Florida Power & Light Company, 6501 South Ocean Drive, Jensen Beach, FL 34957

October 29, 2001

L-2001-241
10 CFR 50.46

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

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

Pursuant to 10 CFR 50.59 (d)(2), the enclosed report contains a brief description of any changes, tests, and experiments, including a summary of the safety evaluation of each which were made on Unit 1 during the period of October 19, 1999 through April 30, 2001. This submittal correlates with the information included in Amendment 18 of the Updated Final Safety Analysis Report submitted under separate cover.

NRC Regulatory Issue Summary 2001-05 waived the requirements that multiple copies of documents be submitted to the NRC. Therefore, hard copies usually sent to the Regional Administrator and Senior Resident Inspector will no longer be furnished. Please contact us should there be any questions regarding this information.

Very truly yours,

Donald E. Jernigan
Vice President
St. Lucie Plant

DEJ/spt

Enclosure

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

IE47

ST. LUCIE UNIT 1
DOCKET NUMBER 50-335
CHANGES, TESTS AND EXPERIMENTS
MADE AS ALLOWED BY 10 CFR 50.59
FOR THE PERIOD OF
OCTOBER 19, 1999 THROUGH APRIL 30, 2001

INTRODUCTION

This report is submitted in accordance with 10 CFR 50.59 (b), which during the period of concern required that:

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

which are conducted without prior Commission approval be reported to the Commission in accordance with 10 CFR 50.59(d)(2) and 50.71(e)(4). This report is intended to meet this requirement for the period of October 19, 1999 through April 30, 2001. Note that, where practical, summaries from more recent 10 CFR 50.59 evaluations have also been included in this report.

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

Each of the documents summarized in Sections 1, 2 and 3 includes a 10 CFR 50.59 safety evaluation, which evaluated the specific change(s). Each of these safety evaluations concluded that the change does not represent an unreviewed safety question or requires a change to the plant technical specifications; therefore, prior NRC approval was not required for implementation.

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SECTION 1

PLANT CHANGE / MODIFICATIONS

PLANT CHANGE/MODIFICATION 92203

REVISION 0

SIGMA METERS REPLACEMENT

Summary:

This Engineering Package (EP) provided for the replacement of Sigma 9220 series indicators used in the Unit 1 Control Room and the Hot Shutdown control Panel. These indicators were replaced by Versatile Measuring Instruments (VMI) bargraph/digital indicators. The Sigma 9220 series indicators, which did not have setpoints, provided indication only and did not require 120VAC power. The input signal is normally applied to the meter movement circuit, which drives the pointer to give a scale reading. However, the replacement VMI indicators do not require 120VAC power.

In addition, this EP provided for the replacement of additional Sigma 9220 and 9260 series indicators (with setpoints) which were fed from a 120V AC power source. These indicators were included in this package due to other reasons such as a required change in circuit resistor values (across which indicators take input), special order indicators (LIC-9013A, B, C, D, & LIC-9023A, B , C, D) with 2 sets of contacts per setpoint or due to replacement within a functional group (PIA-1102A, B, C,D) with the other 9220 series indicators (PI-1102A, B, C, D) for which this EP provided 120V AC power. Additionally, this EP provided (i) correct range for instruments PT-09-5 and PIS-09-5 in the instrument list, (ii) deletion of dual range of instruments PDI-1101A, B, C, and D, and (iii) correction of instrument nameplates on control boards.

Sigma 9220 and 9260 Series indicators were discontinued for some time and spares were not available in the Plant Stores. Later, when Sigma sold their rights to Versatile Measuring Instruments (VMI), they were available from VMI, however not as Class 1E instruments. The replacement VMI Series 2000 indicators are fully solid state (except for the relay output), state of the art bargraph/digital indicators with digital readout. The replacement indicators have better readability and improved accuracy. Replacement of all Sigma indicators with VMI Series 2000 indicators will also maintain the uniformity in the Control Room.

PLANT CHANGE/MODIFICATION 94064

REVISION 1

FIRE PROTECTION SYSTEM DOCUMENTATION UPDATE

Summary:

QA Audit QSL-OPS-94-01 evaluated St. Lucie site compliance with the applicable requirements of 10 CFR 50, SAR and License commitments, FPL QA Program requirements and implementation of the Fire Protection Program delineated in plant procedures.

In response to the finding from this audit, Engineering performed a review of Unit 1 UFSAR Table 9.5A-11, applicable plant procedures and Fire Protection System design documentation in the area of fire detection instrumentation.

This EP provided for modification of the St. Lucie Unit 1 UFSAR, applicable plant procedures and design documentation to address discrepancies noted between this documentation and the installed plant condition.

Revision 1

CR 00-0215 identified that the update provided for the Cable Spreading Room Halon Pre-action Detectors for Zones 1 and 2 did not identify all the required detectors in the zone. A cross-check of UFSAR Table 9.5A-11, AP-1800022 and Drawing 8770-G-424 was performed as part of CR 00-0215. This review identified an additional UFSAR Table 9,5A-11 discrepancy in that Zone 7A detectors for the RAB "A" Switchgear Room are identified as heat detectors when they are actually smoke detectors. EP 94064 Revision 1 corrected these two discrepancies and resolved minor drawing update issues.

PLANT CHANGE/MODIFICATION 99007

REVISION 4

FUEL HANDLING SYSTEM UPGRADES

Summary:

The purpose of this EP was to upgrade the Unit 1 Fuel Handling System to increase the speed of refueling operations and to automate the refueling operations to minimize the likelihood of errors during refueling. The upgrade also addressed the issue of equipment obsolescence and component degradation due to aging.

This EP was implemented in two phases. Phase I consisted the work done before the unit outage for work outside containment. Phase 2 consisted of the remaining activities.

Revision 1 of this EP was issued to document the following changes:

1. The Safety Evaluation was enhanced to include reference to the post modification testing. Precaution guidance for Attachments 11 & 12 was added.

2. Typographical errors were corrected.

Revision 2 of this EP was issued to add a hold point for Post Modification Testing.

Revision 3 of this EP was issued to perform the Containment/Refueling Machine portion (Phase 2) of the modification. This was a complete revision of the word document and revision bars were omitted. Only attachments that have been revised were included.

Revision 4 of this EP was issued to enhance the safety evaluation as requested by the Facility Review Group (FRG) when revision 3 was presented. This revision also corrected typographical errors.

PLANT CHANGE/MODIFICATION 99013

REVISION 2

REPLACEMENT OF MAIN FEEDWATER ISOLATION VALVE ACTUATORS AND ADDITION OF CONDENSATE PUMP TRIP ON MSIS

Summary:

This EP was issued to modify the Main Feedwater Isolation Valves (MFIVs) on St. Lucie Unit 1. The existing motor operators were replaced with fast closure pneumatic piston actuators supplied by a nitrogen accumulator. The original valve tag numbers MV-09-7 and MV-09-8 were changed to HCV-09-7 and HCV-09-8 due to the change in actuator type. The following valve design changes related to the actuator replacement were also performed: 1) Yoke and stem replacement, 2) Mechanical stop addition and 3) The body to bonnet pressure seal gasket was replaced with a graphite gasket.

The purpose of this modification was to correct the design deficiencies related to the existing MOV closure time (LER 1998-009-00) and improve Generic Letter 89-10 margins with respect to MV-09-1 and MV-09-2. The fast closure of the modified MFIVs will support the maintenance of existing Containment design margins in the event of a MSLB inside of the Containment Building. In lieu of upgrading the Feedwater Pump Discharge Valves for fast closure, a trip of the Condensate/Feedwater pumps will be credited for feedwater isolation in the event of a postulated single failure of the MFIVs during a MSLB inside Containment.

This PC/M was divided into two phases as described below.

Phase 1: Supplement 0 of this PC/M was released to allow for the pre-outage installation of only that equipment, piping, tubing, boxes, conduit, cables, control components and wiring that can be installed without affecting the safe operation of the plant.

