August 20, 2015

L-2015-215
10 CFR 2.202

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389

Florida Power & Light (FPL)/St. Lucie's Fifth Overall Integrated Plan Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)

References:

1. NRC Order Number EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events dated March 12, 2012, Accession No. ML12054A736.
2. NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA 12 049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0, dated August 29, 2012, Accession No. ML12229A174.
3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August, 2012, Accession No. ML12242A378.
4. FPL Letter L-2012-385 dated October 25, 2012, FPL's Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated October 25, 2012, Accession No. ML12300A421.
5. FPL Letter L-2013-084 dated February 28, 2013, Florida Power & Light (FPL)/St. Lucie's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049) , Accession No. ML13063A020.
6. FPL Letter L-2013-192 dated June 18, 2013, Florida Power & Light (FPL)/St. Lucie's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), Accession No. ML13179A184.
7. FPL Letter L-2013-254 dated August 28, 2013, Florida Power & Light (FPL)/St. Lucie's First Overall Integrated Plan Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), Accession No. ML13242A274.
8. FPL Letter L-2014-063 dated February 26, 2014, Florida Power & Light (FPL)/St. Lucie's Second Overall Integrated Plan Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), Accession No. ML14064A192.
9. FPL Letter L-2014-274 dated August 27, 2014, Florida Power & Light (FPL)/St. Lucie's Third Overall Integrated Plan Status Report in Response to March 12, 2012 Commission Order

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Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), Accession No. ML14253A184.

10. FPL Letter L-2015-049 dated February 23, 2015, Florida Power & Light (FPL)/St. Lucie's Fourth Overall Integrated Plan Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049).

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 1) to Florida Power & Light (FPL). Reference 1 was immediately effective and directs FPL/St. Lucie to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event. Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 required submission of an Overall Integrated Plan by February 28, 2013. The NRC Interim Staff Guidance (ISG) (Reference 2) was issued August 29, 2012 which endorses industry guidance document NEI 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 3 provides direction regarding the content of this Overall Integrated Plan.

Reference 4 provided the FPL/St. Lucie initial status report regarding mitigation strategies, as required by Reference 1. Reference 5 provided the FPL/St. Lucie Overall Integrated Plan pursuant to Section IV, Condition C.1, of Reference 1. Reference 6 informed the NRC that St. Lucie was no longer pursuing reactor coolant pump (RCP) seal package modifications as part of the FLEX strategy. References 7, 8, 9, and 10 provided the FPL/St. Lucie first, second, third, and fourth six-month Overall Integrated Plan status report.

The purpose of this letter is to provide the fifth six-month Overall Integrated Plan status report. The information in the enclosure is based on conceptual design information that is current as of this letter. As design details and associated procedural guidance are finalized, additional information, as well as revisions to the information contained in the enclosure to this letter, will be communicated to the NRC in the 6-month Integrated Plan updates as required by Reference 1.

This letter contains no new regulatory commitments.

If there are any questions regarding this submittal, please contact Eric Katzman, St. Lucie Licensing Manager, at (772) 467-7748.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 20, 2015.

Respectfully submitted,

Christopher R Costanzo

Christopher R Costanzo
Site Vice President
St. Lucie Plant

CRC/KWF

cc: USNRC Regional Administrator, Region II
USNRC Senior Resident Inspector, St. Lucie Units 1 and 2

Enclosure:

Fifth Six Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses With Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

Attachment 6

Fifth Six Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

1 Introduction

Florida Power and Light (FPL) developed an Overall Integrated Plan (Reference 1 in Section 8), documenting the diverse and flexible strategies (FLEX), in response to Reference 3 for the St. Lucie plant. This attachment provides an update of milestone accomplishments since submittal of the Overall Integrated Plan including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

To simplify review of impacts the six-month updates have on the original Overall Integrated Plan (Reference 1), this fifth six-month update has been formatted as a revision to the fourth six-month update (Reference 19), thus keeping all updates in one document; changes since the fourth six-month update are reflected via revision bars in the right-hand margin. National SAFER Response Center (NSRC) has replaced Regional Response Center (RRC) in the document except for NRC review items in Section 6.

2 Milestone Accomplishments

The following milestone(s) have been completed since the development of the Overall Integrated Plan (Reference 1). Milestone accomplishments are current as of July 21, 2015.

- Submittal of First 6-Month Status Report, August 2013 (Reference 6)
- FLEX Strategy (Preliminary) Walkthrough Demonstration
- Submittal of Second 6-Month Status Report, February 2014 (Reference 14)
- Submittal of Third 6-Month Status Report, August 2014 (Reference 17)
- Submittal of Fourth 6-Month Status Report, February 2015 (Reference 19)
- Submittal of Fifth 6-Month Status Report (This Document)

3 Milestone Schedule Status

The following provides an update to Attachment 2 of the Overall Integrated Plan. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed. An additional milestone for FLEX Strategy Walkthrough Demonstration has been added per NEI template revision. The revised milestone target completion dates do not impact the order implementation date.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	Oct 2012	Complete	

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit Overall Integrated Plan	Feb 2013	Complete	
Submit 6 Month Updates:			
Update 1	Aug 2013	Complete	
Update 2	Feb 2014	Complete	
Update 3	Aug 2014	Complete	
Update 4	Feb 2015	Complete	
Update 5	Aug 2015	Complete	
FLEX Strategy Evaluation – Final Implementation Plan (FIP)	Feb 2014	Started	December 2015
FLEX Strategy Walkthrough Demonstration	Feb 2014	Complete	
Perform Staffing Analysis	Oct 2014	Complete	
Modifications:			
Unit 1 Implementation Outage	Mar 2015	Complete	
Unit 2 Implementation Outage	Nov 2015	Started	
Storage:			
Storage Implementation	Mar 2015	Complete	
FLEX Equipment:			
Procure On-Site Equipment	Oct 2014	Complete	
Procedures:			
Create Site-Specific FSGs	Mar 2014	Unit 1 Complete, Unit 2 Started	August 2015
Create New/Revisions to OPS Procedures	Mar 2014	Unit 1 Complete Unit 2 Started	August 2015
Create Maintenance Procedures	Mar 2014	Complete	
Training:			
Develop Training Plan	June 2014	Complete	
Training Complete	Mar 2015	Unit 1 Complete Unit 2 Started	August 2015
Unit 1 FLEX Implementation	Mar 2015	Complete	
Unit 2 FLEX Implementation	Nov 2015	Started	
Full Site FLEX Implementation	Nov 2015	Started	

4 Changes to Compliance Method

4.1 RCP Seal Modification

The Reference 1 (page 35 of 102) FLEX response indicated St. Lucie would modify the seals for the reactor coolant pumps of both units to include Flowserve Abeyance seal stages. Reference 2 revised the St. Lucie FLEX strategy to maintain the current Flowserve N-9000 RCP seal configuration without making a

Flowserve Abeyance seal modification. The existing St. Lucie seal configuration is consistent with the N-9000 RCP seal configuration evaluated in WCAP-17601-P, "Reactor Coolant System Response to the Extended Loss of AC Power Event for Westinghouse, Combustion Engineering and Babcock & Wilcox NSSS Designs" (Reference 5) and with the approaches adopted by other Combustion Engineering NSSS plants that currently utilize the Flowserve N-9000 seal. Note that both St. Lucie units have excess flow check valves in the RCP controlled bleed off (CBO) lines and, additionally, have fail closed isolation valves to isolate the CBO leakage pathway. Station Blackout Emergency Operating Procedures, have an early positive step to isolate the CBO leak path on loss of seal cooling; these procedures will be revised to require that isolation within 10 minutes post event – see Pending Action 73A.

As part of the revised RCP seal approach, St. Lucie will initiate the reactor coolant system cooldown to a steam generator pressure of 120 psia in a 2-6 hour timeframe as opposed to the 10-14 hour timeframe originally indicated in Reference 1. This action is compliant with WCAP-17601-P and eliminates the deviation previously indicated within Reference 1 Attachment 1B, NSSS Significant Reference Analysis Deviation Table.

4.2 Condenser Makeup Lines

The Reference 1 FLEX response (page 22 of 102) stated that non-seismic condenser makeup lines from the CST would be seismically qualified to provide an additional qualified water inventory for hot standby and cooldown. In a seismic scenario, the qualified contents of the two CSTs and two RWTs will be available to provide approximately 120 hours of Phase 2 coping time. There is reasonable assurance that volumes of one or more non-qualified tanks may also be available. Entry into Phase 3 shutdown cooling (SDC) is expected well before use of makeup of seawater from the Ultimate Heat Sink would be anticipated. Accordingly, the current FLEX strategy does not include a modification to seismically qualify the condenser makeup lines.

4.3 Mechanical Connections

The St. Lucie FLEX strategy for making mechanical system connections has evolved from that indicated in Reference 1 response figures to be consistent with NEI 12-06 guidance (Reference 4). Secondary connections may require reconfiguration (e.g., removal of valve bonnet or disassembly of a flanged pipe joint) if validated that time and resources are reasonably available to support the reconfiguration. Locations of the connection points provide reasonable assurance that at least one connection will be available for all applicable hazards. Refer to attached revised mechanical connection Figures 11, 12 and 14 for the latest changes.

4.4 Electrical Connections

The St. Lucie FLEX strategy for making electrical system connections has evolved from that indicated in the Reference 1 response figures to be consistent with NEI 12-06 guidance (Reference 4). Refer to attached final revised electrical connection figures. Note the 480 volt connections will now be made using procedurally controlled breakers rather than using transfer switches.

Question 25 of audit document Order EA-12-049 Mitigation Strategies, Overall Integrated Plan Regulatory Audit Questions, St. Lucie 1 & 2, Rev. 1, Dated October 30, 2013, questioned the St. Lucie FLEX strategy for isolation of Class 1E Electrical equipment from portable/FLEX equipment. The FPL response was to provide a double isolation scheme with appropriate coordinated current interrupting devices. In lieu of the double isolation concept, FPL has decided that during normal operation, these new breakers will be racked

out and locked open with springs discharged. Under this arrangement, isolation between the Class 1E Electrical equipment and portable/FLEX equipment is maintained.

