CONDUCT OF OPERATIONS

CHAPTER 13

TABLE OF CONTENTS

EC286379
EC287142

EC288394

CONDUCT OF OPERATIONS

CHAPTER 13

LIST OF TABLES

13.0 CONDUCT OF OPERATIONS

13.1 ORGANIZATIONAL STRUCTURE

The Florida Power and Light Company Organization is provided in the FPL Quality Assurance Topical Report discussed in Section 17.2.

13.2 TRAINING PROGRAM

The Florida Power and Light St. Lucie facility training program, which is maintained under the direction of the training manager, meets or exceeds the requirements and recommendations of Section 5.5 of ANSI/ANS 3.1-1978. St. Lucie plant training programs are accredited through the National Nuclear Accrediting Board (NNAB). National Academy for Nuclear Training (NANT) guidelines, which are endorsed by the NNAB, are utilized at St. Lucie.

13.3 EMERGENCY PLAN

The St. Lucie Units 1 and 2 Emergency Plan is a single document which is applicable to both of the two dockets (SL-1, 50-335; SL-2, 50-389). Appropriate design information utilizing the guidelines of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," is incorporated in the Emergency Plan, and the document is updated periodically.

13.4 REVIEW AND AUDIT

Conduct of reviews and audits of operating phase activities is provided in the FPL Quality Assurance Topical Report described in Section 17.2.

13.5 PLANT PROCEDURES

Written plant procedures are established, implemented and maintained covering the applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, (Revision 2), those required for implementing the requirements of NUREG-0737 and plant activities including refueling operations, surveillance and test activities of safety-related equipment, and the Fire Protection Program implementation**,** as outlined in Section 6.8, Procedures and Programs, of the plant Technical Specifications.

13.6 PLANT RECORDS

A recorded history of the plant is maintained in accordance with 10 CFR 50, Appendix B, Section XVII. Complete records are retained as prescribed in the FPL Quality Assurance Topical Report described in Section 17.2, to assure the ability to reconstruct significant events and satisfy any statutory requirements which apply.

13.7 LICENSEE-CONTROLLED TECHNICAL SPECIFICATION REQUIREMENTS

This section of the UFSAR contains ACTION STATEMENTS, LIMITING CONDITIONS OF OPERATION (LCOs), and SURVEILLANCE REQUIREMENTS for Technical Specifications that have little or no impact on the prevention or mitigation of design basis accidents.

In accordance with the NRC final policy statement on Technical Specifications improvements for nuclear power reactors, these "supplemental" technical specifications remain a condition of the facility operating license but, in light of their low risk assessment, do not require prior NRC approval for revision or changes. Requirements relocated to the UFSAR will be controlled through 10 CFR 50.59.

Line-items or segments of current plant Technical Specifications that can be changed without NRC approval are also listed in this section. The identification of these "line-item" Technical Specifications is based on guidance contained in the NRC final policy statement.

The Technical Specification requirements contained in this section were removed from St. Lucie Unit 2 Technical Specifications by means of approved License Amendments. All surveillance test requirements described below can be extended by up to 25%.

13.7.1 TECHNICAL SPECIFICATION REQUIREMENTS

13.7.1.1 Seismic Instrumentation

Plant operating restrictions associated with the seismic instrumentation were removed from the facility Technical Specifications by License Amendment #74 and NRC Safety Evaluation Report issued April 25, 1995.

Operability of the seismic instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the facility to determine if plant shutdown is required pursuant to Appendix A of 10 CFR Part 100. The instrumentation is shared between Units 1 & 2 and is consistent with the recommendations of Regulatory Guide 1.12, "Instrumentation for Earthquakes," April 1974. Seismic instrumentation is also discussed in Section 3.7.4.

13.7.1.1.1 Limiting Condition for Operation

The seismic monitoring instrumentation shown in Table 13.7.1-1 shall be OPERABLE. The emergency power source may be inoperable in Modes 5 or 6.

APPLICABILITY: At all times.

ACTION:

With the number of OPERABLE seismic monitoring channels less than required by TABLE 13.7.1-1, restore the inoperable channel(s) to OPERABLE status as soon as practical.

13.7.1.1.2 Surveillance Requirements

Each of the above seismic monitoring instruments shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown on TABLE 13.7.1-2.

Each of the above seismic monitoring instruments actuated during a seismic event (greater than or equal to 0.01g) shall be restored to OPERABLE status within 24 hours and a CHANNEL CALIBRATION performed within 5 days. Data shall be retrieved from actuated instruments and analyzed to determine the magnitude of the vibratory ground motion.

13.7.1.2 Incore Detectors

Plant operating restrictions associated with the Incore Detectors were removed from the facility Technical Specifications by License Amendment #75 and NRC Safety Evaluation Report issued June 6, 1995.

The operability of the incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core. The NRC Safety Evaluation Report issued June 6, 1995 with Technical Specification License Amendment #75 removing the incore detector operating restrictions from the Technical Specifications and placing them in the UFSAR recommends that any safety evaluation to reduce the minimum number of operable incore detectors address certain issues. These issues are specified below:

1) how an inadvertent loading of a fuel assembly into an improper location will be detected;
2) how the validity of the tilt estimates will be ensured;
3) how adequate core coverage will be maintained;
4) how the measurement uncertainties will be assured and why the added uncertainties are adequate to guarantee that measured peak linear heat rates, peak pin powers radial peaking factors, and azimuthal power tilts will meet Technical Specification limits; and
5) how the incore detector system will be restored to full (or nearly full) service before the beginning of each cycle.