Phase 2: This phase addressed the remaining design details and documentation necessary to fully implement this plant modification.

Revision 1 of this PCM was issued to provide the remaining design details and documentation necessary to fully implement this plant modification.

Revision 2 of this PCM is issued to:

1) Revise the accumulator relief valve setting from 325 psig to 350 psig and the minimum normal operating pressure from 295 to 300 psig, to provide additional margin for the instrument

setpoints and time for operator actions. The instrument setpoint calibration was revised to reflect the change in the operating pressure band and actual pressure switch deadband capability.

2) The actuator vendor installed additional valve stroke control throttle valves, which enlarged the actuator spatial envelope requiring reorientation of the throttle valves and modification of handwheels on adjacent valves.

3) Incorporated ERDADS database changes to reflect the change of the MFIV tag numbers and ERDADS display changes to depict an air operated valve instead of a motor operated valve.

4) Finalized PMT requirements of control circuits affected by the modification.

PLANT CHANGE/MODIFICATION 99031

REVISION 1

REPLACEMENT OF UNIT 1 AND UNIT 2 FIRE PENETRATION SEALS

Summary:

Revision 1 of this PC/M modifies fire penetration seals that were found to be deficient from the review done by Promatec in Engineering Report No. 0029991. These deficiencies fall into three categories. First, the penetrant has too much movement for the seal material to be an adequate fire seal. Second, the temperature of the penetrant is too high for the seal material. Third, the seal is scheduled to be an air or flood seal, without a boot installed, and the movement of the penetrant is higher than allowed by the seal design. To correct the first and second problems, 14 seals were changed to an M-7 seal. To correct the third problem, 39 seals will have a boot installed on the sleeve of the seal. This revision also modified the penetration schedules for both units to show seal ratings for the penetration seals being modified.

PLANT CHANGE/MODIFICATION 99068

REVISION 1

FIRE PROTECTION SYSTEM HOSE STATION ADDITIONS RELOCATIONS / MODIFICATIONS

Summary:

Revision 0 of this EP installed three hot tap branch connections in the manual Fire Protection System suppression water piping that will be used to supply the new hose stations at five locations in the plant. Hose stations are located throughout the plant so that all areas, with some exceptions, are within reach of a fog nozzle when attached to a hose that is not more than 100 feet long. Hot taps or pressure taps is a method of making a connection to existing piping while the existing system is under pressure.

Revision 1 adds five new hose stations, along with all associated piping, that are required to provided manual Fire Protection suppression water spray coverage in accordance with the UFSARs. The five new areas that require coverage were determined in the Engineering Disposition to CR 98-0180-1. Unit 1 requires an additional hose station to cover the area east of the Control Room, which includes the CCW Surge Tank Room and the Electrical Equipment Fan Room.

PLANT CHANGE/MODIFICATION 99162

REVISION 0

NaOH TANK VENT LOOP SEAL

Summary:

PCM 99162 installed a loop seal on the NaOH tank vent to provide vacuum and overpressure protection while allowing a nitrogen blanket to be maintained as desired by Plant Chemistry. Installation of a loop seal allows removal of vacuum breaking check valves V07231 & V07232 and relief valve SR-07-2. The normal position of two manual valves supplying nitrogen to the NaOH Storage Tank was changed: V07273 was changed from normally open to normally closed and V07265 was changed from locked open to normally open. A seal water supply line was provided from service water.

CR 99-0315 identified that the cracking pressures of vacuum relief valve on the NaOH Tank and the tank's nitrogen overpressure control system were not modeled by the design calculations. These conditions adversely affected the Iodine Removal System's capability to maintain containment spray pH as discussed in the UFSAR and Technical Specification bases.

PLANT CHANGE/MODIFICATION 00028

REVISION 1

1B DIESEL FUEL OIL TRANSFER LINE REPLACEMENT

Summary:

This EP provided the details necessary to reroute the underground fuel oil transfer line between the 1B Diesel Oil Transfer Pump and the expansion joint upstream of the 1B1 & 1B2 Diesel Oil Day Tanks. The existing diesel fuel oil transfer line was abandoned in place.

This modification is essentially a like-for-like replacement of the existing piping, with a few enhancements. The new underground piping will use a cathodically protected guard pipe to provide improved corrosion protection and isolate any potential future fuel oil leakage from the environment. The new piping will be protected with tornado missile barriers in accordance with UFSAR requirements.

Revision 1 was issued to modify the Unreviewed Safety Question Determination to include discussion of the missile barrier protection.

PLANT CHANGE/MODIFICATION 00056

REVISION 1

ALTERNATE SJAE SAMPLE POINT

Summary:

PC/M 00056 provided an alternate sample point for the Condenser Air Ejector (CAE) radiation monitor (RE-26-35). The original sample point was from a common discharge header (10"-AE-40) receiving non-condensable gases from the Steam Jet Air Ejector (SJAE) and the Gland Steam Condenser. An alternate sample point on the discharge of the SJAE will allow samples to be taken from the low volume SJAE without the dilution from the Gland Steam Condenser.

This PC/M addressed changes in sampling necessary to eliminate the dilution effect created by the current radiation monitor sample point. The Engineering Package includes the engineering and design necessary to provide justification and documentation for the system modification and changes to the UFSAR.

Revision 1 provided additional evaluation of UFSAR changes and adds reference to the UFSAR changes in Section 11 in response to Facility Review Group comments on PC/M 00057.

PLANT CHANGE/MODIFICATION 00059

REVISION 0

APPENDIX 'R' SSA CIRCUIT MODIFICATIONS - CONTAINMENT

Summary:

As a part of the preparation for the 1998 NRC FPFI (Fire Protection Functional Inspection) audit, a revalidation of the existing SSA (Safe Shutdown Analysis) was initiated. The effort resulted in identification of a number of shortcomings of the original SSA or items where the original assumptions were no longer applicable in today's licensing environment. Specifically, the original FPL position that multiple hot shorts (resulting in a spurious energization of equipment) are not a credible cable failure mode for 'high-low pressure' interface equipment has been rejected in recent NRC practice. The reanalysis effort identified a number of situations where multiple cable hot shorts could have resulted in an inadvertent positioning of valves which could lead to a loss of RCS inventory beyond make-up capability of available equipment, therefore resulting in a fire induced LOCA. Further, cases of non-compliance with separation requirements stated in UFSAR/Appendix were also identified.

Review of essential equipment/cables in containment resulted in identification of two major problem areas, where the electrical penetrations are located allowing transit into containment of all the required electrical cables. These areas are separated by a radiant energy shield from Elev. 23' to 62', but the cables of both divisions cross that barrier. The analysis of the effects of fires is as follows:

"B" Penetration Area

Fire in this area will potentially affect all of SG 1A and T_{COLD} instrumentation, PORV V1404, block valve V1405, and half of SG 1B and pressurizer instrumentation. Three containment fan coolers (CFC) may be affected, also shutdown cooling (SDC) valves V3480 and V3481.

"A" Penetration Area

Fire here will affect all of:

Pressurizer instrumentation, SG 1B instrumentation, PORVs and block valves, charging and auxiliary spray valves, SDC valves V3651 and V3652.

To alleviate these concerns, this EP provided the design details for:

a) Radiant energy shields (RES) were installed under "B" train cable trays in "A" penetration area (above elevation 45') from the vertical RES to the point where tray separation becomes at least 7'. This will protect SG 1B and pressurizer "B" instrumentation and "B" PORV/block valve and assure that only one of SDC valves may be affected by a fire in "A" penetration area.

b) PORV power circuits were replaced with armored cables assuring that no hot shorts can spuriously open the valves. Further, the portion of V1404 ("B" PORV) power circuit routed in conduit was provided with a RES from the tray to the pressurizer cubicle wall to assure its availability for pressure control.

c) Conduits for V1405 ("B" PORV block) power and control, for MD cables for pressurizer pressure indication, for power cables for Containment Fan Cooler 1HVS-1A, for LT-1110Y(10138B), and for trays with separation between V3480 and V3481 of less than 7 ft were provided with RES.

d) V1445, V1446 and V1449 (RCGVS) power circuits were repulled using armored cable.

e) Circuits for TE-1112CB and 1122CA were included in the SSA.