In the same question regarding prevention of multiple sources powering the electrical buses, the strategy provided was that for Phase 3, the scheme would rely on electrically interlocked breakers of the incoming feeder breakers with the FLEX circuit breaker such that both breakers must be OPENED before the FLEX circuit breaker can be closed. The present strategy has evolved to having all the connections for FLEX power connection and breaker positioning be procedurally controlled. This strategy has evolved due to the less restricting time frame for Phase 3 coping.

4.5 Boration Requirements for Shutdown Margin

The Reference 1 FLEX response (page 37 of 102) discussed boration requirements for shutdown margin.

FPL has adopted the position expressed by the NRC staff regarding the boron mixing issue for PWRs (Reference 7) – see Pending Action 17 and Open Item 3.2.1.8.A in Section 6. The NRC letter states that the NRC staff has reviewed the information submitted to date and concluded that use of the industry approach documented in Reference 8 is acceptable with clarifications listed in the letter. FLEX guidelines have been developed that address sub-criticality for Phase 1/2 (300°F) and Phase 3 (50°F) including sources and timing for adding borated water. Guidelines include monitoring of Thot and Tcold to ensure single phase Natural Circ. ΔT conditions exist prior to adding boron and the 1 hour mixing delay is included prior to entering conditions requiring additional boration

4.6 NSRC LUHS Pump

The Reference 1 FLEX response (page 68 of 102) indicated a pump would be provided from the National Safer Response Center (NSRC) to replace the function of the Intake Cooling Water Pumps due to the Loss of Ultimate Heat Sink (LUHS) event. The design point of the SAFER NSRC pump is 5000 gpm at 150 psi. The LUHS Pump criteria mentioned in Reference 1 (page 72 of 102; 7162 gpm, 90 psi) is altered to align with SAFER provided equipment. The nominal flow rate of 5000 gpm is adequate for Shutdown Cooling in the timeframe for entry some 72-120 hours after shutdown while maintaining the Intake Cooling Water systems within their design temperature limits. The NSRC generic pump has inadequate suction lift for the intended deployment of the NSRC pump on the intake structure deck. A pair of NSRC supplied diesel/hydraulic driven suction booster pumps will be used to provide the required lift capability for each SAFER NSRC pump. This pump combination will allow water to be drawn from the intake structure downstream of the traveling water screens (non-seismic) to address debris concerns in a hurricane scenario. A backup plan will locate the floating booster pumps within the intake canal.

4.7 Makeup Water Sources

The St. Lucie FLEX makeup water strategy has evolved from that indicated in the Reference 1 response crediting two Condensate Storage Tanks (CSTs) and one Refueling Water Tank (RWT – borated water source). The current strategy is consistent with NEI 12-06 guidance (Reference 4), including their response to FLEX Guidance Inquiry 2013-11, "Use of Raw or Untreated Water".

For a seismic based event, the current FLEX strategy credits water volumes within the CSTs and RWTs of both units. All four tanks are seismically qualified, as is the cross-connect line between the CSTs. Tank inventories above the lowest non-seismic line are not credited.

For a high wind-hurricane based event, sufficient warning time will be available to ensure site tanks, e.g., CSTs, RWTs, City Water Storage Tanks (CWSTs), Treated Water Storage Tank (TWST) and Primary Water Storage Tanks (PWSTs), are filled with water. Analysis using current licensing basis criteria indicates that water-filled tanks are qualified for a hurricane wind event. Current plant severe weather preparations procedures require all water tanks to be filled when a hurricane watch or warning has been declared. The current FLEX strategy credits the water volumes within the subject tanks for a hurricane event.

For a high wind-tornado based event, site tanks will be pre-filled, as required by administrative procedures. With respect to tornado winds and missiles, the Unit 2 CST volume is fully qualified and reference 18 provides reasonable assurance that the Unit 1 CST is tornado missile protected. Reference 18 also provides reasonable assurance that other major tanks (RWTs, CWSTs, TWST and PWSTs) are tornado missiles protected based on their design, separation and intervening structures; the CWSTs, TWST and/or PWSTs should be available as secondary sources of water to provide makeup to the CSTs/RWTs during Phase 2 following a high wind missile event. An alternate makeup water strategy credits the underground water supply line from Fort Pierce Utilities (FPU), the local potable water supplier. Rather than missile protecting the single existing source from tornado, a second source will be installed and separated by greater than diameter of typical tornado path (1200 ft) with that path oriented from the west to southwest. See new Figure 23.

4.8 RWT Cross-Connect

As stated in the Reference 1 FLEX response (page 18 of 102), the Unit 1 & 2 RWTs are not currently cross-connected. The FLEX response indicated that, as required by the tank evaluations, the RWTs would be cross-connected with a seismically qualified, missile protected line to allow either RWT to be aligned for gravity flow to the SDC piping of either unit. Based on the numerous potential makeup water sources discussed above, as well as guidance provided in the NEI response to FLEX Guidance Inquiry 2013-10, "Shutdown Mode Capability Requirements for PWRs", the current FLEX strategy does not include a modification to install an RWT cross-connect line.

4.9 DC and Extended DC Load Shedding

The St. Lucie DC coping strategy has evolved from that indicated in the Reference 1 response which was to perform load shedding on both safety related batteries. The revised strategy will be to initially secure one battery, load shed/operate on the other battery and return the secured battery to service before the first battery is depleted (and then secure the first battery). This approach will improve battery margin by using the two batteries in a series operating mode. Analysis indicates this shedding is capable of increasing the duration of the battery powered instrumentation monitoring function on Unit 1 to approximately 12 hours for each 1A and 1B station batteries (21.5 hrs. total) and on Unit 2, 9.6 and 7.8 hours for 2A and 2B station batteries, respectively (14.98 hrs. total). – see Pending Action 26A and Confirmatory Item 3.2.4.10.A in Sections 6 and 6A, respectively.

4.10 Steam Generator Makeup – Mode 1-4

The Reference 1 FLEX response indicated a portable pump (FLEX SG Pump) would be used to provide makeup to the steam generators as a backup source should the existing turbine driven Auxiliary Feedwater Pump fail. The pump will be sized to provide 300 gpm at 300 psi discharge (steam generator ring pressure) while drawing from the Condensate Storage Tank. Actual makeup requirements (nominally 130 gpm

following cooldown) are considerably less than the 300 gpm design point. The FLEX CST Pump will be used to replenish the Condensate Storage Tank from available site water sources with ultimate backup from the intake (seawater). The FLEX CST Pump will replenish the Unit 2 CST in the cases of Unit 2 or dual Unit coping following a Beyond Design Basis External Event (BDBEE). Unit 1 CST makeup will be via the CST cross connect line in the dual Unit coping case. The FLEX CST Pump will replenish the Unit 1 CST in the case of a Unit 1 only coping following a Beyond Design Basis External Event (BDBEE). The dual Unit CST makeup requirement for TDAFW Pump or FLEX SG Pump is nominally 130 gpm per Unit as stated above and, thus, the flow requirement for the FLEX CST Pump is reduced from the 300 gpm per Unit to 250 per Unit as tabulated on Page 70 of 102 in Reference 1. The resultant oversupply provides adequate capability to raise CST levels once makeup is implemented. The FLEX SG Pump will also be capable of drafting from the intake canal at a flowrate near to, but somewhat below, the 300 gpm/300 psi design point.

4.11 Mode 5 & 6 Strategies

NEI 12-06 (Reference 4) states that the FLEX strategies are not explicitly designed for outage conditions. FPL will incorporate the supplemental guidance provided in the NEI position paper entitled "Shutdown / Refueling Modes" to enhance the shutdown risk process and procedures (see Reference 9 and 10), as well as that provided in the NEI response to FLEX Guidance Inquiry 2013-10, "Shutdown Mode Capability Requirements for PWRs". As such, pending actions associated with these modes have been closed, including those associated with boron batching alternatives since they are no longer required – both the Unit 1 and Unit 2 RWTs are now considered available to cope with an event during Mode 5 & 6.

4.12 FLEX Equipment Storage

The Reference 1 FLEX response indicated the FLEX Equipment Storage Building (FESB) will be 170' x 70' and will be capable of housing all required FLEX equipment, including required spares ("+1" equipment). The FLEX strategy has evolved to incorporate NEI 12-06 guidance (Reference 4), including their response to FLEX Guidance Inquiry 2013-07, Reasonable Protection", that spare equipment need not be stored in the FESB. The spare equipment will now be stored elsewhere on site, resulting in a smaller FESB footprint (150' x 60'). The Reference 1 FLEX response also stated the FESB will include natural ventilation to maintain temperatures within the manufacturer's recommendations; in lieu of natural ventilation, air-conditioning is now being provided, which will also limit humidity extremes inside the FESB.

Note that the Reference 1 FLEX response stated the refueling of diesel fuel oil driven equipment will be accomplished via a trailer stored in the FESB, on which will be mounted a 500-gallon tank. The tank size has been evaluated and a 1000 gallon trailer mounted tank is being procured. Gravity fill of this tank has been revised to use V17202 or one of two new redundant valves that have been installed on the fill line. See new Figure 24.

4.13 Maintenance and Testing of FLEX Equipment

FPL will comply with the EPRI generic industry program for maintenance and testing of FLEX equipment as delineated in References 11 and 12.

4.14 Sequence of Events Timeline

The Reference 1 FLEX response included Sequence of Events Timelines. A new action in the Modes 1-5, SGs Available timeline for RCP Control Bleed Off isolation is added at 10 minutes to limit RCP leakage.

This addresses Confirmatory Item 3.2.1.1.A. Note that these timelines are under review and may be adjusted via a future six-month update based on ongoing evaluations and development of FLEX strategies. Review is complete on several of these timelines and resulting further changes are:

1. DC and Extended DC Load Shedding are to be performed at 1.0 – 1.5 hours or within 90 minutes of the Station Blackout. Analysis indicates this shedding is capable of increasing the duration of the battery powered instrumentation monitoring function on Unit 1 to approximately 12 hours for each 1A and 1B station batteries (21.5 hrs. total) and on Unit 2, 9.6 and 7.8 hours for 2A and 2B station batteries, respectively (14.98 hrs. total).
2. Deployment of the FLEX SG Pump is to be performed at 2- 4 hours to be connected for TDAFW Pump backup. This will support the early RCS cooldown strategies that have SG secondary depressurized to a level that the FLEX SG Pump is able to provide required flow at between 4 and 5 hours.
3. Restoration of power to the SIT outlet MOV's will be performed at 8-11 hours. This will allow any necessary SIT isolation to be performed to prevent nitrogen injection that may occur due to RCS shrinkage and leakage.