13.7.1.2.1 Limiting Condition for Operation

1. The incore detection system shall be operable using either the CECOR code with:

   a. At least 75% of all incore detector locations, and

   b. A minimum of two quadrant symmetric incore detector locations per core quadrant, and

   c. a measurement-calculational uncertainty factor of 1.062.

   An operable incore detector location shall consist of a fuel assembly containing a fixed detector string with a minimum of three operable rhodium detectors;

Or,

2. The incore detection system shall be operable using the BEACON code with:

   a. The minimum requirement for detector availability is 75% for startup testing at the beginning of each cycle. For the rest of the cycle 50% detector availability is needed with no detector string requirements, and

   b. There is no requirement for detector symmetric locations, however there is a minimum requirement of operable detectors for each quadrant. This requirement is as follows:

      ≥10 Detectors/Quadrant

      ≥4 Detectors/Top-Half Quadrant

      ≥4 Detectors/Bottom-Half Quadrant, and

   c. a measurement-calculational uncertainty factor applied in accordance with JPN- PSL-SEFJ-96-022, "Evaluation of The Best Estimate Analyzer for Core Operations - Nuclear (BEACON) ."

APPLICABILITY: When the incore detection system is used for:

a. Recalibration of the excore axial flux offset detection system,

b. Monitoring the AZIMUTHAL POWER TILT,

c. Calibration of the power level neutron flux channels, or

d. Monitoring the linear heat rate.

ACTION:

a. With the incore detection system inoperable, do not use the system for the above applicable monitoring or calibration functions.

13.7.1.2.2 Surveillance Requirements

The incore detection system shall be demonstrated operable:

a. By performance of a channel check within 7 days prior to its use and when required for:

   1. Recalibration of the excore axial flux offset detection system,

   2. Monitoring the linear heat rate pursuant to Technical Specification 4.2.1.4,

   3. Monitoring the AZIMUTHAL POWER TILT, or

   4. Calibration of the Power Level Neutron Flux Channels.

b. At least once per 18 months by the performance of a channel calibration operation which exempts the neutron detectors but includes all electronic components. The neutron detectors are calibrated prior to installation in the reactor core.

The incore detector monitoring system may be used for monitoring the core power distribution by verifying that the incore detector Local Power Density alarms are adjusted to satisfy the requirements of the core power distribution map and when the setpoint for these alarms include allowances, set in the conservative directions, for (1) a measurement-calculational uncertainty factor applied consistent with Section 13.7.1.2.1.1.c or Section 13.7.1.2.1.2.c, (2) an engineering uncertainty factor of 1.03, (3) an allowance for axial fuel densification and thermal expansion of 1.01, and (4) a THERMAL POWER measurement uncertainty factor of 1.02.

The determination of the total uncertainty allowance applied to the LHR alarms is derived from the product of the individual components as listed in items 1 through 4, above. (Reference PSL-ENG-SEFJ-99-009).

13.7.1.3 Meteorological Instrumentation

The Meteorological Instrumentation system is shared between St. Lucie Units 1 & 2. Meteorological system shares the same tower and dataloggers (one at the Met. Tower, one at the Control Room). EC246531

Meteorological Instrumentation operation restrictions were removed from the facility Technical Specifications by License Amendment No. 86 and NRC Safety Evaluation Report issued August 20, 1996.

Operability of the meteorological instrumentation ensures that sufficient meteorological data is available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public.

13.7.1.3.1 Limiting Condition for Operation

The meteorological monitoring instrumentation channels shown in Table 13.7.1-3 shall be OPERABLE.

APPLICABILITY: At all times.

ACTION:

a. With the number of OPERABLE meteorological monitoring channels less than required by Table 13.7.1-3, suspend all release of gaseous radioactive material from the radwaste gas decay tanks until the inoperable channel(s) is restored to OPERABLE status.

13.7.1.3.2 Surveillance Requirements

Each of the above meteorological monitoring instrumentation channels shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 13.7.1-4.

13.7.1.4 Loose-Part Detection Instrumentation

The Loose-Part Detection Instrumentation operation restrictions were removed from the facility Technical Specifications by License Amendment No. 86 and NRC Safety Evaluation Report issued August 20, 1996.

The loose-part detection instrumentation is provided to ensure sufficient capability available to detect loose metallic parts in the primary system and avoid or mitigate damage to primary system components. The allowable out-of-service times and surveillance requirements are consistent with the recommendations of Regulatory Guide 1.133, "Loose-Part Detection Program for the Primary System of Light-Water-Cooled Reactors," May 1981.

13.7.1.4.1 Limiting Condition for Operation

The loose-part detection system shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION: None

13.7.1.4.2 Surveillance Requirements

Each channel of the loose-part detection system shall be demonstrated OPERABLE by performance of:

a. a CHANNEL CHECK at least once per 24 hours,

b. a CHANNEL FUNCTIONAL TEST at least once per 31 days, and

c. a CHANNEL CALIBRATION at least once per 18 months.

13.7.1.5 Explosive Gas Monitoring Instrumentation

The Explosive Gas Monitoring Instrumentation operation restrictions were removed from the facility Technical Specifications by License Amendment No. 86 and NRC Safety Evaluation Report issued August 20, 1996.

The explosive gas monitoring instrumentation is provided to monitor the concentrations of potentially explosive gas mixtures in the waste gas holdup system. The OPERABILITY and use of the instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

13.7.1.5.1 Limiting Condition for Operation

The explosive gas monitoring instrumentation channels shown in Table 13.7.1-5 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Technical Specification 3.11.2.5 are not exceeded.

APPLICABILITY: As shown in Table 13.7.1-5.

ACTION:

a. With the explosive gas monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Specification, declare the channel inoperable.

b. With less than the minimum number of explosive gas monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 13.7.1-5.