PLANT CHANGE/MODIFICATION 00061

REVISION 1

AUTOMATIC SPRINKLER SYSTEM ADDITIONS

Summary:

As a result of the Fire Protection Functional Inspection and Condition Report 98-0195 it was determined that automatic sprinklers must be installed in the Unit 1 RAB (Reactor Auxiliary Building) cable lofts and in the rooms below in order to supplement the fire resistance capability of the Thermo-Lag walls and Houdaille slab. The areas where sprinklers were installed are the HP Counting Room, the I&C Shop, the Electrical Shop, the Radio Chemistry Laboratory and its northern extension. All of these rooms are located in the RAB at elevation 19.5' underneath the Houdaille slab. The areas above these rooms, the 'A' and 'B' cable lofts, will have sprinklers, as will the hallway, west stairway and the AB Switchgear room, which will have sprinklers to protect the Thermo-Lag walls. All of the areas described will be protected by a single pre-action sprinkler system with a dedicated detection/actuation system.

This PC/M installed the heat detectors (detectors, conduits and cables) and automatic sprinkler system (isolation and sprinkler valves, piping, supports and sprinkler heads) in and above the subject rooms to provide the necessary protection for the rooms, Thermo-Lag walls and Houdaille pre-cast panels. Piping connected to the plant nitrogen system was extended to the location of the sprinkler valve to provide the supervisory gas for the system.

In addition to the above, Condition Report 98-0579 identified a lack of drainage capability for the 'A' Cable Loft. In order to accommodate drainage for fire suppression water, a new drain was added at the bottom of the 'A' cable loft cable chase in fire stop 19-5-S-02, connected to the plant floor drain system.

Revision 1 removed the Engineering Hold on placing the sprinkler system in service since necessary design details were issued with the revision. This revision provided details for installation of a drain scupper in the cable chase north wall to provide a drainage path for fire suppression water overflowing from the 'A' Cable Loft. This revision also provided a vendor manual for the sprinkler system to support installation of periphery connections of water and nitrogen control systems. In addition, fire alarm panel installation information and annunciation capabilities were addressed by this revision.

Revision 1 also included piping and support details for sprinklers to be installed in and around the RAB east stair Thermo-Lag enclosure.

PLANT CHANGE/MODIFICATION 00077

REVISION 0

REPLACEMENT OF EDG-1B WOODWARD ELECTRICAL GOVERNOR

Summary:

This modification affected EDG-1B, which is one of the Emergency Diesel Generators (EDGs) for St. Lucie Unit 1.

The purpose of this modification is to improve EDG-1B speed control by performing the following design changes:

1) Upgrade the EDG electrical governor components by replacing the existing obsolete Woodward model 2301 electrical load controller and associated components with a Woodward model 2301A electronic load controller and digital reference unit,

2) Make changes to the hydraulic governor control logic circuits in order to take advantage of the increased capabilities of the electrical governor,

3) Permanently power the electrical governor from the external 125 VDC source rather than switching to an internal EDG generated DC source to eliminate a major noise source,

4) Block manual speed control during emergency operation, except when the EDG is being synchronized for connection to offsite power, and

5) Install speed switch indicating lights on the DG 1B Idle Start Control Panel to facilitate maintenance and testing.

The replacement Woodward model 2301A electronic load controller and digital reference unit are capable of controlling the EDGs at idle speeds and during acceleration to full speed, as well as at full speed. In order to take advantage of increased capabilities of the replacement model 2301A load controller, the EDG governor control system is to be modified to permit the electrical governor to control EDG operation at all speeds. This requires modification of the hydraulic governor control to maintain it at its high limit to prevent it from interfering with operation of the electric governor over the full normal range of operation.

The control logic for the manual control of EDG speed is to be changed such that manual control via the governor speed raise/lower switch in the Control Room will be blocked when EDG speed drops below 200 rpm or upon the occurrence of an emergency start signal. The block is overridden via the synchronizing selector switch to

allow synchronization with offsite power. This change is being performed to make the Unit 1 EDG operation similar to the Unit 2 EDG operation in this respect.

A set of three new red indicating lights will be added to the EDG Idle Start/Stop Panel to facilitate maintenance and testing.

PLANT CHANGE/MODIFICATION 00098

REVISION 1

ALTERNATE COOLING METHOD FOR UNIT 1 SPENT FUEL POOL HEAT EXCHANGER

Summary:

This EP provided the details necessary to supply alternate cooling flow to the CCW side of the Spent Fuel Pool Heat Exchanger (SFPHx). Prior to the EP, CCW flow to the SFPHx was supplied by the Component Cooling Water System non-essential header (N-header). It is difficult to take certain sections of the CCW system out of service for repair because of the cooling requirements of the SFPHx, especially during an outage. The Engineering Package was divided into two phases.

Phase 1 of this PC/M added branch connections so a temporary cooling system can be connected to provide cooling water flow to the CCW side of the SFPHx. The hot tap split tee connections were welded on the CCW system. Phase 1 of this PC/M completed the addition of branch connections to the CCW inlet and outlet piping, CCW lines CC-129 and CC-130, by implementing the hot tap and expanding the CCW boundary to two new branch isolation valves. These lines were located inside the CCW system isolation valves to the SFPHx.

Phase 2 of this PC/M sized the cooling tower, determined the flow requirements, designed the temporary piping to supply cooling water from the cooling tower to the SFPHx, and evaluated the use of an alternate cooling system during a partial core offload. This alternate cooling method is required to cool the Spent Fuel Pool while the CCW N-Header is out of service to replace or repair isolation valve HCV-14-10.

PLANT CHANGE/MODIFICATION 00125

REVISION 0

ABANDONMENT OF THE BACKUP AIR SUPPLY TO THE MSIVs

Summary:

This EP provided the engineering justification and design information required to abandon in place the backup air supply from the Unit 1 Turbine Generator Building and Steam Trestle. This Backup Air Supply system was initially installed to provide backup air for the Main Steam Isolation Valves (MSIVs), HCV-081A & HCV-08-IB, and the feedwater regulating valves, FCV-9011 & FCV-9021. The backup air supply connections were removed from the feedwater regulating valves via PC/M 96118. The Backup Air Supply system is no longer needed due to the subsequent installation of higher pressure and capacity air compressors. Therefore, the Backup Air Supply system was abandoned and removed on an As Requested PC/M (ARP) basis. This eliminated the need to maintain equipment that is no longer used, and provided a vehicle for removal of the abandoned equipment.

PLANT CHANGE/MODIFICATION 01004

REVISION 0

STEAM GENERATOR WELDED TUBE & TUBESHEET PLUGS, FLEXIBLE STAKE

Summary:

PC/M 01004 provided design details for use of welded tube & tubesheet plugs should steam generator tube degradation be identified. This PCM also allowed installation of flexible stakes and updates the steam generator technical manual to address all approved mechanical and welded plugs and stakes.

This PCM was issued to provide a methodology to plug tubes should future steam generator tube inspections indicate tube plugging is required. No field work was required - this was a documentation only PCM.

PLANT CHANGE/MODIFICATION 01053

REVISION 0

HOT LEG INSTRUMENT NOZZLE REPLACEMENT

Summary:

This EP provided for modification of the St. Lucie Unit 1 Reactor Coolant System (RCS) hot leg instrument nozzle for PDT-1121D. The instrument nozzle is made of a material that is known to be susceptible to primary water stress corrosion cracking (PWSCC) and the nozzle for PDT-1121D was found to be previously leaking. The purpose of this modification was to remove and replace the sensing line nozzle for PDT-1121D and to minimize the possibility of a future nozzle failure. To replace the nozzle, a modification of the original partial penetration weld/nozzle design and material was required to reduce the susceptibility to PWSCC and for ALARA considerations. The modification moved the partial penetration weld joint to the hot leg outside surface where previously the joint was on the inside surface. The material of the nozzle was changed from Alloy 600 to Alloy 690.