4.15 Instrumentation Credited for Coping Evaluations

The Reference 1 FLEX response included lists of instrumentation credited for coping evaluations supporting FLEX Strategies that Maintain Core Cooling & Heat Removal, Maintain RCS Inventory Control and Maintain Containment. Several of the instrument tags listed have been revised to provide improved sensing range and to be aligned with the power supplies that will be available under the DC Loading Shedding strategy (described in 4.9 of this attachment). Note that the parameters listed under these FLEX Strategies in the Reference 1 FLEX response are not revised.

4.16 FLEX SFP Pump Discharge

The Reference 1 FLEX response described the hardened makeup flowpath to Maintain Spent Fuel Pool Cooling as via the 2½" ICW lines on the exterior east wall of each Fuel Handling Building (FHB). In lieu of providing missile protection for these lines, an alternate missile protected flow path will be provided. The alternate path is via a new FLEX connection on the suction of one of Spent Fuel Pool Pumps on each unit. These lines and their flow paths to the Spent Fuel Pools are within the missile protected interior of the FHB's. The 2½" ICW lines remain the preferred hardpipe flowpath should they remain intact following the BDBEE. See new Figure 22.

4.17 FLEX Strategy Internal Flooding

Question 2 of audit document Order EA-12-049 Mitigation Strategies, Overall Integrated Plan Regulatory Audit Questions, St. Lucie 1 & 2, Rev. 1, Dated October 30, 2013, questioned the St. Lucie FLEX strategies address considerations for seismic hazards associated with large internal flooding sources that are not seismically robust. The FPL response was that internal flooding was a concern for access to the ECCS Pump rooms and that no AC power was required to access those rooms. In addition, internal flooding has been considered for FLEX Equipment deployment. The FLEX Strategy for RCS Makeup requires hose deployment to connections on the LPSI pump piping that is located behind the watertight doors to the ECCS Pump rooms. Access into the watertight doors is via the -0.5 ft hallways whose design bases internal flood level (from non-seismic Unit 2 Holdup Tank ruptures) is above the watertight door thresholds. To facilitate hose deployment, a modification to the watertight doorways has been implemented to allow insertion of a flood barrier. This limits the volume of water entering the LPSI pump rooms to that between the barriers and the doors.

4.18 FLEX Equipment +1 Spares

PSL does not intent to have a complete set of spare hoses and cables but will accomplish +1 by having the greater of (1) 10% of the "N" required spares or (2) those sections of hose and cables required to replace the longest run of each hose or cable type and size needed for FLEX Strategies.

5 Need for Relief/Relaxation and Basis for the Relief/Relaxation

FPL expects to comply with the order implementation date. No relief/relaxation is required at this time.

6 Pending Actions from Overall Integrated Plan and Draft Safety Evaluation

	Overall Integrated Plan Pending Actions	Status
1	Seismic re-evaluation of site and submit to NRC. Include insights in development of the FLEX integrated plan	Complete. PSL has screened out. FPL Letter L-2014-215 (Ref. 15)
2	Flooding re-evaluation of site and submit to NRC. Include insights in development of the FLEX integrated plan	Complete, Flooding re-evaluation was submitted to the NRC via FPL Letter L-2015-048 sent March 10, 2015
3	Establish location of NSRC Staging Area (outside of 25 mile radius)	Complete. Staging areas have been established with SAFER review.
4	Review FESB deployment routes for liquefaction	Complete, EC 282155, Attachment – "WP-Soil Liquefaction White Paper" was issued to address FLEX route liquefaction
5	Determine NSRC staging area location and develop deployment routes to site	Complete. Staging areas have been established with SAFER review.
6	Review Communications adequacy during Phase 2 staffing study	Complete
7	Review Extend DC Shedding Approach regarding potential spurious actions	Complete, Failure Analysis of active components performed.
8	Determine alternate plant locations for obtaining critical parameters remotely	Complete, included in FSG's
9	Review 480 VAC Diesel Generator FLEX Sizing	Complete. 350 kW DG/unit is required
10	Review 4.16 KVAC Diesel Generator NSRC FLEX Sizing	Complete. NSRC 2MW unit is acceptable
11	Analysis to maintain acceptable CR temperatures during ELAP, identify additional required strategies/ modifications	Complete, CR Calc FPL-064-CALC-008 revised to show maximum temp of 110°F
12	Review EER operation up to 129°F for 72 hours or provide portable fans, initiate FSG/Time Validation as required	Complete, EER Calc FPL-064-CALC-007 revised to show acceptability of 129°F
13	Qualify U1 CST regarding tornado wind hazards, identify any required modifications	Complete, Ref. 18 provides reasonable assurance that the CST is tornado missile protected
14	Qualify RWT(s) regarding tornado wind hazards, identify any required modifications	Complete. No modifications required. See Section 4.7 and 4.8

Overall Integrated Plan Pending Actions	Status
15 Review boron batching alternatives, determine approach, identify required modifications	Complete. Not Required. See Section 4.7 and 4.11
16 Perform analysis supporting survivability of one or more non-qualified water tanks	Complete, Ref. 18 provides reasonable assurance that one or more non-qualified tanks is tornado missile protected
17 Finalize boration requirements for Cold Shutdown Margin and timing of injection with electrical power availability. Ensure letdown flow is not required or provide modification to provide letdown. Update milestone as necessary.	Complete. Letdown modification is not required. See Section 4.5
18 Review boron precipitation during Phase 1&2 (pool boiling) and Phase 3 (final cooldown) for Mode 6&5 w/o SGs	Closed – Not Required. See Section 4.11
19 Evaluate establishment of contract or letter of agreement for water supply by tanker trucks	Complete
20 Review M5 containment vent path (RWT gravity feed/Containment overpressure) Consider LCO 3.9.4, RAB/CR ventilation. Confirm adequacy of Unit 2 8" mini-purge line size.	Closed – Not Required. See Section 4.11 (Note: Reviewed; will now use 30" Escape Hatch)
21 Review potential modification for an 8" relief path to prevent U1 containment overpressure in M5	Closed – Not Required. See Section 4.11 (and note above)
22 Review safeguard equipment initiation with respect to M5 containment vacuum analysis	Complete. Not Required. See Section 4.11 (Note: Reviewed; will lockout equipment)
23 Review LUHS Pumping System NSRC FLEX Sizing	Complete - NSRC LUHS Pumping System adequate - See Section 4.6
24 Ensure FHB L-shaped door can be opened in the required time frame or identify alternate venting approach	Complete, alternate venting using personnel & new fuel entrance doors adopted. See Section 6B, Item AQ 14.
25 Provide Technical Basis for WCAP-17601-P deviations to NRC during six month updates	Ongoing. No deviations. See Section 4.1
25A Time validation study for isolation of controlled bleed off (CBO) lines within 10 minutes	Complete and acceptable; CBO lines can be isolated within 10 minutes post event
26 Time validation study for completing DC load shedding within specified time period	Complete and acceptable for current strategy – Unit 1: ~ 30 minutes; Unit 2: ~ 30 minutes (inverters)/one hour (balance); to be re-evaluated (see Action 26A below)
26A Time validation study for completing revised DC load shedding discussed in Section 4.9 within specified time period, to include any impact to required instrumentation and Control Room heat up	Complete - Unit 1 and Unit 2 load shed validated at ~30 minutes. Control Room impact determination complete with acceptable temperature maintained.
27 Time validation study for Control Room ventilation	Complete

Overall Integrated Plan Pending Actions		Status
28	Time validation study for Battery Room ventilation	Closed – Not Required. On Unit 1, Battery Room roof exhausters will be powered when the battery room chargers are placed in operation; both will be powered by same FLEX 480V portable diesel-generator. On Unit 2, Battery Room doors will be open and rooms ventilated via FLEX 480V FLEX DG repowered Electrical Equipment Room ventilation when the battery room chargers are placed in operation.
29	Time validation study for Electrical Equipment Room ventilation	Complete
30	Time validation study for FHB ventilation and the deployment and staging of SFP makeup/spray capability	Complete
31	Time validation study for 480 VAC diesel generator to the station 480 VAC bus	Complete
32	Time validation study for CST non-seismic lines isolation, as required by design	Closed – Not Applicable. See Section 4.2
33	Time validation study for CST cross-connect	Complete
34	Time validation study for FLEX CST pump deployment	Complete
35	Time validation study for FLEX SG pumps for CST/AFW	Complete and acceptable; pumps can be deployed ~ five hours post event)
36	Time validation study for boration to establish Cold Shutdown Margin (M1-4 w/SGs)	Complete
37	Time validation study for establishing power to SIT MOVs to isolate	Complete
38	Time validation study for establishing RWT gravity flow path to RCS (include mid-loop conditions)	Closed – Not Applicable. See Section 4.11
39	Time validation study for FLEX SG pump for RWT/RCS	Closed – Not Applicable. See Section 4.11
40	Time validation study for batch boration to maintain borated water supply (M6 & 5 w/o SGs)	Closed – Not Applicable. RWT available for makeup use. See Section 4.7 and 4.11
41	Time validation study for venting containment in mid-loop conditions	Closed – Not Applicable. See Section 4.11
42	Time validation study for isolating Fuel Transfer Tube path.	Closed – Not Applicable. See Section 4.11
43	Time validation study for establishing containment vent path.	Closed – Not Applicable. See Section 4.11
44	Time validation study for isolating CCW Flow to Containment Fan Cooler Penetrations	Closed – Not Applicable. See Section 4.11
45	Time validation study for hoses for SFP makeup/spray in Phase 1	Complete
46	Time validation study for FLEX SFP pump	Complete