13.7.1.5.2 Surveillance Requirements

Explosive gas monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 13.7.1-6.

13.7.1.6 Turbine Overspeed Protection

The Turbine Overspeed Protection operation restrictions were removed from the facility Technical Specifications by License Amendment No. 86 and NRC Safety Evaluation Report issued August 20, 1996.

Turbine overspeed protection instrumentation and turbine speed control valves protect the turbine from excessive overspeed. Protection from turbine excessive overspeed is required since excessive overspeed of the turbine could generate potentially damaging missiles which could impact and damage safety related components, equipment or structures.

13.7.1.6.1 Operability Requirements EC286188

At least one turbine overspeed protection system shall be OPERABLE.

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

* With any main steam line isolation valve and/or any main steam line isolation valve bypass valve not fully closed.

EC286188

13.7.1.6.2 Surveillance Requirements

The above required turbine overspeed protection system shall be demonstrated OPERABLE:

a.* At least once per 184 days by cycling each of the following valves through at least one complete cycle from the running position.

1. Four high pressure turbine stop valves.

2. Four high pressure turbine control valves.

3. Four low pressure turbine reheat stop valves.

4. Four low pressure turbine reheat intercept valves.

b.* At least once per 184 days by direct observation of the movement of each of the above valves through one complete cycle from the running position when the plant is operating or by verifying that all valves are in the closed position and that conditions with respect to the valves appear normal for planned and unplanned turbine trips.

c. At least once per 18 months by performance of a CHANNEL CALIBRATION on the turbine overspeed protection systems.

d. At least once per 40 months by disassembling at least one of each of the above valves and performing a visual and surface inspection of valve seats, disks and stems and verifying no unacceptable flaws or corrosion.

13.7.1.7 Crane Travel - Spent Fuel Storage Pool Building

The Crane Travel - Spent Fuel Storage Pool Building load restriction was removed from the facility Technical Specification by NRC approval of License Amendment No. 134 and NRC Safety Evaluation issued April 28, 2004.

The restriction on movement of loads in excess of the nominal weight of a fuel assembly, CEA and associated handling tool over other fuel assemblies in the storage pool ensures that in the event this load is dropped (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses.

13.7.1.7.1 Limiting Condition for Operation

Loads in excess of 1600 pounds shall be prohibited from travel over fuel assemblies in the spent fuel storage pool.

APPLICABILITY: With fuel assemblies in the spent fuel storage pool unless the following conditions are met:

a. fuel assemblies are in a spent fuel transfer cask in the cask pit area and,

* Testing frequency based on PSL-ENG-SENS-08-077.

b. the Spent Fuel Cask Crane main hook is being used to place the cask lid on the cask.

ACTION: With the requirements for above specification not satisfied, place the crane load in a safe condition.

13.7.1.7.2 Surveillance Requirements

Crane interlocks and physical stops which prevent crane travel with loads in excess of 1600 pounds over fuel assemblies shall be demonstrated OPERABLE within 7 days prior to crane use and at least once per 7 days thereafter during crane operation.

13.7.1.8 Spent Fuel Cask Crane Main Hook

The Spent Fuel Cask Crane load restriction was removed from the facility Technical Specifications by NRC approval of License Amendment No. 134 and NRC Safety Evaluation issued April 28, 2004.

The maximum load which may be handled by the spent fuel cask crane main hook is limited to 150 tons. This restriction is provided to prevent the load exceeding the single-failure-proof design load limit.

The minimum vertical clearance below the load while the load is in transit is required to be > 6 inches (6-inch minimum). This restriction is provided to prevent impact in the unlikely event of an uncontrolled load movement.

When moving the spent fuel transfer cask shield plug, the rigging shall ensure that the lid remains horizontal and cannot tilt. This restriction is provided to prevent the shield plug from contacting spent fuel in the spent fuel transfer cask.

13.7.1.8.1 Limiting Condition for Operation

The maximum load which may be handled by the spent fuel cask crane shall not exceed 150 tons.

The minimum vertical clearance below a load when the load is in transit shall be at least 6 inches.

The cask lid rigging shall prevent the cask lid from tilting.

APPLICABILITY: Whenever loads are moved with the cask crane main hook.

ACTION: With the requirements of the above specification not satisfied, place load in a safe condition. The provisions of Specification 3.0.3 are not applicable.

13.7.1.8.2 Surveillance Requirements

The loaded weight of a spent fuel assembly cask shall be verified to not exceed 150 tons prior to attaching it to the spent fuel cask crane.

The vertical clearance below the load shall be verified to be at least 6 inches before moving the load horizontally.

13.7.1.9 Combustible Gas Control

Plant operating restrictions associated with hydrogen analyzers and electric hydrogen recombiners - W were removed from the facility Technical Specifications by License Amendment No. 151 and NRC Safety Evaluation Report issued February 22, 2008.

The operability of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, “Control of Combustible Gas Concentrations in Containment Following a LOCA,” March 1971.

The containment fan coolers and containment spray ensure adequate mixing of the containment atmosphere following a LOCA. This mixing action will prevent localized accumulations of hydrogen from exceeding the flammable limit.

13.7.1.9.1 Hydrogen Analyzers

13.7.1.9.1.a Limiting Condition for Operation

Two independent containment hydrogen analyzers shall be OPERABLE.

APPLICABILITY: Modes 1 and 2

ACTION: With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or demonstrate within the next 24 hours that the grab sample system of the inoperable hydrogen analyzer has the capability to draw a sample of the containment atmosphere into the grab sample canister. Verify this capability of the grab sample system at least once per 30 days thereafter. If no Hydrogen Analyzers are operable, take the actions above for one inoperable hydrogen analyzer, initiate a Condition Report to document the condition and the plans to restore at least one Hydrogen Analyzer to operable status.