The nozzle attaches a sensing line to the RCS hot leg for pressure differential transmitter PDT-1121D. PDT-1121D is part of the Reactor Protection System (RPS) and measures the reactor coolant flow. The PDT provides input to trip the reactor on a low flow condition.

PLANT CHANGE/MODIFICATION 01059

REVISION 0

SHUTDOWN COOLING RELIEF VALVE V3483 SET PRESSURE INCREASE

Summary:

PC/M 01059 provided design details to increase the set pressure of the Loop 1A Safe Shutdown Cooling (SDC) return to Low Pressure Safety Injection (LPSI) Pump 1A relief valve, V3483, to 350 psig, and increase the design pressure of the LPSI shutdown cooling discharge piping and components to 550 psig. The purpose of increasing set pressure is to minimize the potential for relief valve inadvertent lift, particularly when initially opening the SDC system to RCS, and to provide added margin to facilitate valve reseat if it does lift.

No changes were made to normal plant operating conditions as a result of this PC/M. The shutdown cooling system entry requirements were not modified as a result of the increased set pressure for V3483, or as a result of the increased design pressure rating for the discharge piping. This modification results in additional operational margin for operating transients, which are anticipated as a result of the system design.

PLANT CHANGE/MODIFICATION 01067

REVISION 0

USE OF FIBERGLASS BLANKET INSULATION WITHIN PSL 1 CONTAINMENT

Summary:

PC/M 01067 allowed the use of fiberglass blanket insulation on the Letdown line from RCS Loop 1B1 between valve V2519 and containment penetration P-26. This scope specifically includes all letdown piping between the secondary bio-shield wall and containment penetration P-26, the Regenerative Heat Exchanger and Charging System piping contained within the Regenerative Heat Exchanger room. Use of fiberglass type insulation is desired to provide maintenance flexibility for insulation repair activities and to lower accumulated dose during such activities.

SECTION 2

SAFETY EVALUATIONS

SAFETY EVALUATION SEMS-90-052
REVISION 2

GENERIC USE OF SEALANT INJECTION

Summary:

The purpose of this evaluation is to evaluate temporary repairs of gasket and packing leaks on safety related and quality related systems (i.e., sensitive systems such as feedwater) or components through the use of sealant injection. The affected components shall be replaced or permanently repaired in accordance with the time constraints delineated in the CR disposition or other approved Engineering output.

Revision 1 updated the evaluation to reflect changes in vendors, sealant materials, and to address recent regulatory issues (i.e., IN 97-74, SER 5-97, and Part 9900) pertinent to leak sealing.

Revision 2 was written to identify that peening may be used as part of a seal injection repair or as a stand-alone procedure, and to provide guidelines on when it can be used.

SAFETY EVALUATION SENP-95-049
REVISION 2

ALTERNATE NIS EXCORE DETECTOR ARRANGEMENT

Summary:

The Reactor Protection System (RPS) at St. Lucie normally operates with a 2-of-4 reactor trip logic. Since channel D was out of service due to shorting of its cable and/or detector, the RPS was in 1-of-3 trip logic as required by the Technical Specifications. With the RPS in 1-of-3 logic, a spurious signal would result in reactor trip and unnecessary exercise of the plants' safety systems.

This evaluation provided an assessment of an alternative NIS excore detector arrangement for the RPS. This involves connecting the detector signal from power range control channel 2 to linear power range channel D. This restores channel D to operable status and reactor trip logic from 1/3 to 2/4 coincidence. This arrangement was feasible since the linear power range and power range control channels use the same design for detectors and cables.

The use of the alternative arrangement involves changes to certain plant systems, including the safety related nuclear instrumentation system. The change to the nuclear instrumentation system is the detector location. The control channel detector is located at 202 degrees and the detector for the failed channel is at 255 degrees. The effects of the change in detector location on such items as axial shape index, azimuthal power tilt and limiting safety system settings have been determined to be acceptable.

The alternative arrangement may be implemented using either of two cable routing options. Option 1, which may be installed at power, involves installing a jumper in the control room and running the D channel cable in the same raceway as the B channel cable for a portion of the cable route. This modified routing for channel D has been evaluated with respect to safe plant operation and found to be acceptable. This configuration will only remain in place until the next planned or unplanned unit shutdown. During the next shutdown, options include restoring the detector to service or installing a jumper in the containment instrument tunnel applying the existing channel separation criteria for the entire channel cable route.

Revision 1 revised the installation instructions and provided additional references.

Revision 2 to this safety evaluation was performed due to recent failure on Channel "D" and documented in CR 00-1713.

SAFETY EVALUATION SEMS-97-086
REVISION 2

10 CFR 50.59 EVALUATION FOR INSTALLATION OF MECHANICAL BLOCKS ON HCV-14-8A, -8B, -9, AND -10

Summary:

This 10 CFR 50.59 evaluation addressed the installation of manual blocks on HCV-14-8A, -813, -9, and -10 while the valve actuators are removed for maintenance. While the actuators were removed, mechanical blocks were temporarily installed on these valves to maintain them in the closed position.

The purpose of this evaluation was to determine the acceptability of installing mechanical blocks on these valves to maintain them in the closed position while the actuators were removed for overhaul. This evaluation also provided a design for the mechanical block.

Revision 1 of this evaluation expands the scope to include the use of the mechanical blocks during all Modes of plant operation and as such has been modified to a 10CFR 50.59 evaluation to support use of the clamp during power operation.

Revision 2 of this evaluation allows removal of the valve topworks, which consequently also results in the removal of a valve stem support. As a result, the weight of the valve stem will be partially carried by the mechanical block (clamp). The calculation for the support and mechanical block was revised to address the new loads. This revision documents the use of the revised calculation.

SAFETY EVALUATION SEIS-98-122
REVISION 0

ST. LUCIE UNIT 1 CONTAINMENT INSTRUMENT AIR PRESSURE SWITCH SETPOINT - UFSAR CHANGES

Summary:

Condition Report 97-2001 described a discrepancy between Unit 1 Control Wiring Diagrams (CWDs) and the Total Equipment Data Base (TEDB). Conflicting setpoint values were shown for pressure switches PS-18-28A and PS-18-28B. These switches measure the containment instrument air receiver air pressure and control the load and unload of the lead containment instrument air compressor. UFSAR Section 9.3.1.2 and UFSAR Table 9.3-2 agree with the CWDs with a setpoint of 100 psig and a reset point of 105 psig. TEDB and vendor drawing 8770-7698 indicate a setpoint of 95 psig and a reset point of 105 psig.

The root cause evaluation and disposition of CR 97-2001 has determined that the installed switch type (Square D 9012-ACW-8) supplied by the vendor has a minimum deadband of 8 psig. This minimum deadband eliminates the possibility of a setpoint range of 5 psig. Therefore, this evaluation provided the justification to permanently accept this setpoint change and revises the UFSAR and the CWDs accordingly.

SAFETY EVALUATION FPER-99-008
REVISION 1

TWO-SIDED CABLE TRAY FIRE STOP REDESIGN

Summary:

The purpose of this evaluation was to determine an upgrade design for two-sided cable tray fire stops, which will provide a 3-hour fire rating per St. Lucie Units 1 and 2 design basis requirements. The evaluation provided justifications for associated UFSAR changes. These fire stops provide reasonable assurance that a fire will not affect redundant safe shutdown circuits in adjacent fire areas/zones. The fire stops will be qualified fire barriers and do not require a breach permit.

SAFETY EVALUATION SEFJ-99-012
REVISION 1

SAFETY ANALYSIS REQUIREMENT FOR PWR CALIB DURING PWR ASCENSION DUE TO PWR DEPENDENT PWR MEASUREMENT UNCERTAINTY

Summary:

The purpose of this evaluation was to address the issue related to the increased secondary calorimetric uncertainties at lower power levels. The scope of work included the assessment of plant specific calorimetric power measurement uncertainties as compared to the values used in the St. Lucie Units 1 and 2 analyses, and provide guidelines for power calibration requirements to be incorporated into the appropriate plant procedures.