Overall Integrated Plan Pending Actions	Status
47 Time validation study for refueling FLEX equipment	Started
48 U1 & U2 Construct FLEX Equipment Storage Building Storage Building	Construction Completed
49 U1 & U2 Install external satellite phone antenna and docking stations for TSC & EOF	Complete - Antennas and stations installed
50 U1 & U2 Install new cabling with disconnects for MCC supplying battery chargers. Alternate connections line side	Closed – Not Applicable. See Section 4.4
51 U1 & U2 Change essential instrumentation source to vital 120VAC power panel	Unit 1 Complete, Unit 2 Started (Design Issued: EC 280773 Unit 2)
52 U1 & U2 Install cabling to Class 1E 480 VAC Switchgear A&B for primary and alternate connection of 480 VAC FLEX DG	Unit 1 Complete, Unit 2 Started (Design Issued: EC 280771 Unit 2)
53 U1 & U2 Install transfer switches on load side charging pumps and Class 1E battery chargers. Alternate connection.	Closed – Not Applicable. See Section 4.4
54 U1 & U2 Design cabling/disconnects for Class 1E 4.16 KVAC busses A&B	Closed – Not Applicable as cables will be connected via procedure. See Section 4.4
55 U1 & U2 Install RCP low leakage seals	Closed – Not Applicable. See Section 4.1
56 U1 Install ADV seismic pneumatic backup and air pressure regulator, provide quick connects	Complete
56A U1 Time validation study for ADV Operator actions	Complete and acceptable; Operator actions can be completed within 90 minutes post event
57 U1 Install modifications for CST as required by tornado wind hazard analysis	Complete, Ref. 18 provides reasonable assurance that the CST is tornado missile protected
58 U1 & U2 Qualify non-seismic lines penetrating CSTs or use another approach to qualify additional CST inventory	Closed – Not Applicable. See Section 4.2
59 U1 & U2 Qualify non-seismic CST cross-connect	Complete
60 U1 & U2 Install 2 connections per CST for refilling the CSTs via FLEX CST pump	Unit 1 Complete, Unit 2 Started (Design Issued: EC 279191 Unit 2)
61 U1 & U2 Install 2 connections per CST for suction point for FLEX SG pump	Unit 1 Complete, Unit 2 Started (Design Issued: EC 279191 Unit 2)
62 U1 & U2 Install 2 connections on AFW lines upstream of MVs for FLEX SG pump to symmetrically feed both steam generators	Unit 1 Complete, Unit 2 Started (Design Issued: EC 279191 Unit 2)
63 U1 & U2 Install single connections for taking suction on non-qualified tanks	Unit 1 Complete, Unit 2 Started (Design Issued; EC 278639)
64 U1 & U2 Install modifications for RWT as required by tornado wind hazard analyses	Closed – Not Required. See Section 4.7 and 4.11
65 U1 & U2 Install RWT cross-connect sized for gravity fill as required by tornado wind hazard analyses	Closed – Not Applicable. See Section 4.8

Overall Integrated Plan Pending Actions	Status
66 U1 & U2 Install 2 connections per RWT for suction point for FLEX SG pump/FLEX CST Pump	Unit 1 Complete, Unit 2 Started (Design issued and fabrication of connection piping initiated: EC 279191 Unit 2)
67 U1 & U2 Install 2 connections per RWT for CST FLEX pump discharge	Unit 1 Complete, Unit 2 Started (Design issued and fabrication of connection piping initiated: EC 279191 Unit 2)
68 U1 & U2 Install 2 connections on LPSI pump discharge piping for RCS cold leg injection via FLEX pump	Unit 1 Complete, Unit 2 Started (Design issued and fabrication of connection piping initiated: EC 279191 Unit 2)
69 U1 & U2 Install 2 connections on LPSI pump suction piping (Mode 6 with Rx head off/SG primary manways off)	Unit 1 Complete, Unit 2 Started (Design issued and fabrication of connection piping initiated: EC 279191 Unit 2)
70 U1 Provide containment vent path to ensure sufficient RWT gravity flow for RCS makeup	Closed – Not Required. See Section 4.11 (Note: Reviewed; will now use 30" Escape Hatch)
71 U1 & U2 Missile protect ICW line I-2 ½-CW-178 located on the exterior of U1 & U2 FHBs	Closed – Not Required. See Section 4.16
72 U1 & U2 Install ICW manifolds with hose connections and isolation valves for LUHS	Unit 1 and Unit 2 Complete
73 Create new site procedures, including one(s) for use of Satellite communications	Complete – Hard Cards attached to phones
73A Revise existing site procedures, including EOPs to reflect isolation of CBO lines within 10 minutes post event	Complete - 1/2-EOP-10 revised
74 FSG: Establishing FLEX Control Room Ventilation	Started - 1-FSG-99 issued, 2-FSG-99 started
75 FSG: Extended DC bus load shedding	Started - 1-EOP-10 revised, 2-EOP-10 revision started, 1-FSG-04 issued, 2-FSG-04 started
76 FSG: Damage assessment following event	Started - 1-FSG-05 issued, 2-FSG-05 started
77 FSG: Accessibility considerations for personnel to enter areas to perform local manual actions	Started - 1-FSG-05 issued, 2-FSG-05 started
78 FSG: Deployment and staging of portable equipment (Onsite and Offsite)	Started - 1-FSG-99 issued, 2-FSG-99 started
79 FSG: Operation of the FLEX equipment (startup, shutdown, operational monitoring, minor troubleshooting	Started - 1-FSG-99 issued, 2-FSG-99 started
80 FSG: Operation of DFO transfueler, filling from U2 DFO tanks, filling FLEX portable equipment, etc.	Started - 1-FSG-99 issued, 2-FSG-99 started
81 FSG: Restore AC power or alternate power sources for specific plant equipment	Started - 1-FSG-99 issued, 2-FSG-99 started
82 FSG: Lighting and communications necessary for ingress and egress to plant areas for deployment of FLEX strategies	Started - 1-FSG-99 issued, 2-FSG-99 started

Overall Integrated Plan Pending Actions	Status
83 FSG: Deployment and operation of 480 VAC diesel generator	Started - 1-FSG-99 issued, 2-FSG-99 started
84 FSG: Power restoration with ESF signals present due to de-energized instrument inverters	Started - 1-FSG-07 issued, 2-FSG-07 started
85 FSG: Repowering selected station loads to support long term safety functions (load management)	Started - 1-FSG-13 issued, 2-FSG-13 started
86 FSG: Operation of ADVs with backup compressed gas	Complete - 1-EOP-99 issued
87 FSG: Deployment and operation of FLEX CST pump	Started - 1-FSG-06 issued, 2-FSG-06 started
88 FSG: Maintaining flow to SGs, with identified backup sources and criteria for transferring between sources	Started - 1-FSG-03 issued, 2-FSG-03 started
89 FSG: Deployment and operation of FLEX SG pump	Started - 1-FSG-03 issued, 2-FSG-03 started
90 FSG/EOP-10 to address for FLEX RCS cooldown (cooldown, solid plant conditions, SIT isolation, Attach 1B)	Started - 1-EOP-10 revised, 2-EOP-10 revision started, 1-FSG-08 and 1-FSG-10 issued, 2-FSG-08 and 2-FSG-10 started
91 FSG: Guidance for SIT injection and isolation	Started - 1-FSG-10 issued, 2-FSG-10 started
92 FSG: Establish RWT gravity flow to RCS and criteria for transfer to FLEX SG pump	Started - 1-AOP-99.02 issued, 2-AOP-99.02 started
93 FSG: Guidance for boron mixing	Closed – Not Applicable. RWT available for makeup use. See Section 4.7 and 4.11
94 FSG: Deployment and operation of FLEX SFP pump	Started - 1-FSG-11 issued, 0-FSG-11 started
95 FSG: Guidance for isolation of CCW penetrations for CFC Coolers	Closed – Not Applicable. See Section 4.11
96 FSG: Guidance for venting containment in M5/6 Once-Through-Cooling with LUHS (include CS Lockout)	Closed – Not Applicable. See Section 4.11
97 FSG: Deployment and operation of NSRC 4.16 KVAC generator	Complete - 1-EOP-99 issued
98 FSG: Deployment and operation of NSRC pumping system for ICW	Complete - 1-EOP-99 issued
99 FSG: Deployment and operation of FLEX SG pump: injection for vapor bound LPSI pump	Closed – Not Applicable. See Section 4.11
99A FSG: Transition from FLEX Equipment to Plant Equipment	Started - 1-FSG-13 issued, 2-FSG-13 started
100 Implement FLEX program stipulating the required administrative controls to be implemented	Complete - ADM-17.34 issued
101 Confirm adequacy of access provisions for locked areas affected by loss of ac power and address any additional guidance or procedure upgrades required	Started - 1-FSG-05 issued, 2-FSG-05 started

Overall Integrated Plan Pending Actions	Status
102 Provide final versions of electrical one-line diagrams in a future six-month update.	Complete
103 Provide update of any changes to dc coping strategy	Complete. See Section 4.9
104 U1 & U2 Install 1 connection on one SFP Pump suction line for SFP FLEX pump discharge	Complete. See Section 4.16
105 Install two sets of secondary water supply connections from underground water main (Ft. Pierce Utilities) at north and new south metering stations	Complete - New underground mains, stations and connections installed
106 Install removable flood barriers at watertight doors to ECCS Pump Rooms.	Complete. See Section 4.17

Alpha suffixes and numbers above 100 indicate additional items beyond those identified in Reference 1

Draft Safety Evaluation Pending Items	Status
Draft NRC Safety Evaluation has not been received. Draft FIP submitted to NRC during November, 2014 Audit Visit	N/A

6A Open and Confirmatory Items from Interim Staff Evaluation

The NRC Interim Staff Evaluation and Audit Report on the St. Lucie Overall Integrated Plan have been received via Reference 13. Responses to the following two Open Items and 15 Confirmatory Items have been developed. Where responses have been developed though not completed or reviewed by the NRC, brief summary remarks are added to the Notes section with St. Lucie response white paper tracking number:

Open Items

Item Number	Description	Notes
3.2.1.8.A	Core Sub-Criticality – Confirm that St. Lucie will apply the generic resolution for boron mixing under natural circulation conditions potentially involving two-phase flow, in accordance with the conditions provided in the NRC's endorsement letter dated January 8, 2014, or alternately, justify the boric acid mixing assumptions that will ensure adequate shutdown margin exists through all three phases of an ELAP event.	St. Lucie will apply the generic requirement per Reference 16 regarding conditions and timing for boron mixing. Response to be included with Program Document.