13.7.1.9.1.b Surveillance Requirements

Each hydrogen analyzer shall be demonstrated OPERABLE by the performance of a CHANNEL FUNCTIONAL TEST at least once per 31 days, and at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION using sample gases containing:

a. Nominally one volume percent hydrogen, balance nitrogen and oxygen.

b. Nominally four volume percent hydrogen, balance nitrogen, and oxygen.

13.7.1.10 Leading Edge Flow Meter (LEFM)

The PSL Unit 2 Extended Power Uprate (EPU) raised the licensed maximum power level to 3020 MWt. The EPU change to the maximum rated thermal power (RTP) included a 1.7% Measurement Uncertainty Recapture (MUR) based on installation of the LEFM. The use of LEFM for determination of feedwater temperature and feedwater mass flow, results in an overall calorimetric uncertainty of 0.3%. The MUR uprate of 1.7% results from the difference between the original 2% power determination uncertainty (required by 10CFR50 Appendix K) and the LEFM based calorimetric uncertainty of 0.3%.

Operability of the LEFM instrumentation is required to support an overall calorimetric uncertainty of 0.3%. Various LEFM system failure modes and resulting action statements are considered based on the use of independent LEFM instrumentation for feedwater headers A & B, and also based on redundancy within each LEFM sub-system. Existing feedwater flow (Venturis) and temperature (RTD) instrumentation have been retained and are used as calorimetric instrumentation if needed.

13.7.1.10.1 Limiting Condition for Operation

The LEFM instrumentation shown in Table 13.7.1-7 shall be OPERABLE

APPLICABILITY: Mode 1 at greater than 98.3% Reactor Power

ACTION:

a) With the number of OPERABLE LEFM / Calorimetric instrument channels less than required by Table 13.7.1-7, restore the inoperable channels to OPERABLE status or be in compliance with the reduced power limits of Table 13.7.1-8 within 48 hours.

b) If the plan experiences a power change of greater than 10% while operating on the Venturis during the 48 hour period, then power level will be restricted to less than or equal to 2968 MWt until the LEFM system is fully OPERABLE.

c) If LCV-9006 is in operation at greater than 98.3% Reactor Power, then the Calorimetric Input shall be swapped to the Venturis and the 48-Hour LCO shall be commenced.

13.7.1.11 Reactor Coolant System Chemistry

Plant operating restrictions associated with reactor coolant system chemistry were removed from the facility Technical Specifications by License Amendment No. 175 and NRC Safety Evaluation Report issued August 14, 2015.

The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining the chemistry within the Steady State Limits provides adequate corrosion protection to ensure the structural integrity of the Reactor Coolant System over the life of the plant. The associated effects of exceeding the oxygen, chloride and fluoride limits are time and temperature dependent. While poor chemistry control can lead to a more

rapid degradation of the primary materials, this type of degradation is a long-term process; furthermore, poor Reactor Coolant System chemistry is a cause of, not a detector or indicator of, Reactor Coolant System degradation. The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

13.7.1.11.1 Limiting Condition for Operation

The Reactor Coolant System chemistry shall be maintained within the limits specified in Table 13.7.1-9.

APPLICABILITY: All MODES

ACTION:

MODES 1, 2, 3 and 4:

a. With any one or more chemistry parameter in excess of its Steady State Limit but within its Transient Limit, restore the parameter to within its Steady State Limit within 24 hours.

b. With any one or more chemistry parameter in excess of its Transient Limit, restore the parameter to be in excess of its Steady State Limit but within its Transient Limit within 6 hours.

MODES 5 and 6:

a. With the concentration of either chloride or fluoride in the Reactor Coolant System in excess of its Steady State Limit for more than 24 hours or in excess of its Transient Limit, reduce the pressurizer pressure to less than or equal to 500 psia, if applicable, and perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operation prior to increasing the pressurizer pressure above 500 psia or prior to proceeding to MODE 4.

13.7.1.11.2 Surveillance Requirements

The Reactor Coolant System chemistry shall be determined to be within the limits by analysis of those parameters at the frequencies specified in Table 13.7.1-10.

13.7.1.12 Communications EC286379

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity condition during core alterations.

13.7.1.12.1 Limiting Condition for Operation

EC286379

Direct communications shall be maintained between the control room and personnel at the refueling station.

APPLICABILITY: During CORE ALTERATIONS.

ACTION: When direct communications between the control room and personnel at the refueling station cannot be maintained, suspend all CORE ALTERATIONS.

13.7.1.12.2 Surveillance Requirements

Direct communications between the control room and personnel at the refueling station shall be demonstrated within 1 hour prior to the start of and in accordance with the Surveillance Frequency Control Program during CORE ALTERATIONS

13.7.1.13 Manipulator Crane Operability

The OPERABILITY requirements of the cranes used for movement of fuel assemblies ensures that: 1) each crane has sufficient load capacity to lift a fuel element, and 2) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

13.7.1.13.1 Limiting Condition for Operation

The manipulator crane shall be used for movement of fuel assemblies, with or without CEAs, and shall be OPERABLE with:

a. A minimum capacity of 2000 pounds, and

b. An overload cut off limit of less than or equal to 3000 pounds.

APPLICABILITY: During movement of fuel assemblies, with or without CEAs, within the reactor pressure vessel.

ACTION: With the requirements for crane OPERABILITY not satisfied, suspend use of any inoperable manipulator crane from operations involving the movement of CEAs and fuel assemblies within the reactor pressure vessel.

