(c) (CAC Nos. MF1373 and MF1374),” March 31, 2016 (ADAMS Accession No. ML15344A346).

41 Jensen, Joseph, FPL, letter to NRC, “Transition to 10 CFR 50.48(c) - NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Edition),” March 22, 2013 (ADAMS Accession No. ML13088A173).

42 Giitter, Joseph, NRC, letter to Michael Tschiltz, Nuclear Energy Institute, “Retirement of National Fire Protection Association 805 Frequently Asked Question 08-0046 'Incipient Fire Detection Systems',” July 1, 2016 (ADAMS Accession No. ML16167A444).

43 Giitter, Joesph, NRC, letter to Michael Tschiltz, Nuclear Energy Institute, “Response to July 28, 2016, Letter Regarding Retirement of National Fire Protection Association 805 Frequently Asked Question 08-0046 'Incipient Fire Detection Systems',” November 17, 2016 (ADAMS Accession No. ML16253A111).

44 NRC, NUREG-2180, “Determining the Effectiveness, Limitations, and Operator Response for Very Early Warning Fire Detection Systems in Nuclear Facilities (DELORES-VEWFIRE),” December 2016 (ADAMS Accession No. ML16343A058).

45 NRC, NUREG-1855, Revision 0, "Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision Making," March 2009 (ADAMS Accession No. ML090970525).

46 McCree, Victor, NRC, letter to Mano Nazar, FPL, "St. Lucie Plant - Final Significance Determination of White Finding and Notice of Violation; NRC Inspection Report 05000335/2014010 and 05000389/2014010," November 19, 2014 (ADAMS Accesion No. ML14323A786).

47 NRC, NUREG/CR-4461, Revision 2, "Tornado Climatology of the Contiguous United States," February 2007 (ADAMS Accession No. ML070810400).

48 Electric Power Research Institute, Topical Report 1016737, "Treatment of Parameter and Modeling Uncertainty for Probabilistic Risk Assessments," December 19, 2008 (Available at: https://www.epri.com/#/pages/product/1016737/).

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