Item Number	Description	Notes
3.2.1.8.B	The St. Lucie RCS Inventory coping strategy involves an alternate approach relying on repowering one of three installed charging pumps in each unit using a portable 480 VAC FLEX generator. Justify how these installed pumps will be capable of performing their mitigating strategies function following an undefined ELAP event, in contrast with using a portable FLEX pump.	St. Lucie repowering and use of an installed charging pump as an alternate coping strategy is currently being evaluated. Response to be included with Program Document.

Confirmatory Items

Item Number	Description	Notes
3.1.1.2.A	Confirm that the routes for deployment of FLEX equipment provide for at least one connection point for the FLEX equipment that will only require access through seismically robust structures, consistent with consideration 2 of NEI 12-06, Section 5.3.2.	St. Lucie has ensured that the FLEX equipment staged locations and cable/hose routes are protected from seismic events or allow for multiple placement locations/routes. Response to be included with Program Document.
3.1.1.4.A	Confirm that the deployment routes and methods to be used will enable delivery of resources from the RRC staging area to the site following a BDBEE.	St. Lucie deployment routes and methods have been reviewed by SAFER and enable delivery of off-site resources. Response to be included with Program Document.
3.2.1.A	The NRC staff endorsed the PWROG position paper on the use of the Combustion Engineering Nuclear Transient (CENTS) code in the ELAP analysis for Combustion Engineering plants, with the limitation that it can only be applied to the flow conditions prior to reflux boiling initiation. Confirm that the applicable ELAP analyses for St. Lucie meet the above limitation on the use of CENTS.	St. Lucie ELAP analysis CENTS code results are used for non-reflux boiling conditions. Response to be included with Program Document.
3.2.1.1.A	Confirm the plant-specific RCP seal leakage rates assumed for St. Lucie from time zero to the time when subcooling in the RCS cold-legs decreases to 50 degrees F° and confirm the impact of these leakage rates on the plant-specific time constraints and sequence of events (SOE). (Note: The TER, on page 30 of 69, listed an incorrect ADAMS accession number for the August 16, 2013, PWROG position paper on RCP seal leakage; it should be ML13235A151).	St. Lucie RCP seal leakage rates remain at 1 gpm/seal with early CBO isolation included in SOE. Response to be included with Program Document.

Item Number	Description	Notes
3.2.1.2.B	Confirm the assumption that the RCP seal leakage rate is less than 1 gpm per RCP during an ELAP before the controlled bleed off is isolated.	St. Lucie RCP Seal leakage is <1 gpm per seal up to CBO isolation. Response to be included with Program Document.
3.2.1.5.A	Confirm that the Rosemount pressure transmitters credited in an ELAP event will continue to function in the anticipated environmental conditions.	Rosemount transmitters are confirmed to be adequate for ELAP conditions. The FPL EQ Program shows that the environmental conditions that would exist during an ELAP event are enveloped by the type testing done under the program. Other essential instruments, not located in a harsh environment are found acceptable based on vendor specification sheets. Response to be included with Program Document.
3.2.1.9.A	Justify the use of the NOTRUMP computer code to determine the integrated flow rate required to remove decay heat and sensible heat.	AFW integrated flow rate requirement revised to compare to CENTS code output. Response to be included with Program Document.
3.2.1.9.B	Confirm that the revised calculation for RCS makeup flow demonstrates that the FLEX strategies and equipment can provide sufficient flow to accommodate the sensible heat resulting from cooldown in the 2-6 hour time frame.	Flow supplied by AFW and SG FLEX pumps confirmed to supply adequate cooldown flow. Response to be included with Program Document.
3.2.1.9.C	Confirm that the pump criteria and the associated analysis support the adequacy of the RRC-supplied pumps to re-establish Shutdown Cooling for Phase 3.	Reduced flow provided by RRC supplied pump is confirmed to be adequate for reestablishing Shutdown Cooling. Response to be included with Program Document.
3.2.4.2.A	Confirm that the electrical equipment room equipment is analyzed for operation up to a temperature of 129 degrees F° for 72 hours, or that portable fans will be used to provide adequate room ventilation.	Shed heat loads are being recalculated to lower temperature profile and required equipment confirmed to function for 72 hours. Response to be included with Program Document.

Item Number	Description	Notes
3.2.4.4.A	The NRC staff has reviewed the licensee communications assessment (ADAMS Accession Nos. ML12307A116 and ML13057A033) and has determined that the assessment for communications is reasonable (ADAMS Accession No. ML13134A050). Confirm that upgrades to the site's communications systems have been completed.	Upgrades to the communications systems have been completed (Engineering Change Package 279287.
3.2.4.6.A	Confirm that the measures to provide main control room ventilation under high ambient temperatures during an ELAP event are sufficient to mitigate room heat-up and allow operators to perform their functions.	Shed heat loads are being recalculated to lower temperature profile and confirm measures are sufficient for habitability. Response to be included with Program Document.
3.2.4.7.A	Confirm the availability of secondary sources of water to provide makeup to the CSTs/RWTs during Phase 2 following a high wind missile event.	New high wind missile separated 2nd potable water supply connection ensure secondary source maintained for Phase 2. Response to be included with Program Document.
3.2.4.10.A	The revised battery load shed strategy is to initially secure one battery, load shed and operate on the other battery, and return the secured battery to service before the first battery is depleted, thereby extending the available coping time. Confirm that this revised strategy is sufficient to power all critical loads during Phase 1, and can be implemented consistent with the assumed time constraints and SOE.	Analysis indicates this shedding is capable of increasing the duration of the battery powered instrumentation monitoring function on Unit 1 to approximately 12 hours for each 1A and 1B station batteries (21.5 hrs. total) and on Unit 2, 9.6 and 7.8 hours for 2A and 2B station batteries, respectively (14.98 hrs. total). This duration is considered sufficient.
3.3.2.A	Confirm that considerations 1 and 3 of Section 11.8 of NEI 12-06 will be addressed, so that: A) a historical record of previous mitigating strategies and the basis for changes will be maintained, and B) a mitigating strategies change process will be adopted which provides a documented engineering basis that ensures that any change in FLEX strategy continues to ensure the key safety functions are met; or provide an appropriate alternative.	NEI 12-06 considerations will be addressed in Program Document controlled under Appendix B QA program maintains FLEX strategies current and future configuration. Response to be included with Program Document.

6B NRC Staff Audit Questions, Safety Evaluation Review Items and Audit Debrief Items

The NRC Staff conducted an onsite FLEX Program audit visit the week of November 17-21, 2014. Preceding and during the visit several Audit Questions, Safety Evaluation Review Items and Audit Debrief Items were submitted to PSL for response. Audit Questions related to and are numbered per non-docketed Audit Question from the NRC Staff and responded to by PSL in the autumn of 2013. These items supplemented Open and Confirmatory Items described in section 6A above. Responses were provided to the Staff with the summary of those provided below. Status of these items is pending with the NRC Staff.

Audit Questions (AQ)

Item Number	Description	Notes
AQ2	FPL's integrated plan did not address the procedural interfaces considerations for seismic hazards associated with 1) large internal flooding sources that are not seismically robust and do not require ac power, and 2) the use of ac power to mitigate ground water in critical locations as required by NEI 12-06 Section 5.3.3, Considerations 2 and 3. Provide a discussion regarding any large internal flooding sources that are not seismically robust and do not require ac power, and 2) the use of ac power to mitigate ground water in critical locations. If these considerations are not applicable to PSL, then provide a discussion regarding why they are not applicable to PSL.	1) Internal flood protection is principally a concern with respect to equipment located within the ECCS Pump rooms. These rooms are located at the lowest RAB elevation and receive drains form higher elevations. The ECCS Pump Rooms are protected by watertight doors and operator manual actions to isolate drains to the rooms. 2) CLB flooding elevation (EL. 17.2') does not reach minimum entrance to all seismic category 1 buildings (EL. 19.5'). Preliminary results from the Flooding Hazard Reevaluation indicate that a short duration of standing water occurs outside seismic category 1 building entrances resulting from local intense precipitation (LIP). Once the analysis is finalized the potential effects of the LIP will be reviewed and entered into the plants corrective action program. Any required interim measures will be implemented and the hazards will be addressed in the integrated assessment.
AQ3	FPL's integrated plan did not specifically address NEI 12-06 Section 6.2.3.2, consideration 7 regarding the potential need for dewatering or extraction pumps, and consideration 8 regarding the potential need for temporary flood barriers. Provide a discussion of these flood mitigation considerations (7 and 8) if they are applicable to PSL or provide a discussion of why these flood mitigation provisions are not needed at PSL.	*Current Licensing Basis* Dewatering or extraction pumps are not required as building entrances are above the plant probable maximum flood (PMF) high water elevation. Per Unit 1 and Unit 2 UFSARs (Refs. 1&2), the PMF high water level is 17.2 ft. Plant grade elevation is 18.5 ft and minimum entrance to all seismic Category 1 buildings is 19.5 ft. As an additional precaution, stop logs are deployed on specific doors to address wave run-up. *Flooding Reevaluation* Preliminary results from the Flooding Hazard Reevaluation indicate that a short

Item Number	Description	Notes
		duration of standing water occurs outside seismic category 1 building entrances resulting from local intense precipitation (LIP). Once the analysis is finalized the potential effects of the LIP will be reviewed and entered into the plants corrective action program. The hazard will be addressed in the integrated assessment and any required interim measures will be implemented.