13.7.1.13.2 Surveillance Requirements

The manipulator crane used for movement of fuel assemblies, with or without CEAs, within the reactor pressure vessel shall be demonstrated OPERABLE within 72 hours prior to the start of such operations by performing a load test of at least 2000 pounds and demonstrating an automatic load cut off before the crane load exceeds 3000 pounds.

13.7.1.14 DOST Sediment Cleaning Surveillance Requirements

St. Lucie Technical Specification Amendment 183 dated July 28, 2016, removed Surveillance Requirement 4.8.1.1.2.g.1 related to fuel oil storage tank cleaning from the Technical

EC287142
EC288179

Specifications and include fuel oil storage tank cleaning in the Updated Final Safety Analysis Report for St. Lucie Unit 2, which the licensee is required to control by the provisions set forth in Title 10 of the Code of Federal Regulations (10 CFR), Section 50.59, “Changes, tests, and experiments.” EC287142 EC288179

The surveillance requirement for demonstrating the FUNCTIONALITY of the fuel oil systems for standby diesel generators follows the guidance of Regulatory Guide 1.137, “Fuel Oil Systems for Standby Diesel Generators.”

Applicability: At all times

Surveillance Requirement:

Each diesel generator shall be demonstrated FUNCTIONAL by draining each Diesel Oil Storage Tank, removing the accumulated sediment and cleaning the tank using an appropriate cleaning compound, with a frequency set at 15 years.

13.7.2 LINE-ITEM TECHNICAL SPECIFICATION REQUIREMENTS

13.7.2.1 Reactor Protective Instrumentation Response Times

The response time surveillance test acceptance criteria for Technical Specification 3/4.3.1 was relocated by License Amendment # 67 and NRC Safety Evaluation dated July 12, 1994.

The measurement of reactor protective instrumentation response times at the specified frequencies provides assurance that the protective function associated with each channel is completed within the time limit assumed in the accident analyses. No credit is taken in the analyses for those channels with response times indicated as not applicable.

13.7.2.1.1 Response Time Surveillance Test Requirements and Acceptance Criteria

Reactor protective instrumentation response times may be demonstrated by any series of sequential, overlapping, or total channel test measurements, including allocated sensor response time, provided that such tests demonstrate total channel response time is within the limits specified in Table 13.7.2-1.

CEOG Topical Report CE NPSD-1167, and FPL No Significant Hazards Evaluation PSL-ENG-SEIS-03-043 provide the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in these documents. The allocated sensor response time must be verified prior to placing a new component in operation and re-verified after maintenance that may adversely affect the sensor response time (e.g., replacement of a transmitter DP cell or variable damping circuits). Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times. The CEOG topical report and FPL evaluation only cover certain sensor model numbers. If sensors are replaced with types not previously evaluated, then response time testing (RTT) for the new sensor must either be performed and the appropriate changes made to plant procedures, or an additional request for RTT elimination must be submitted and approved. If, however, the replacement sensor is one for which RTT elimination has been approved, then FPL may modify the plant procedures, using an allocated response time based upon a vendor-supplied response time value, or upon statistical analysis of historical data for that transmitter type and model.

13.7.2.2 Engineered Safety Features Actuation Systems Instrumentation Response Times

The response time surveillance test acceptance criteria for Technical Specification 3/4.3.2 was relocated by License Amendment #67 and NRC Safety Evaluation dated July 12, 1994.

The measurement of engineered safety features actuation systems instrumentation response times at the specified frequencies provides assurance that the ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit is taken in the analyses for those channels with response times indicated as not applicable.

13.7.2.2.1 Response Time Surveillance Test Requirements and Acceptance Criteria

Engineered safety features actuation systems instrumentation response times may be demonstrated by any series of sequential, overlapping, or total channel test measurements, including allocated sensor response time, provided that such tests demonstrate the total channel response time is within the limits specified in Table 13.7.2-2.

CEOG Topical Report CE NPSD-1167, and FPL No Significant Hazards Evaluation PSL-ENG-SEIS-03-043 provide the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in these documents. The allocated sensor response time must be verified prior to placing a new component in operation and re-verified after maintenance that may adversely affect the sensor response time (e.g., replacement of a transmitter DP cell or variable damping circuits). Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times. The CEOG topical report and FPL evaluation only cover certain sensor model numbers.

If sensors are replaced with types not previously evaluated, then response time testing (RTT) for the new sensor must either be performed and the appropriate changes made to plant procedures, or an additional request for RTT elimination must be submitted and approved. If, however, the replacement sensor is one for which RTT elimination has been approved, then FPL may modify the plant procedures, using an allocated response time based upon a vendor-supplied response time value, or upon statistical analysis of historical data for that transmitter type and model.

13.7.2.3 Flood Protection

Plant operating restrictions associated with the flood protection were removed from the facility Technical Specifications by License Amendment #82 and NRC Safety Evaluation Report issued April 11, 1996.

The beach dunes, old beach road, and mangrove swamp provide additional assurance that safety-related structures are adequately protected during design basis flooding events.

13.7.2.3.1 Surveillance Requirements

A visual inspection shall be conducted by a qualified engineer after every hurricane and at a minimum a visual inspection every 5 years if there has been no hurricane in that period. If the visual inspection finds the beach dune and the old beach road to have been breached, the inspection will be expanded to include an evaluation of the mangrove swamp and SR-A1A embankment adjacent to the site. If the expanded visual inspection finds significant erosion

requiring repair of the SR-A1A roadbed or embankment, then FPL will consider the effects of the storm damage as part of the hurricane recovery activities.