ABB-Combustion Engineering (ABB-CE) had previously issued Infobulletin 94-01 regarding a potential 10 CFR 21 issue related to the secondary calorimetric power measurement (SCPM) uncertainties, which may exceed 2% of rated power at reduced power levels. The increased uncertainties are associated with the feedwater flow transmitter drift and the calibration temperature effects. Conservative power calibration requirements were imposed at that time to satisfy safety analysis acceptance criteria.

Revision 1 to this evaluation added guidelines for power escalation calibration requirements for the case where venturi in combination with leading edge flow meter (LEFM) was used for feedwater flow measurement in the calorimetric power determination procedure, as per PC/M 01007M. Revision 0 of this evaluation addressed the calibration requirements separately for the case of venturi and LEFM, but not the combination of the two for feedwater flow indication as implemented via PC/M 01007M.

SAFETY EVALUATION SEFJ-99-020
REVISION 2

FUEL ASSEMBLY EXAMINATION AND RECONSTITUTION IN THE ST. LUCIE UNIT 1 SPENT FUEL POOL

Summary:

During Cycle 15, St. Lucie Unit 1 experienced increased iodine activity in the RCS indicative of failed fuel. Isotopic analysis revealed the possibility of one or more failed fuel rods, which may be due to be used during Cycle 16. In order to reduce the possibility of operating Cycle 16 with failed fuel from the Cycle 15 core, and to attempt to reduce the overall activity level of the RCS during Cycle 16, a fuel inspection and reconstitution campaign was performed at the end of Cycle 15.

As part of this campaign, fuel assemblies were to be examined via ultrasonic testing techniques and those fuel assemblies scheduled to be used again in Cycle 16 and found with indications of a failed fuel rod(s) were to be reconstituted. Fuel assembly reconstitution includes replacement of failed fuel rods with inert zircaloy clad or solid stainless steel rods in the fuel assembly if the fuel assembly cage is not usable, recaging the fuel assembly by placing the intact fuel rods in an intact fuel assembly cage. As part of assembly reconstitution, certain individual fuel rods will be examined via high resolution video camera and eddy current testing techniques. These fuel assembly examination and reconstitution activities will take place in the St. Lucie Unit 1 spent fuel pool (SFP). This safety evaluation documented the justification for the temporary placement of irradiated fuel and the use of fuel assembly examination and reconstitution apparatus in the Unit 1 SFP.

Revision 1 of this evaluation documented the justification for placement of up to a maximum of five failed fuel rods in the guide tubes (vs. lattice) of the parent Region S fuel. This evaluation concluded that placement of up to a maximum of five failed fuel rods in the guide tubes of the parent fuel assemblies is acceptable subject to constraints described in the evaluation.

Revision 2 documented the option to use different UT inspection equipment for the Cycle 16/17 inspection and reconstitution campaign or any future campaign. It also documented the justification for placement of a maximum of five failed fuel rods in the guide tubes of Fuel Assembly H-406. The evaluation also allowed the use of solid stainless steel rods as inert replacement for failed fuel in fuel assemblies, as an acceptable alternative to the zircaloy clad stainless steel rods.

SAFETY EVALUATION SEMS-99-027
REVISION 2

HYDRANTS, HOSE HOUSES AND HOSE STATIONS - COMPARISON OF THE UFSAR VS. FIRE FIGHTING STRATEGIES

Summary:

During the NRC's Fire Protection Functional Inspection in March/April 1998, concerns regarding fire suppression coverage in remote areas of the Unit 1 Reactor Auxiliary Building resulted in a review of hose station coverage. A corrective action resulting from this review was to compare the UFSAR listings of hydrants, hose houses and hose stations providing coverage for fire zones vs. the guidance provided in the PSL Administrative Procedure for Fire Fighting Strategies. This review was documented in this evaluation.

The proposed changes to the UFSAR as a result of this evaluation typically consist of administrative changes to the identified Fire Zones for available suppression equipment. In some changes, the assumed suppression equipment available, whether a hydrant/hose house, hose station or fire extinguisher was changed to take credit for more accessible suppression equipment. However, the available suppression identified for each Fire Zone is equal to or greater than what was originally assumed to be available in the UFSAR. Therefore, there is no decrease in suppression capability for each fire zone.

SAFETY EVALUATION SEMS-99-034
REVISION 0

UFSAR AND DBD UPDATE OF FLOW CAPABILITIES OF STEAM DUMP AND BYPASS VALVES PCV-8801 THROUGH PCV-8805

Summary:

This evaluation addressed the flow capabilities of the steam dump and bypass valves (PCV-8801 through PCV-8805) on Units 1 and 2 and provided for revision of the UFSAR and DBD. The UFSAR and DBD currently state that the steam dump and bypass valves are capable of a load rejection of 45%. Calculation PSL-2FSM-95-015 has determined that the steam dump and bypass valves are capable of a load rejection of 29% (stretch power). The effective stroke length of the valves was reduced by previous actuator modifications, which resulted in a lower flow coefficient (Cv). Based on the Cv change and using the Stretch Power steam flow rates, the percentage of full flow through the valves was decreased.

SAFETY EVALUATION SEMS-99-038
REVISION 2

REVIEW OF UNIT 1 SDC SYSTEM OPERATION

Summary:

Shutdown Cooling System operation is initiated at a point in the plant cooldown when the RCS conditions drop below SDC design conditions. The system continues to remove decay and sensible heat until the RCS reaches a nominal temperature of 135F. Condition Report 98-1749 was issued to address the inability to maintain Unit 2 RCS temperature during mid-loop operation due to a degraded SDC system. The cause of the degraded Unit 2 SDC system performance was determined to be excessive seat leakage through the heat exchanger bypass valves. The valves had been degraded by cavitation of the seats during throttled flow operation.

This evaluation performed a review of the Unit 1 SDC system design and operation including single train operation and single failure. Recommendations were provided for procedural changes and operational limits that should minimize the cause and impact of heat exchanger bypass valve leakage as well as other SDC design considerations. Partially drained and mid-loop operation were reviewed to establish RCS level and SDC flow limits to ensure the reliability of SDC.

During development of this evaluation, adverse SDC suction conditions caused by flashing at system high points were determined to be more limiting than NPSH and vortexing at reduced RCS levels. Operating limits designed to preclude loss of SDC due to credible single failures in consideration of the suction restrictions have been defined and are included herein.

Unit 1 UFSAR changes were provided in Revision 0 of this Safety Evaluation that aligned the Unit 1 UFSAR description of SDC operation with updated plant procedures. Procedural guidance and limits were also provided for operating the SDC system in such a manner that will reduce flow control and bypass valve seat damage due to significant throttling and establish limits for single and dual SDC train operation in a mid-loop configuration. Revision 1 was issued to address the conditions that would exist during Safeguards Testing performed at lowered RCS levels in Mode 5. Restrictions were imposed for lower RCS temperature and increased RCS level relative to the basis for the flow limits specified in Revision 0 and controlling the system test alignment to preclude adverse LPSI pump suction conditions. These controls allowed the

performance of integrated safeguards testing at 35 ft. elevation (below the reactor vessel flange) as long as RCS temperature can be maintained below 100F.

Revision 2 was issued to gain flexibility in scheduling RCS reduced inventory conditions taking credit for the inherent conservatism in calculated estimates of SDC thermal performance. This approach has already been successfully implemented on Unit 2.