Item Number	Description	Notes
AQ4	FPL's integrated plan provided some plans for procedures to be used to deploy portable equipment during flood conditions. For Considerations 1 and 2, of NEI 12- 06 section 6.2.3.3 FPL identified several procedures to be developed regarding deployment of FLEX equipment and connection point considerations. Provide a reference to procedures regarding deployment of temporary flood barriers, per Consideration 3 of NEI 12-06 Section 6.2.3.3, or discuss why these procedures are not required at PSL.	Plant procedure 0005753 - "Severe Weather Preparations" provides direction for the installation of stop logs. Deployment of stop logs is initiated prior to the projected arrival of a hurricane at the site. No barriers are required to be installed for deployment of FLEX equipment or connection to FLEX connection points.
AQ6	If it is intended to credit significant improvement for ELAP related to the isolation of controlled bleed-off (CBO) lines, provide confirmation that CBO isolation procedures, human factors requirements, and equipment qualifications are applicable to the ELAP event and are able to be achieved within the time frames described in section 5.3.1 of WCAP-16175.	CBO isolation is performed under 1(2)-EOP-01 "Standard Post Trip Actions" prior to entry into 1(2)-EOP-10 "Station Blackout". CBO isolation is accomplished by closing valves SE-01-1 on Unit 1 and V2524 on Unit 2. These valves actuate via vital DC powered solenoids (direct on Unit 1 and via instrument air on Unit 2) operated by hand switches in the Main Control Room. The Unit 2 valve closes on loss of instrument air. The valves are Environmentally Qualified and are power via Class 1E DC buses that remain powered following an ELAP. Time Validation Studies have been performed to verify the CBO isolation is able to be achieved within the 10 minute time frame.
AQ 14	FPL's strategy for providing air flow to remove steam generated from pool boiling include securing open all Fuel Handling Building (FHB) doors, opening the large L-shaped door (no power required) and staging hoses for portable makeup or spray from the SFP FLEX pump. The open FHB doors will provide a ventilation pathway for steam from the SFP in addition to a pathway for laying hoses. It is not clear from this discussion what the actual flow path of steam and condensate will be since the elevations of the various doors was not discussed. No elevation diagrams were included in the integrated plan. Provide a discussion regarding SFP door location and elevations that details how moisture will be vented from the SFP	The FLEX Strategies for Spent Fuel Pool Cooling include opening doors and deploying hoses in Phase 1 prior to habitability in the FHB being degraded. The L-Shaped door opening time without power was estimated to be excessive compared to the available time, so the opening of the personnel doors at the operating (62 ft) and ground (19.5 ft) elevations was selected to allow for air flow and steam venting. The two doors at the 62 ft. have 3 ft. x 7 ft. openings. One is northwest of the Spent Fuel Pool (SFP) surface elevation that is also 62 ft. The other door is south of the SFP on the new fuel storage area south wall that is open

Item Number	Description	Notes
	building if boiling occurs.	to the SFP via a normally open sliding doorway that has a 5.3 ft. x 30 ft. opening. The double door at the 19.5 ft. has an 18 ft. x 15 ft. opening. The steam moisture will be vented out of the FHB via these openings if boiling occurs in the Spent Fuel pool.
AQ 18 AQ 45	NEI 12-06, Section 3.2.2, Paragraph (3) provides that plant procedures/guidance should specify actions necessary to assure that equipment functionality can be maintained (including support systems or alternate method) in an ELAP/[LUHS] or can perform without ac power or normal access to the ultimate heat sink (UHS), such systems as auxiliary building cooling water, service water, or component cooling water cooling when ac power is lost during the ELAP for Phase 1 and 2. For example, the potential need for cooling water for the TDAFW pump bearings was not discussed. Provide additional information regarding plans to provide ventilation and cooling to credited equipment when normal cooling will not be available during the ELAP.	Plant equipment used during Phase 1 and 2 do not require ventilation or auxiliary cooling. TDAFW is installed in an outdoor environment within the qualified Steam Trestle. No ventilation fans are required for safety related design functions or post-ELAP conditions. TDAFW pump bearings do not rely on external cooling systems. Charging and BAM pumps do not rely on external cooling water systems. Permanent plant active valves required support Phase 1 and 2 strategies do not require ventilation to maintain an environment that allows them to achieve the position relied upon for FLEX strategies. Electrical equipment and instrumentation that are relied upon during an ELAP are environmentally qualified for their safety related design function and do not require cooling to be available during the ELAP.
AQ 19 AQ 44	Provide a discussion of battery room ventilation to prevent hydrogen accumulation while recharging the batteries in phase 2 or 3. In your response, include a description of the exhaust path if it is different from the design basis.	The design basis Battery Room roof exhausters will be powered when the battery room chargers are placed in operation to prevent hydrogen accumulation. The exhausters will be powered by the same FLEX 480V DG used to power the battery chargers and draw flow from the battery rooms and exhaust to the outside atmosphere.

Item Number	Description	Notes
AQ22	NEI 12-06, Section 3.2.2, Paragraph (12) provides that: Plant procedures/guidance should consider loss of heat tracing effects for equipment required to cope with an ELAP. Alternate steps, if needed, should be identified to supplement planned action. Provide a discussion of the need for heat tracing for equipment required to cope with an ELAP.	Equipment relied upon to cope with an ELAP at St. Lucie does not depend upon heat tracing. Exterior piping for BDBEE makeup water sources is not heat traced. For potential makeup from the RWT, boric acid concentrations maintained in the RWT are well below the 2.52 wt % solubility limit of 32F. With respect to heat tracing of Boric Acid Makeup systems, St. Lucie has implemented a Boric Acid Concentration Reduction program, an aspect of which was to remove heat tracing of the BAM piping. Heat tracing for CVCS piping from the BAMT to the charging pumps was eliminated on both units since the boron concentration in the BAM tanks was reduced from 8-12 wt % to the range of 3.1-3.5 wt. % boric acid following EPU. The solubility limit of the boric acid at 3.5 wt % is 50 °F, which is well below the ambient temperature maintained in the RAB. Given the tropical climate of PSL, it is not expected that the ambient temperature inside the RAB will be reduced below the solubility limit during an ELAP, therefore, no heat tracing in the CVCS piping is required.
AQ23	NEI 12-06, Section 3.2.2, Paragraph (8) provides that: Plant procedures/guidance should identify the portable lighting (e.g., flashlights or headlamps) and communications systems necessary for ingress and egress to plant areas required for deployment of FLEX strategies. On page 80 of 102 of the integrated plan, FPL noted in Figure 3, PSL FLEX Electrical Connections (Phase 1-3 Strategy Table), that emergency lighting and plant communications would be powered from the 480 VAC FLEX portable generators. The sequence of events timetable on page 7 4, Action Item 5 notes that the 480 VAC generator will be deployed and connected between 6 - 8 hours into the event. Provide plans for the availability of installed lighting and communications equipment prior to the connection of the 480 VAC portable generators.	Installed DC lighting is available in the Control Room, various locations in the plant (Appendix R) and will be supplemented with portable battery operated lanterns as required. Dedicated radios with batteries are maintained on smart chargers in the Technical Support Center to supplement radios that normally used by on-duty personnel. Satellite Phones with docking stations for use in the Technical Support Center and Control Rooms are maintained available charged and with spare batteries on smart chargers. Portable 6 KW diesel generators are available for charging batteries and supplemental lighting as required.

Item Number	Description	Notes
AQ24	NEI 12-06, Section 3.2.2, Paragraph (9) provides that: Plant procedures and guidance should consider the effects of ac power loss on area access, as well as the need to gain entry to the Protected Area and internal locked areas where remote equipment operation is necessary. Provide plans for access to the protected area and internal locked areas of the plant considering loss of power to security systems.	A set of access keys will be provided to the watchstanders.
AQ25	Describe how electrical isolation will be maintained such that (a) Class 1 E equipment is protected from faults in portable/FLEX equipment and (b) multiple sources do not attempt to power electrical buses.	a) During normal operation, the new breakers will be racked out and locked open with springs discharged. Under this arrangement, isolation between the Class 1E Electrical equipment and portable/FLEX equipment is maintained. b) The strategy regarding prevention of multiple sources powering the electrical buses has evolved to having all FLEX power connection and breaker positioning be procedurally controlled. Bus preparation prior to Phase 2 will provide isolation from all incoming and outgoing connections precluding reconnection of multiple sources.
AQ28	NEI 12-06, Section 3.2.2, guideline (15) and Section 11.5, specify requirements regarding maintenance, equipment unavailability, and testing. In its integrated plan, FPL described establishing a maintenance program plan based on EPRI guidelines and using existing plant maintenance programs to identify and document maintenance and testing requirements. Please confirm your intention to commit to the generic EPRI industry program for maintenance and testing of FLEX electrical equipment such as batteries, cables, and diesel generators. [See NRC endorsement letter dated October 7, 2013; NRC ADAMS Accession No. ML 13276A224]	St. Lucie will commit to the generic EPRI industry program for maintenance and testing of FLEX electrical equipment.

Item Number	Description	Notes
AQ 31	Identify the installed non-safety related systems or equipment that are credited in establishing the mitigation strategies. For the identified systems or equipment, discuss the intended mitigation functions, and justify that they are available and reliable to provide the desired functions on demand during the ELAP conditions.	PSL credits no installed non-safety related systems or equipment for Phase 1 strategies. In Phase 2, PSL credits an underground 12" potable water supply line a number of backup non-safety related tanks (CWSTs, TWST, PWSTs, etc) as an alternate strategy to supply demineralized or potable water for CST and RWT makeup. Based on redundancy and separation, there is reasonable assurance that a number of these alternate water supplies will be available for use following BDBEEs. In Phase 3, PSL credits non-safety related traveling water screens, located within qualified intake structures, to provide debris control for the RRC pumps restoring UHS flow. Due to their construction, there is reasonable assurance that one or more of the four traveling water screens will be available to support the FLEX Phase 3 LUHS strategy.
AQ39	Provide a summary of the sizing calculation for the FLEX generators to show that they can supply the loads assumed in phases 2 and 3.	480 - A 480 VAC FLEX DG with a standby rating of 405 kW (437.5 kVA at 0.8 power factor) is required, one per unit. 4160 - Two 4160 VAC FLEX DGs with continuous ratings of 1000 kW (in parallel – combined 2 MW; 2.5 MVA at 0.8 power factor) will be utilized for each unit.
AQ42	On Page 24 of the Mitigation Plan, under PWR Portable Equipment Phase 2, the licensee described the portable diesel driven pump (SG FLEX pump) being deployed for injection into the steam generators (SGs) in the event that the turbine-driven auxiliary feedwater (TDAFW) pump fails. The licensee indicted that the time and resources to make connections of the SG FLEX pump will be validated. Provide a milestone for completing its validation for connection of the SG FLEX pump for Phase 2 when needed.	A milestone has been created in the Saint Lucie's Fukushima response schedule to complete the validation of the deployment and installation of the SG FLEX pump. The validation will be performed using the guidance for time sensitive action validation contained in the NEI endorsed guidance for FLEX strategies. The validation will be performed by the required minimum staff compliment as required by Order EA-12-049.