13.7.2.4 Backup Boron Dilution Detection Sampling

Should one or both of the automatic boron dilution alarms become inoperable, Table 13.7.2-3 provides the requirements for sampling frequencies to ensure that sufficient time is available to the operators, from the detection of dilution until criticality, to mitigate the consequences of any boron dilution event.

13.7.2.5 ESF Pump Acceptance Criteria and Test Methods

The performance criteria values and test procedural details for Surveillance Requirements (SR) 4.1.2.5, "Boric Acid Makeup Pumps - Shutdown," 4.1.2.6, "Boric Acid Makeup Pumps - Operating,"4.5.2.g, "ECCS Subsystems - Operating," and 4.6.2.1.b, "Containment Spray and Cooling Systems," were removed from the facility Technical Specifications (TS) by License Amendment No. 136 and NRC Safety Evaluation Report issued October 6, 2004. The License Amendment and SER also completely deleted SR 4.5.2.i from TS.

13.7.2.5.1 Surveillance Requirements 4.1.2.5, "Boric Acid Makeup Pumps - Shutdown" and 4.1.2.6, "Boric Acid Makeup Pumps - Operating"

The boric acid makeup pump(s) required by LCOs 3.1.2.5 and 3.1.2.6 shall be demonstrated OPERABLE by verifying, that on recirculation flow, the pump develops a discharge pressure of greater than or equal to 90 psig when tested pursuant to the Inservice Testing Program.

13.7.2.5.2 Surveillance Requirements 4.5.2.g and 4.5.2.i, "ECCS Subsystems - Operating"

Each ECCS subsystem required by LCO 3.5.2 shall be demonstrated OPERABLE:

a. By verifying that each of the following pumps develops the required total developed head when tested pursuant to the Inservice Testing Program:

    1. High-Pressure Safety Injection pumps
    2. Low-Pressure Safety Injection pumps

b. By performing a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems of TS 3.5.2 that alter the subsystem flow characteristics. The test shall measure the individual leg flow rates in the following conditions to validate system flow resistance characteristics:

    1. HPSI System - Each Pump:

        a. The sum of the three lowest cold leg flow rates shall be greater than or equal to 476 gpm.

        b. With the system operating in hot/cold leg injection mode, the hot leg flow shall be greater than or equal to 317 gpm.

2. LPSI System - Each Pump:

   The flow through each injection leg shall be greater than or equal to 1763 gpm.

13.7.2.5.3 Surveillance Requirements 4.6.2.1,b, "Containment Spray and Cooling Systems"

Each containment spray system required by LCO 3.6.2.1 shall be demonstrated OPERABLE:

a. By verifying that on recirculation flow, each spray pump develops the required total developed head when tested pursuant to the Inservice Testing Program.

TABLE 13.7.1-1

SEISMIC MONITORING INSTRUMENTATION

(Instrumentation located in St. Lucie Unit 1)

INSTRUMENT CHANNEL	SENSOR LOCATION	MINIMUM MEASUREMENT RANGE	CHANNELS OPERABLE
1. STRONG MOTION TRIAXIAL ACCELEROGRAPHS			
a. SMR-42-1	R.B. Elev. 23.0''	0-2 g	1*
b. SMR-42-2	R.B. Elev. 62.0'	0-2 g	1
c. SMR-42-3	R.A.B. Elev. –0.5'	0-2 g	1
d. SMR-42-4	R.A.B. Elev. 43.0'	0-2 g	1
e. SMR-42-5	Yard Elev. 19.5'	0-2 g	1

* With St. Lucie Unit 2 reactor control room alarm

TABLE 13.7.1-2

SEISMIC MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS
(Instrumentation located in St. Lucie Unit 1)

INSTRUMENTS AND SENSOR LOCATIONS	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1.STRONG MOTION TRIAXIAL ACCELEROGRAPHS			
a. SMR-42-1	M*	R	SA
b. SMR-42-2	M*	R	SA
c. SMR-42-3	M*	R	SA
d. SMR-42-4	M*	R	SA
e. SMR-42-5	M*	R	SA

* Except seismic trigger

TABLE 13.7.1-3

METEOROLOGICAL MONITORING INSTRUMENTATION

INSTRUMENT AND ELEVATION	INSTRUMENT MINIMUM ACCURACY	MINIMUM CHANNELS OPERABLE
1. WIND SPEED		
a) Nominal Elev (10 meters)	± 0.5 mph(NOTE 1)	1(NOTE 3)
b) Nominal Elev (57.9 meters)	± 0.5 mph(NOTE 1)	N.A.
2. WIND DIRECTION		
a) Nominal Elev (10 meters)	± 5°	1(NOTE 4)
b) Nominal Elev (57.9 meters)	± 5°	N.A.
3. AIR TEMPERATURE (Delta T)		
a) Nominal Elev (10 meters)	± 0.1°C(NOTE 2)	1(NOTE 5)
b) Nominal Elev (57.9 meters)	± 0.1°C(NOTE 2)	1(NOTE 5)
c) Nominal Elev (33.5 meters)	± 0.1°C(NOTE 2)	N.A.

NOTES:

1. Starting speed of anemometer shall be <1 mph.

2. ΔT measurement channels only.

3. The 57.9 meter channel may be substituted for the 10 meter wind speed for up to 30 days in the event the 10 meter channel is inoperable. Wind speed data from the 57.9 meter elevation should be adjusted using the wind speed power law:

   $^{S}10 \text{ meters} = {}^{S}57.9 \text{ meters} \quad (0.1727)^{n}$

   where:

   S = wind speed in mph
   n = 0.25 For Pasquill Vertical Stability Classes A, B, C, and D.
   n = 0.50 For Pasquill Vertical Stability Classes E, F, and G.
   1.727×10^{-1} = constant = 10 meters/57.9 meters.