SAFETY EVALUATION SENS-99-039
REVISION 0

SAFETY EVALUATION FOR USE OF PROCUREMENT ENG'S GENERIC EVAL BY THE NUCLEAR PROCUREMENT & LOGISTICS DEPT

Summary:

This safety evaluation demonstrated that the practice of the Pre-Screen Reviewer(s) from the Nuclear Procurement & Logistic Department (known as Nuclear Materials Management Department on site) to independently use Procurement Engineering's approved Generic Evaluations for stock code item dispositions is acceptable. Currently, the Pre-Screen Reviewer routes Stock Codes to Procurement Engineering and asks for authorization from PE to use a certain Generic Evaluation if he/she thinks it is applicable. If the Procurement Engineer concurs that the Generic Evaluation is applicable, a statement is made as such via a single signature electronic PE Evaluation. The stock code is then routed back to the Pre-Screen Reviewer to apply the Generic Evaluation.

This safety evaluation demonstrates that the use of the PE approved Generic Evaluations by the Nuclear Procurement & Logistic Pre-Screen Reviewer (as covered by the scope of the Generic Evaluations) meets the intent of the TQR requirements. Generic Evaluations were developed for certain categorical type items as procurement standards, and contain the technical and quality requirements that can then be incorporated into the stock codes by the Pre-Screen Reviewer. However, if an issue related to an individual stock code is beyond the scope of the Generic Evaluations, a specific PE Evaluation is required to be setup and routed to the Procurement Engineering Group of Nuclear Engineering for disposition. In addition, the Pre-Screen Reviewer position has/will require certain expertise, which includes position specific qualification requirements, and participation in the Engineering Support Personnel continuing education program.

SAFETY EVALUATION SEMS-99-043
REVISION 0

USE OF PRC-01 RESIN IN THE CVCS LETDOWN STREAM TO REMOVE CO-58 CONTAMINATES

Summary:

This Safety Evaluation was prepared to examine the use of an additional resin material in the chemical and volume control system (CVCS) ion exchangers during the plant cooldown, reactor refueling and plant heatup evolutions at St. Lucie Unit 1. The additional resin material to be used during, conditions specified in this evaluation is porous media with an enhanced capability for removing Cobalt 58 (Co-58). This product material is identified as PRC-01. PRC-01 will increase the decontamination factor (DF) of the CVCS cleanup system for both soluble cations and sub-micron sized insoluble corrosion products as measured by the Co-58 isotope.

This evaluation concludes that, subject to the constraints identified in Section 5.0, PRC-O1 resin may be effectively and acceptably applied to cleanup of the RCS during, cooldown, refueling and plant heatup.

SAFETY EVALUATION SEMS-99-052
REVISION 2

UNIT 1 STEAM GENERATOR SECONDARY SIDE FOREIGN OBJECTS

Summary:

This evaluation addressed the safety significance and the potential impact of plant operation with foreign objects in the secondary side of St. Lucie Unit 1 SGs.

Revision 1 of this Safety Evaluation was completed to address foreign objects that remain inside St. Lucie Unit 1 SG 1B.

Revision 2 of this Safety Evaluation provided an update based on eddy current testing and foreign object search and retrieval (FOSAR) activities conducted during the SL1-17 April 2001 refueling outage. The evaluation was revised to eliminate duplication and separate objects remaining in the SGs from objects removed. Additional strands of copper wire were assumed to remain in the secondary side of the SG 1B. While additional foreign objects were observed in SG 1B during this outage, all were successfully removed and no degradation was reported during ECT inspections conducted this outage. No foreign objects were observed in the SG 1A in this refueling outage.

SAFETY EVALUATION SEMS-99-056
REVISION 2

INSTALLATION OF A TEMPORARY CLAMP ON V3483

Summary:

Condition Report 99-2048 concerned operational leakage discovered in the body to nozzle leak on valve V3483 which is the relief valve for Shutdown Cooling (SDC) loop 1A. This evaluation addressed the temporary clamping of the nozzle to body interface on V3483. An initial visual inspection performed on 10/10/99 indicated that the leak as documented in CR 99-2048 was approximately 5 drops per minute. The leak affected the discharge side of the valve and was considered minor in nature, but needed to be stopped to eliminate leakage in the Safeguards Room.

This evaluation justified the addition of a temporary clamp on the body to nozzle interface on V3483. The leak repair enclosure being installed via this safety evaluation was considered as a temporary measure to stop the minor leakage on V3483.

Revision 1 provided for revisions to the clamp required to support field fit-up. The Furmanite calculations and drawing were revised to reflect the field fit-up dimensions.

Revision 2 provided for rework of V3483 at the first available outage where the 1A Shutdown Cooling header is taken out of service and drained, no later than the SL1-18 refueling outage.

SAFETY EVALUATION SENS-99-058
REVISION 0

MAIN STEAM ISOLATION VALVE STROKE TEST IN MODE 2

Summary:

This safety evaluation justified revisions to Operating Procedure 1-0810050 for the Main Steam Isolation Valve (MSIV) periodic stroke test. The MSIV stroke test is described in the Unit 1 UFSAR, Section 10.3.4. As described in the UFSAR, the testing is implied to take place while steaming through the MSIVs. This safety evaluation added an additional option for meeting the testing prerequisites to perform MSIV stroke testing. The new option will allow testing in Mode 2 with a positive MTC, and with the reactor critical provided steaming rates are maintained through the Atmospheric Dump Valves.

The main steam isolation valves are designed to perform their safety function during or following a design basis earthquake and are designed such that no single failure causes both isolation valves to remain open. Note, however, that the main steam isolation valve test circuitry is physically separated from the safety related circuits required to close the MSIVs during an MSIS and, except during testing, these circuits are deenergized. The test circuit is automatically isolated from the safety related circuits should MSIS occur during a test.

SAFETY EVALUATION SENS-99-059
REVISION 0

1999 UFSAR REVIEW FINDINGS REQUIRING CHANGES OR CLARIFICATIONS TO THE UFSARs IN ACCORDANCE W/50.59

Summary:

The purpose of this safety evaluation was to provide a method to update, correct, or add clarifications to the UFSAR following the 1999 UFSAR Review Project reviews of selected risk significant systems. This safety evaluation contained a description of each change, its impact on plant safety, and the determination that the change does not involve an unreviewed safety question. User comments were issued for those comments, corrections, updates or clarifications that could be classified as administrative or editorial in nature. This Safety Evaluation provided the justification and 10 CFR 50.59 consideration for the UFSAR changes. The subject matter of these changes involve the following:

1. Unit 1 Safety Injection Pipe Whip Restraints.
2. Unit 1 Containment Spray Suction Design Pressure.
3. Unit 1 Component Cooling Water FMEA Correction.
4. Unit 2 Component Cooling Water Pump Suction and Discharge Isolation Valve Positions.
5. Unit 1 Chemical and Volume Control Heat Exchanger Performance Monitoring; Boric Acid requirements.
6. Unit 2 Chemical and Volume Control Boric Acid requirements and pump control; Boron concentration; relief valve setpoint; Boronometer vessel design temperature; pneumatic valve V2523.

SAFETY EVALUATION SECS-99-060
REVISION 0

SITE STORM WATER DRAINAGE SYSTEM, REDUCTION IN LEVEL OF DETAIL WITHIN THE UFSAR

Summary:

During review of the Unit 1 and Unit 2 UFSARs, it was questioned whether the site storm drainage flow calculations have been updated relative to recent paving of various areas. While updating the calculation, it was found that within each UFSAR, details pertaining to the design of the site storm drainage system provide a level of detail above and beyond that required by Regulatory Guide 1.70. Specifically, section 3.4.4 of the Unit 1 UFSAR and section 3.4.1 provide the methodology and precise parameters used in determination of the storm water flow and subsequent sizing of the drain. As the site is developed the precise parameters may change (i.e., unpaved sections may have different runoff coefficients, etc.) and therefore the UFSAR would need to be updated. This Safety Evaluation provided the basis for the acceptability to remove this level of detail from each UFSAR with documentation of the storm water drainage design within a unique calculation.