Item Number	Description	Notes
AQ48	Motive Force for the atmospheric dump valve (ADV) Operations: (a) Specify the size of the ADV backup nitrogen supply source and the required time for its use as motive force to operate the ADVs for mitigating an ELAP event; (b) Discuss the analysis determining the size of the subject nitrogen supply to show that the nitrogen sources are available and adequate, lasting for the required time; (c) Discuss the electrical power supply that is required for operators to throttle steam flow through the ADVs within the required time and show that the power is available and adequate for the intended use before the operator takes actions to manually operate the ADVs; and (d) Discuss the operator actions that are required to operate ADVs manually and show that the required actions can be completed within the required time.	The nitrogen backup supply system will be capable of supporting operation of the ADVs for 120 hours. Using historical data on valve operator leakage a calculation has been prepared to determine the required size of the backup nitrogen supply. This calculation determined that less than one St Lucie standard size cylinder is all that is required. To provide margin, two cylinders have been provided to support the operation of each ADV. No electrical power is required to support the operation of the Unit 1 ADVs. The Unit 2 ADVs are powered from the Vital DC power system. Based on the recovery timeline the backup nitrogen supply must be operational two hours after the event has occurred. All of the required components are pre-staged in the vicinity of the ADVs. Operator actions to place the backup nitrogen in service will be to connect two hose assemblies, which already include the required valves and fittings between the nitrogen cylinder and a permanently installed connection on the ADV pneumatic control line. Control valves are included as part of the hose assemblies so that the pressure to the ADV operator can be modulated and in turn the ADV position can be changed as required.

Item Number	Description	Notes
AQ49	Uncontrolled Cooldown - Clarify whether the ADVs or upstream associated piping is protected from external events such as tornado missiles. If not, address the following questions: (a) Clarify whether damage to the ADV or upstream associated piping could occur during an ELAP that would result in an uncontrolled cooldown of the reactor coolant system; (b) Clarify whether postulated damage would be limited to a single ADV and/or associated piping, or whether failures could be postulated resulting in an uncontrolled cooldown affecting both steam generators; (c) If ELAP scenarios involving the uncontrolled cooldown of one or more steam generators may be postulated, describe key operator actions that would be taken to mitigate these events; (d) If ELAP scenarios involving the uncontrolled cooldown of one or more steam generators may be postulated, provide an analysis demonstrating that the intended mitigating actions would lead to satisfaction of the requirements of Order EA-12-049 for these cases; and (e) As applicable, if the operator actions to mitigate an ELAP event involving an uncontrolled cooldown results in an asymmetric cooldown of the reactor coolant system, address the consequences of the asymmetric cooldown on the mixing of boric acid that is added to the reactor coolant system to ensure sub-criticality.	The safety related ADV's are located in the steam trestles which are safety related structures qualified for tornado missile and seismic loads. The ADV's and upstream associated piping are protected from tornado wind/missile events.

Item Number	Description	Notes
AQ 51	Clarify whether you plan to abide by the NEI position paper addressing mitigating strategies in shutdown and refueling modes that is dated September 18, 2013 (ADAMS Accession No. ML 13273A514), which has been endorsed by the NRC staff (ADAMS Accession No. ML 13267A382). If not, clarify how mitigating strategies for shutdown and refueling modes will be addressed and provide justification for the planned approach.	PSL will abide by the NEI position paper addressing mitigating strategies in shutdown and refueling modes that is dated September 18, 2013 (ADAMS Accession No. ML13273A514), which has been endorsed by the NRC staff (ADAMS Accession No. ML13267A382 Additionally, FSG-14, Shutdown RCS makeup, has been developed. This guideline provides instructions to establish RCS makeup flowpaths during an extended loss of AC power (ELAP) event, occurring while shutdown with Shutdown Cooling in service. FSG-14 will have guidance for makeup to the RCS from multiple sources including: FLEX pump, Safety Injection Tanks if available, charging pump drawing from the RWT or BAMT.

Safety Evaluation (SE) Review Items

Item	Description	Notes
SE Review Item 1	1. (RCS Venting) The generic analysis in WCAP-17601-P strictly addressed ELAP coping time without consideration of the actions directed by a site's mitigating strategies. WCAP-17792-P extends these analytical results through explicit consideration of mitigating strategies involving RCS makeup and boration. In support of the RCS makeup and boration strategies proposed therein, a generic recommendation is made that PWRs vent the RCS while makeup is being provided. Provide the following information in regard to this topic: a. Will the mitigating strategy include venting of the RCS? b. If so, please provide the following information: i. The vent path to be used and the means for its opening and closure. ii. The criteria for opening the vent path. iii. The criteria for closing the vent path. iv. Clarification as to whether the vent path could experience two-phase or single-phase liquid flow during an ELAP. If two-phase or liquid flow is a possibility, clarify whether the vent path is designed to ensure isolation capability after relieving two-phase or liquid flow. v. If relief of two-phase or liquid flow is to be avoided, discuss the availability of instrumentation or other means that would ensure that the vent path is isolated prior to departing from single-phase steam flow. vi. If a pressurizer power-operated relief valve (PORV) is to be used for RCS venting, clarify whether the associated block valve would be available (or the timeline by which it could be repowered) in the case that the PORV were to	1a. The FLEX Strategies for Reactor Cooldown and Heat Removal will include venting the RCS when it is necessary to accommodate charging the RCS with borated water in order to maintain shutdown margin. 1b.i.The vent path is the Reactor Coolant Gas Vent System that is operated by opening and closing the vessel head vent. 1b.ii The criteria used for opening the vent is at the start of charging the RCS with borated water. 1b.iii The vent will be closed upon completion of charging the RCS with borated water. 1b.iv The vent will initially pass steam and once the reactor vessel level rises to the top of the vessel head, the vent passes liquid. The vent is designed to close against full RCS pressure that is well above the 750 psig expected when passing the 44 gpm of a charging pump. 1b.v The instrumentation relied upon for verifying the flow path is isolated are the pressurizer pressure and reactor vessel level transmitters. 1b.vi PORVs are not used for RCS Makeup & Boration. 1b.vii PORVs are not used for RCS Makeup & Boration.

Item	Description	Notes
SE Review Item 1 (Cont'd)	stick open. If applicable, further explain why opening the pressurizer PORV is justified under ELAP conditions if the associated block valve would not be available. vii. If a pressurizer PORV is to be used for RCS venting, clarify whether FLEX RCS makeup pumps and FLEX steam generator makeup pumps will both be available prior to opening the PORV. If they will not both be available, provide justification. c. If RCS venting will not be used, provide the following information: i. The expected RCS temperature and pressure after the necessary quantity of borated makeup has been added to an unvented RCS. ii. Justification that the potential impacts of unvented makeup will not adversely affect the proposed mitigating strategy (e.g., FLEX pump discharge pressures will not be challenged, plant will not reach water solid condition, adequate boric acid can be injected, increased RCS leakage will not adversely affect the integrated plan timeline, etc.).	1c. RCS Venting will be used.
SE Review Item 2	(Timeline to reflux cooling) Clarify whether procedural guidance for the timing of providing makeup to the reactor coolant system is based on analysis in WCAP-17792-P, pages 3-10 through 3-16. If so, provide justification for basing the timing of primary makeup on the assumption that reactor coolant pump seal leakage rates that are less than the maximum expected value under ELAP conditions will not increase.	Procedural guidance for the timing of providing makeup to the reactor coolant system is based on the earlier of (1) decrease in ΔT indicating departure from single phase NC or (2) transition to extended cooldown and not on the analysis in WCAP-17792-P. RCP Seal leakage assumptions for PSL are 1 gpm/pump vs 15 gpm/pump described in WCAP-17792-P analysis.

Item	Description	Notes
SE Review Item 3	Provide confirmation that appropriate human factors are applied for the implementation of the FLEX strategies.	EN-AA-103, Human Factors Program, provides the guidance for ensure design features facilitate the safe and reliable performance of operations by the following: • Personnel tasks can be accomplished within time and performance criteria • Human-system interfaces, procedures, staffing/qualifications, training, and management and organizational arrangements support personnel situation awareness • Design will support personnel in maintaining vigilance over plant operations and provide acceptable workload levels, i.e., minimize periods of under- and over-load • Human-system interfaces will minimize personnel error and will support error detection and recovery capability In addition NEI has endorsed a FLEX verification and validation document that outlines the process to be use by licensees to ensure the required tasks, manual actions and decisions for FLEX strategies are feasible and may be implemented within the constraints identified in the Overall Integrated Plan (OIP) for Order EA-12-049. Also, the use of color coded 480 Volt electrical connections, cables, hoses and hose connections will enhance the human –system interface. FLEX equipment tags will be installed on plant equipment to ensure easy identification during deployment and installation of FLEX equipment. Training, using the SAT process, will be administered to Operations, Emergency Responders, Security and Decision Makers commensurate with the level on interface required by the FLEX strategies.