4. The 57.9 meter channel may be substituted for the 10 meter wind direction channel for up to 30 days in the event the 10 meter channel is inoperable.

5. The 33.5 meter channel may be substituted for one of the 10 meter or 57.9 meter temperature channels for up to 30 days if one of the channels is inoperable. The data should always be normalized to °C/100 meters to determine the vertical stability class.

TABLE 13.7.1-4

METEOROLOGICAL MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

	INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1.	WIND SPEED		
a)	Nominal Elev (10 meters)	D	SA
b)	Nominal Elev (57.9 meters)	D(NOTE 1)	SA(NOTE 1)
2.	WIND DIRECTION		
a)	Nominal Elev (10 meters)	D	SA
b)	Nominal Elev (57.9 meters)	D(NOTE 1)	SA(NOTE 1)
3.	AIR TEMPERATURE (Delta T)		
a)	Nominal Elev (10 meters)	D	SA
b)	Nominal Elev (57.9 meters)	D	SA
c)	Nominal Elev (33.5 meters)	D(NOTE 1)	SA(NOTE1)

NOTES:

1. Required only if these channels are being substituted for one of the Minimum Channels OPERABLE per Table 13.7.1-3.

TABLE 13.7.1-5

EXPLOSIVE GAS MONITORING INSTRUMENTATION

	INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1.	WASTE GAS DECAY TANKS EXPLOSIVE GAS MONITORING SYSTEM			
	a) Oxygen monitors	1	(NOTE 1)	1

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, operation of the waste gas holdup system may continue, provided samples of oxygen are analyzed by the lab gas partitioner at least once per 24 hours.

NOTE:

1. During waste gas holdup system operation.

TABLE 13.7.1-6

EXPLOSIVE GAS MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1	WASTE GAS TANKS EXPLOSIVE GAS MONITORING SYSTEM					
	a) Oxygen Monitor	D		Q(1)	M	(NOTE 1)
	b) Oxygen Monitor (Alternate)	D		Q(1)	M	(NOTE 1)

(1) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:

1. One volume percent oxygen, balance nitrogen, and

2. Four volume percent oxygen, balance nitrogen.

NOTE:

1. During waste gas holdup system operation.

TABLE 13.7.1-7

LEFM CALORIMETRIC INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	MINIMUM CHANNELS OPERABLE
LEFM CPU	2	1
LEFM Meter Section (Path 1-4, 5-8)	4	4
Calorimetric Section of DCS	1	1

TABLE 13.7.1-8

REDUCED POWER LIMITS APPLICABLE TO INOPERABLE LEFM CALORIMETRIC INSTRUMENTATION

MAXIMUM MWt	MAXIMUM % OF 3020 MWt	TOTAL POWER UNCERTAINTY	DESCRIPTION OF INOPERABLE LEFM CALORIMETRIC INSTRUMENT
3015	99.84	0.46%	Either Header “A” or Header “B” of LEFM in “Check Mode” (1)
2968	98.3	2.0%	Both Header “A” and Header “B” of LEFM in “Check Mode” (1)
2968	98.3	2.0%	Any one of the two LEFM Meters “Fail Mode” (1)
2968	98.3	2.0%	Calorimetric Section of DCS is Out of Service

Note (1): LEFM Check and Fail Modes are automatically determined within the LEFM system and are annuciated and illustrated on the LEFM CPU display screens.

TABLE 13.7.1-

REACTOR COOLANT SYSTEM

CHEMISTRY LIMITS

PARAMETER	STEADY STATE LIMIT	TRANSIENT LIMIT
DISSOLVED OXYGEN*	≤ 0.10 ppm	≤ 1.00 ppm
CHLORIDE	≤ 0.15 ppm	≤ 1.50 ppm
FLUORIDE	≤ 0.15 ppm	≤ 1.50 ppm

* Limit not applicable with T_{avg} less than or equal to 250°F.

TABLE 13.7.1-10

REACTOR COOLANT SYSTEM

CHEMISTRY LIMITS SURVEILLANCE REQUIREMENTS

PARAMETER	MIMIMUM SAMPLING FREQUENCIES	MAXIMUM TIME BETWEEN SAMPLES
DISSOLVED OXYGEN*	SFCP* #	72 hours
CHLORIDE	SFCP	72 hours
FLUORIDE	SFCP	72 hours

* Not required with T_{avg} less than or equal to 250°F

In accordance with the Surveillance Frequency Control Program

TABLE 13.7.2-1

REACTOR PROTECTIVE INSTRUMENTATION RESPONSE TIMES

Functional Unit		Response Time
1.	Manual Reactor Trip	Not Applicable
2.	Variable Power Level - High	≤ 0.40 second*,**
3.	Pressurizer Pressure - High	≤ 1.15 seconds
4.	Thermal Margin/Low Pressure	≤ 0.90 second**
5.	Containment Pressure - High	≤ 1.15 seconds
6.	Steam Generator Pressure - Low	≤ 1.15 seconds
7.	Steam Generator Pressure Difference - High	≤ 1.15 seconds
8.	Steam Generator Level - Low	≤ 1.15 seconds
9.	Local Power Density - High	≤ 0.40 second*,**
10.	Loss of Component Cooling Water to Reactor Coolant Pumps	Not Applicable
11.	Reactor Protection System Logic	Not Applicable
12.	Reactor Trip Breakers	Not Applicable
13.	Wide Range Logarithmic Neutron Flux Monitor	Not Applicable
14.	Reactor Coolant Flow - Low	0.90 seconds
15.	Loss of Load (Turbine Hydraulic Fluid –Low)	Not Applicable

* Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

** Based on a resistance temperature detector (RTD) response time of less than or equal to 8.0 seconds (15.0 seconds for the hot leg RTDs during Cycle 20 only) where the RTD response time is equivalent to the time interval required for the RTD output to achieve 63.2% of its total change when subjected to a step change in RTD temperature.