Both Unit 1 and Unit 2 UFSAR state that the site storm water drainage system is designed to preclude flooding of Safety Related structures, systems and components under maximum precipitation conditions (PMP or PMH), however total flooding of the drain lines will not cause water to backup into areas which would jeopardize the required function of a Safety Related system. This evaluation concluded that this statement remains valid and that the level of detail quoted within each UFSAR is not required.

SAFETY EVALUATION SENS-00-001
REVISION 1

REMOVAL OF AUTOMATIC CONTROL FUNCTION FOR TCV-14-4B AND BLOCKING THE VALVE OPEN

Summary:

During the performance of the valve cycle test for Unit 1 TCV-14-4B, temperature control valve for ICW flow to CCW heat exchanger 1B outlet, the open stroke time was measured at greater than 57 seconds, which exceeded the maximum stroke time limit of 56.1 seconds per plant procedures. This stroke was performed in accordance with the condition report disposition to CR 99-2569, which had addressed a recent slower than normal stroke of this same valve. The CR corrective action required the frequency of stroke testing be changed to weekly. This recent open stroke time valve failure was documented in new Condition Report 00-0074. The valve was positioned "fully open" to maintain the ICW system operable. A stem clamp preventing inadvertent valve closure was considered to allow maintenance/repair while the valve and ICW system is maintained in service.

Revision 1 to this safety evaluation addressed a Facility Review Group comment and deleted an engineering suggested activity in this evaluation.

SAFETY EVALUATION SEFJ-00-027
REVISION 0

ELIMINATION OF THE DUAL SYMMETRY CONTROL ELEMENT ASSEMBLY (CEA) CHECK AT ST. LUCIE 1

Summary:

This evaluation demonstrated sufficient justification for the elimination of the dual Control Element Assembly (CEA) symmetry test for St. Lucie Unit 1. Elimination of the dual CEA symmetry test reduced the required low power physics testing time following a refueling outage.

St. Lucie Unit 1 primarily uses the Dual CEA Symmetry test as a redundant means for verifying the latching of both CEA components of a dual element CEA to their single Control Element Drive Mechanism (CEDM) shaft. A secondary benefit of this test is that it provides an early indication to testing personnel of a significant reduction in a CEA's neutron poisoning ability or a gross reactivity anomaly resulting from an assembly misload. Redundant methods are currently in use at St. Lucie Unit 1 to adequately satisfy all three bases of the CEA symmetry test.

SAFETY EVALUATION SENS-00-105
REVISION 0

SAFETY EVALUATION FOR UNIT 1 UFSAR APPENDIX 9.5A CONSISTENCY REVIEW UFSAR CHANGES

Summary:

Appendix 9.5A of the St. Lucie Unit 1 UFSAR was reviewed for internal inconsistencies within the appendix. Changes were recommended to correct those inconsistencies as well as editorial enhancements, which improve the usability of the document. This safety evaluation reviewed the proposed fire protection consistency review changes for the Unit 1 UFSAR. These changes involve fire protection features of the plant that will not affect the ability to achieve and maintain safe shutdown of the reactor in the event of a fire.

SAFETY EVALUATION SENS-00-108
REVISION 0

2000 UFSAR REVIEW FINDINGS REQUIRING CHANGES OR CLASSIFICATIONS TO UFSAR IN ACCORDANCE W/10CFR50.59

Summary:

The purpose of this safety evaluation is to provide a method to update, correct, or add clarifications to the UFSAR following the 2000 UFSAR Review Project reviews of non-risk significant systems. This safety evaluation contains a description of each change, its impact on plant safety, and the determination that the change does not involve an unreviewed safety question. User comments were issued for those comments, corrections, updates or clarifications that could be classified as administrative or editorial in nature. This Safety Evaluation provided the justification and 10 CFR 50.59 consideration for UFSAR changes. The subject matter of these changes involve the following:

- Unit 1 Heavy Loads
- Unit 2 Heavy Loads
- Unit 1 Missile Protection
- Unit 2 Missile Protection
- Unit 1 Ultimate Heat Sink
- Unit 2 Radiation Waste
- Unit 1 Effluent Radiation Monitoring

SAFETY EVALUATION FPER-00-125
REVISION 0

SAFETY EVALUATION - FIRE PROTECTION SURVEILLANCE REDUCTION TASK

Summary:

This evaluation developed the basis for Fire Protection Surveillance Procedure changes that would reduce maintenance costs. The reliability and availability of these fire protection features is maintained and enhanced by the performance of inspection and testing to ensure continued operability and readiness. A selected set of plant procedures was reviewed to determine if surveillance frequency extensions could be adopted without affecting the reliability or availability of the equipment. The decision to extend surveillance frequencies was based on the current National Fire Protection Association (NFPA) codes, Nuclear Mutual Limited/Nuclear Electric Insurance Limited (NEIL) requirements, the past performance data and experienced engineering judgment by a Fire Protection Engineer meeting the requirements of Membership Grade to the Society of Fire Protection Engineers.

SAFETY EVALUATION SEIS-00-127
REVISION 0

DECLASSIFICATION OF ME-25-1, ME-25-2, AND ME-25-3

Summary:

This evaluation addressed the moisture elements for the Shield Building Ventilation System (SBVS) HVE-6A and HVE-6B, (ME-25-1 and -2), and the moisture element for the Hydrogen Purge Ventilation System (ME-25-3) which are currently classified as Safety Related, Seismic Class 1, Quality Group 1E per the Total Equipment Data Base (TEDB).

Engineering Quality Instruction ENG-QI 2.6 provides requirements and guidance relating to the determination of safety classifications for design outputs, structures, systems, components, piece-parts, computer software, procedures, and activities. A safety classification evaluation may lower a safety classification for a part of a component than that which is assigned to the component as a whole.

This evaluation demonstrated that the current classification of the moisture elements for the SBVS and the Hydrogen Purge Ventilation System which are classified as Safety Related can be declassified as components of lower safety classification.

SAFETY EVALUATION SEFJ-00-129
REVISION 0

IN SITU HYDROSTATIC TESTING OF STEAM GENERATOR TUBE FLAWS

Summary:

Steam generator tube integrity performance criteria are stated in NEI 97-06. These criteria are consistent with and bound other criteria that have been applied previously in earlier versions of NEI 97-06, Draft Regulatory Guide 1.121 and factors of safety implicit in the ASME Code.

In situ testing is performed on tubes containing indications of degradation based on tube inspection by eddy current testing. Eddy current test results may conservatively overestimate the severity of flaws due to eddy current tests' inability to detect micro-ligaments in cracks that provide reinforcement.

In situ pressure and leak testing are methods to demonstrate that tubes meet the performance criteria stated above. The results of in situ pressure testing allow the determination of the structural and leakage integrity of steam generator tubes for the purpose of Condition Monitoring. This testing may also be used in conjunction with other inspection results to predict tube integrity for Operational Assessment. The FPL Steam Generator Integrity Program requires that in situ testing be evaluated when indications are detected that may challenge performance criteria and in cases of known primary-to-secondary steam generator tube leakage.

SAFETY EVALUATION SENS-00-132
REVISION 0

OPERATION OF A MAIN FEEDWATER REGULATING VALVE WITH THE LOCKING PIN INSTALLED

Summary:

The purpose of this evaluation was to assess the licensing impact associated with operating Units 1 & 2 at power with a pinned main feedwater regulating valve. Pinning a main feedwater regulating valve (MFRV) is necessary in order to support maintenance activities associated with the MFRV control system. Successful troubleshooting and maintenance of the control system helps prevent plant transients due to control system failures. The installed pin couples the valve stem to the manual gear drive and prevents the control system from moving the valve stem. While pinned, steam generator level is maintained by throttling back MFRV flow and remote manually operating the low power feedwater control valve for level adjustments. The installed pin prevents the MFRV from automatically closing upon a reactor or turbine trip but the valve is closed by manual operation providing the required protection from S/G overfill.