TABLE 13.7.2-2

ENGINEERED SAFETY FEATURES RESPONSE TIMES

Initiating Signal and Function		Response Time in Seconds
1. Manual		
a.	SIAS	
	Safety Injection (ECCS)	Not Applicable
	Containment Isolation	Not Applicable
	Shield Building Ventilation System	Not Applicable
	Containment Purge Valve Isolation	Not Applicable
	Containment Fan Coolers	Not Applicable
b.	CSAS	
	Containment Spray	Not Applicable
	Iodine Removal	Not Applicable
c.	CIAS	
	Containment Isolation	Not Applicable
	Shield Building Ventilation System	Not Applicable
	Containment Purge Valve Isolation	Not Applicable
d.	SIS	
	Main Steam Isolation	Not Applicable
	Feedwater Isolation	Not Applicable
e.	RAS	
	Containment Sump Recirculation	Not Applicable
f.	AFAS	
	Auxiliary Feedwater Actuation	Not Applicable
	Feedwater Isolation	Not Applicable
2. Pressurizer Pressure-Low		
a.	Safety Injection (ECCS)	≤ 30.0*/20.0**
b.	Containment Isolation	≤ 21.75*/11.75**
c.	Shield Building Ventilation System	≤ 26.0*/10.0**
d.	Containment Fan Coolers	≤ 24.15*/11.15**
e.	Charging Flow	≤ 330.00*/180.00**
3. Containment Pressure High		
a.	Safety Injection (ECCS)	≤ 30.0*/20.0**
b.	Containment Isolation	≤ 21.75*/11.75**
c.	Shield Building Ventilation System	≤ 26.0*/10.0**
d.	Containment Fan Coolers	≤ 24.15*/11.15**
e.	Feedwater Isolation	≤ 5.15*/5.15**
f.	Main Steam Isolation	≤ 6.75*/6.75*

TABLE 13.7.2-2 (cont'd)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

	Initiating Signal and Function	Response Time in
4.	Containment Pressure-High-High	
	a. Containment Spray/Iodine Removal	≤ 25.65*/11.15**
5.	Containment Radiation-High	
	a. Containment Isolation	≤ 26.75*/16.75**
	b. Shield Building Ventilation System	≤ 32.75*/16.75**
6.	Steam Generator Pressure-Low	
	a. Feedwater Isolation	≤ 5.15/5.15**
	b. Main Steam Isolation	≤ 6.75/6.75**
7.	Refueling Water Storage Tank-Low	
	a. Containment Sump Recirculation	≤ 111.15*/101.15**
8.	4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	
	a. Loss of Power (4.16 kV)	Not Applicable***
	b. Loss of Power (480 V)	Not Applicable***
9.	4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	
	a. Loss of Power (4.16 kV)	Not Applicable***
	b. Loss of Power (480 V)	Not Applicable***
10.	Steam Generator Level-Low	
	a. Auxiliary Feedwater	≤ 305*/≤ 305**
11.	Auxiliary Feedwater Isolation	
	a. SG 1A – SG 1B Differential Pressure	Not Applicable
	b. Feedwater Header SG 1A – SG 1B Differential Pressure	Not Applicable

TABLE NOTATION

* Diesel generator starting and sequence loading delays included. Response time limit includes movement of valves and attainment of pump or blower discharge pressure.

** Diesel generator starting and sequence loading delays not included. Offsite power available. Response time limit includes movement of valves and attainment of pump or blower discharge pressure.

*** Response time testing is not required since the ESFAS functions are tested with and without power.

Table 13.7.2-3

MONITORING FREQUENCIES FOR BACKUP BORON DILUTION DETECTION

	NUMBER OF OPERABLE CHARGING PUMPS*			
MODE	0	1	2	3
3	12 hr	100 min	40 min	25 min
4 (At least 1 RCP)	12 hr	130 min	50 min	30 min
4 (No RCPs)	12 hr	75 min	35 min	30 min
5	8 hr	30 min	30 min	30 min
5 (RCS Level below hot leg centerline)	8 hr	30 min	Operation Not Allowed**	Operation Not Allowed**
6	24 hr	75 min	40 min	30 min

* Charging pump OPERABILITY for any period of time shall constitute OPERABILITY for the entire monitoring frequency.

** In MODE 5 with the RCS level below the hot leg centerline, at least two charging pumps shall be verified to be inoperable by racking out their motor circuit breaker.

13.8 NRC TS Amendment Related Commitments

EC288394

13.8.1 Amendment 184, TSTF-422, Risk-Inform Requirements Regarding Selected Required Action End States

The NRC SER for Amendment 184 required the following commitments be incorporated into the UFSAR:

1. On an ongoing basis, the licensee will follow the guidance established in Section 11 of NUMARC 93-01, Nuclear Management and Resource Council, Revision 4A, April 2011.

2. Upon implementation of the approved TS amendments, when TS required ACTION end state remains within the applicability of the TS, the licensee will follow the guidance established in WCAP-16364-NP, Revision 2, dated May 2010, with the exception that Section 11 of NUMARC 93-01, Revision 4A, will be utilized to meet 10 CFR 50.65(a)(4) requirements in lieu of NUMARC 93-01, Revision 3.

Both of these commitments are embodied in Procedure ADM-17.16, Implementation of the Configuration Risk Management Program