SAFETY EVALUATION SEES-00-138
REVISION 0

SAFETY EVALUATION FOR CHANGES TO THE FIRE PROTECTION PLAN FOR EMERGENCY HAND HELD BATTERY LANTERNS

Summary:

This evaluation reviewed the changes to the Fire Protection Plan to address emergency hand held battery operated lanterns. The lanterns are required by PSL-ENG-SEES-98-039, "Evaluation of the St. Lucie Plant 10CFR Part 50 Appendix R 8-Hour Battery Pack Emergency Lighting Requirements". The lanterns were installed by PCM 98023, Supplement 2, as part of the continuing resolution of fire protection issues identified during the Fire Protection Functional Inspection.

Procedures were implemented for the inspection/surveillance of the lantern requirements for these supplemental emergency lighting devices. Review of the portable emergency lanterns conducted as part of CR 00-1231 determined that minimum quantities of lanterns required in each of the lockers and any required compensatory actions needed to be provided in plant procedures. Surveillance instructions had previously been added to plant procedures. The frequency of these surveillances needed to be included in the Fire Protection Plan as well. The change to the Fire Protection Plan to include these lanterns and the requirements associated with them provides additional confidence that adequate portable emergency lighting will be maintained in Units 1 and 2 of the St. Lucie Plant.

SAFETY EVALUATION SEMS-01-001
REVISION 0

USE OF CARBOHYDRAZIDE IN STEAM GENERATOR SECONDARY SIDE

Summary:

Dissolved oxygen controls and secondary chemistry requirements applicable to the steam generators are outlined in the UFSAR and defined in greater detail within Chemistry Operating Procedures. Those requirements are generally based on the PWR Secondary Water-Chemistry Guidelines published by EPRI. An INPO assist visit at Turkey Point identified that they should evaluate carbohydrazide as an alternate control method for dissolved oxygen in the steam generators during wet lay-up. This Safety Evaluation was performed to evaluate the same issue for St. Lucie.

The application of carbohydrazide has been reviewed for compatibility with the existing secondary chemistry controls, fabrication materials, OSHA and environmental impacts and system operating requirements. Carbohydrazide was found to be compatible with all existing chemicals and fabrication materials and to have no significant impact on either OSHA or environmental requirements. The use of carbohydrazide will not impact wet lay-up system operation and will permit a smooth transition into the operating chemistry regime for the steam generator secondary side.

SAFETY EVALUATION SENS-01-009
REVISION 0

SAFETY EVALUATION FOR OPERATION OF THE CONTROL ROOM HVAC SYSTEM INCLUDING ALIGNING OUTSIDE AIR INTAKE

Summary:

A Condition Report, CR 01-0049, was initiated to address the alignment of the Control Room Outside Air Intake (CROAI) to the Unit 2 Control Room HVAC System. A surveillance performed on the system indicated that the differential pressure indicator had a bias that prevented the indication from going below the 1/8" wg lower acceptability setpoint. This bias condition would have indicated that the Unit 2 Control Room was already pressurized in the Control Room HVAC Recirculation Mode of operation. As such, the CROA1 valves may not have been opened. During the research to determine the time requirements for aligning tile CROAI valves, it was noted that several sections of Unit 1 and Unit 2 UFSARs required updating and cross referencing to other complementary sections. This safety evaluation addressed this updating.

The review of the EOPs and UFSAR Information indicated that the CROAI valves can be aligned during the execution of EOP-99 when Table 2 is being performed and meet the time criteria for Control Room Habitability. This safety evaluation provided the basis for the EOP revision.

SAFETY EVALUATION SEMS-01-016
REVISION 0

ST. LUCIE UNIT 1 TCV-13-21 IN BYPASS

Summary:

This evaluation reviewed the acceptability of plant operation with TCV-13-21 in a bypass mode (i.e. with TCV-13-21 isolated and hydrogen seal oil unit cooler air side outlet temperature control maintained by V13312) for an extended period of time not to exceed Mode 1 after SL 1-17. This is desired to prevent BOP perturbations encountered while attempting to return TCV-13-21 to automatic control during periods of cooler intake temperatures.

During normal plant operations, TCV-13-21 automatically controls hydrogen seal oil unit cooler air side outlet temperature. In winter months when the intake and turbine cooling water temperatures are cooler, TCV-13-21 operates very close to the closed position due to minimal cooling requirements. Attempting to place TCV-13-21 from bypass to automatic control during periods of cooler intake cooling water temperatures has resulted in balance of plant perturbations (turbine vibration alarms, etc.). Therefore, it was desired to leave TCV-13-21 in bypass until SL 1-17 at which time the valve will be returned to automatic control. Normally, TCV-13-21 provides acceptable performance when left in automatic control. In this particular case, TCV-13-21 was removed from service in the Fall 2000 for a preventive Maintenance calibration check. Subsequent attempts to return TCV-1 3-21 to automatic control during the cooler winter months proved unsuccessful.

SAFETY EVALUATION SEMS-01-020
REVISION 0

ADDITION OF CARBOHYDRAZIDE TO THE SECONDARY SYSTEM

Summary:

This evaluation addressed the addition of Carbohydrazide for the enhanced control of dissolved oxygen and passivation of metal surfaces in the secondary system during all modes of operation at PSL Units 1 and 2.

Carbohydrazide is currently approved for use in the St. Lucie steam generators during wet layup. Carbohydrazide is also used in the secondary systems at several domestic PWRs to control dissolved oxygen, provide enhanced passivation for the low pressure portion of the condensate/feedwater system, and eliminate the addition of hydrazine which is a hazardous material.

The addition of Carbohydrazide can be a direct replacement for hydrazine or added as an enhancement to the current hydrazine, ammonia, and Dimethylamine chemistry program. Carbohydrazide serves a similar function as hydrazine although more effective at lower temperatures (<275F), and it also breaks down chemically to form hydrazine at higher temperatures (>275F). Some power plants have continued to add a small amount of hydrazine to maximize effectiveness of the chemicals while minimizing chemical costs. This evaluation did not remove the requirements to maintain feedwater hydrazine concentrations in the range established by plant chemistry procedures. Since hydrazine is a decomposition product of carbohydrazide, existing chemical addition controllers and in-line analyzers for hydrazine will not be affected by these proposed changes.

Dissolved oxygen controls and secondary chemistry requirements applicable to the Steam Generators and Condensate/Feedwater systems are outlined in the UFSAR and defined in greater detail within Chemistry Operating Procedures. Those requirements are generally based on the PWR Secondary Water Chemistry Guidelines published by EPRI. An INPO assist visit at Turkey Point identified that carbohydrazide should be evaluated as an alternate control method for dissolved oxygen in the steam generators during wet lay-up. Safety Evaluation PSL-ENG-SEMS-01-001 was performed to evaluate that issue for St. Lucie and Carbohydrazide is now approved for use at St. Lucie during Steam Generator wet lay-up.

The application of Carbohydrazide during all operating modes has been reviewed for compatibility with the existing secondary chemistry controls, fabrication materials, OSHA and environmental

impacts and system operating requirements.

Carbohydrazide was found to be compatible with all existing operating chemical levels and materials of construction and to have no significant impact on either OSHA or environmental requirements. The use of Carbohydrazide will permit a smooth transition from wet lay-up operation covered in PSL-ENG-SEMS-01-001 into the operating chemistry regime for the steam generators and secondary side balance of plant.

SECTION 3

RELOAD SAFETY EVALUATIONS

PLANT CHANGE/MODIFICATION 00047

REVISION 1

ST. LUCIE UNIT 1 CYCLE 17 RELOAD

Summary:

This EP provided the reload core design of St. Lucie Unit 1 Cycle 17.

This engineering package provided:

1) The design of the St. Lucie Unit 1 Cycle 17 core,

2) The data and instructions needed to reconfigure the core from the previously approved Cycle 16 design using either an incore fuel shuffle or a full core off-load,

3) The data needed for post-modification testing (which includes the testing of the major nuclear characteristics) and thus verify proper performance, and

4) The information needed for changing appropriate plant procedures to ensure the operation of Cycle 17 is in compliance with the Technical Specifications and the design basis.