Item	Description	Notes
SE Review Item 4	a. Discuss the design of the suction strainers used with FLEX pumps taking suction from raw water sources, including perforation dimension(s) and approximate surface area. b. Provide reasonable assurance that the strainers will not be clogged with debris (accounting for conditions following, flooding, severe storms, earthquakes or other natural hazards), or else that the strainers can be cleaned of debris at a frequency that is sufficient to provide the required flow. In the response, consider the following factors: i. The timing at which FLEX pumps would take suction on raw water relative to the onset and duration of the natural hazard. ii. The timing at which FLEX pumps would take suction on raw water relative to the timing at which augmented staffing would be available onsite. iii. Whether multiple suction hoses exist for each FLEX pump taking suction on raw water, such that flow interruption would not be required to clean suction strainers.	a. In Phase 2, the intake canal is used as the last selected water source for the FLEX SG Pump and the FLEX SFP Pump. In Phase 3, PSL credits the intake traveling screens to provide for debris control for the RRC supplied LUHS pumps. Perforation size in these screens is 3/8" with a surface area of 2 ft. x 10 ft. per panel and 13 panels on front (normally rising) side and 13 panels in series on back side of screen frame. b. The screens normally pass 120,000 gpm of circulating water flow. For the FLEX LUHS pump, flow to feed both PSL Unit 1 and Unit 2 is 10,000 gpm. The total flow for the other FLEX Pumps is 1200 gpm maximum for the 3 pumps. Water velocity across the screen, normally at 2.7 fps, is correspondingly reduced by 90% for the largest FLEX pump flow and, thus, there is reasonable assurance that debris loading and resultant screen clogging will be minimal. i. The FLEX SFP pump or FLEX SG pump could take suction during Phase 2 as early as 8 hours following the onset of the BDBEE. The FLEX LUHS pump will take suction on the intake after 24 hours in Phase 3. ii. Augmented staff will be available onsite as early as 6 hours following the onset of the BDBEE. iii. There is no requirement to clean the screens due to their configuration. Should their cleaning become necessary, they are separate from the suction hose so no flow interruption would be necessary.
SE Review Item 5	Provide information on the refueling strategy for diesel powered FLEX equipment.	The refueling of diesel powered FLEX equipment is provided by a 1000 gallon refueling trailer. This refueler will be filled from the Unit 2 Diesel Oil Storage Tanks (DOSTs) and delivered to FLEX equipment to fill their on-board tanks. The refueler will return to the Unit 2 DOSTs for refilling as its inventory is depleted.

Daily Debrief Items (DI)

Item	Description	Notes
11/17/2015 DI 5	Safety Injection Tank (SIT) isolation timing during RCS Cooldown to avoid Nitrogen Injection	Evaluation White Paper prepared and reviewed that provided the elevated RCS pressure required that prevents nitrogen injection from the SIT. Corresponding temperatures also provided that would be maintained until SIT isolation is performed.
11/19/2015 DI-7	Reactor Coolant System (RCS) shrinkage and available injection volume from SIT's for borated water addition considering elevated pressure described in earlier Debrief Item (11/17/15-DI5)	Evaluation White Paper prepared and reviewed that discussed that with the 10% remaining water volume in the SIT assumed for prevention of nitrogen injection, associated borated water injection exceeds that calculated for maintaining shutdown margin (SDM). SDM Reactivity Calculation that assumes no RCS leakage and, thus, less volume available for injection.

7 Potential Draft Safety Evaluation Impacts

Draft NRC Safety Evaluation has not been received.

8 References

The following references support the updates to the Overall Integrated Plan described in this Attachment.

1. FPL Letter L-2013-084 to NRC, Florida Power & Light (FPL)/St. Lucie's Overall Integrated Plan in Response to March 12. 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049) dated February 28, 2013
2. FPL Letter L-2013-192 to NRC, Florida Power & Light (FPL)/St. Lucie's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049) dated June 18, 2013
3. NRC Order Number EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, dated March 12, 2012
4. NEI 12-06 Rev 0, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide (including supplemental guidance contained within posted Flex Guidance Inquiry Forms)
5. WCAP-17601-P Rev 1, Reactor Coolant System Response to Extended Loss of AC Power Event for Westinghouse, Combustion Engineering and Babcock & Wilcox NSSS Designs, January 2013
6. FPL Letter L-2013-254 to NRC, Florida Power & Light (FPL)/St. Lucie's First Overall Integrated Plan Status Report in Response to March 12, 20I2 Commission Order Modifying Licenses with Regard to

Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated August 28, 2013
7. NRC Endorsement of Reference 8, Agencywide Documents Access and Management Systems (ADAMS) Accession No. ML13276A183, dated January 8, 2014
8. Westinghouse Position Paper entitled "Westinghouse Response to NRC Generic Request for Additional Information (RAI) on Boron Mixing in Support of the Pressurized Water Reactor Owners Group (PWROG)", ADAMS Accession No. ML13235A135, dated August 15, 2013
9. NEI Position Paper entitled "Shutdown / Refueling Modes", ADAMS Accession No. ML13273A514, dated September 18, 2013
10. NRC Endorsement of Reference 9, ADAMS Accession No. ML13267A382, dated September 30, 2013
11. Electric Power Research Institute (EPRI) Report 3002000623 entitled "Nuclear Maintenance Applications Center: Preventive Maintenance Basis for FLEX Equipment", ADAMS Accession No. ML13276A573, dated September 2013
12. NRC Endorsement of Reference 11, ADAMS Accession No. ML13276A224, dated October 7, 2013
13. Interim Staff Evaluation and Audit Report by the Office of Nuclear Reactor Regulation Related to Order EA-12-049 Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, Florida Power and Light Company, St. Lucie Plant, Units 1 and 2, Docket Nos. 50-335 and 50-389, dated February 6, 2014
14. FPL Letter L-2014-063 to NRC, Florida Power & Light (FPL)/St. Lucie's Second Overall Integrated Plan Status Report in Response to March 12, 20I2 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 26, 2014
15. FPL Letter L-2014-215 to NRC, Florida Power & Light (FPL) Response to NRC 10 CFR(f) Request for Information Update Regarding Near-Term Task Force Recommendation 2.3, Seismic, dated June 30, 2014
16. Westinghouse Letter LTR-FSE-13-46, Rev. 0-A (DRAFT), Westinghouse Response to NRC Generic Request for Additional Information (RAI) on Boron Mixing in Support of the Pressurized Water Reactor Owner's Group, June 11, 2013
17. FPL Letter L-2014-274 to NRC, Florida Power & Light (FPL)/St. Lucie's Third Overall Integrated Plan Status Report in Response to March 12, 20I2 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated August 27, 2014
18. FPL Engineering Evaluation PSL-ENG-SECS-14-003, Rev. 0 NRC Order EA-12-049 Response (Fukushima) PSL Tornado Missile
19. FPL Letter L-2015-049 to NRC, Florida Power & Light (FPL)/St. Lucie's Fourth Overall Integrated Plan Status Report in Response to March 12, 2012 commission Order Modifying Licenses with Regard to Requirement for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 23, 2015

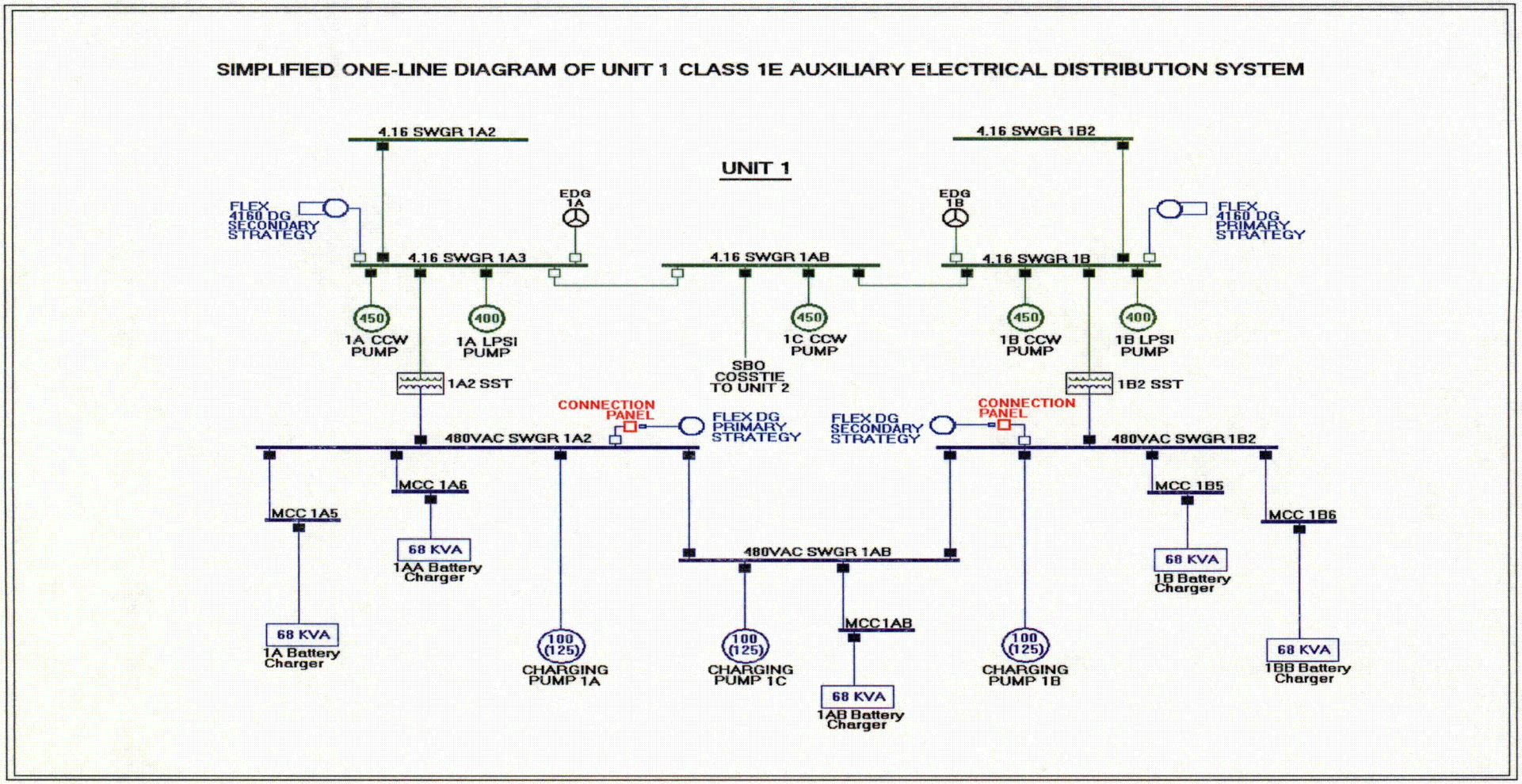


Figure 1 PSL FLEX Electrical Connections (Unit 1) (Rev 0A)

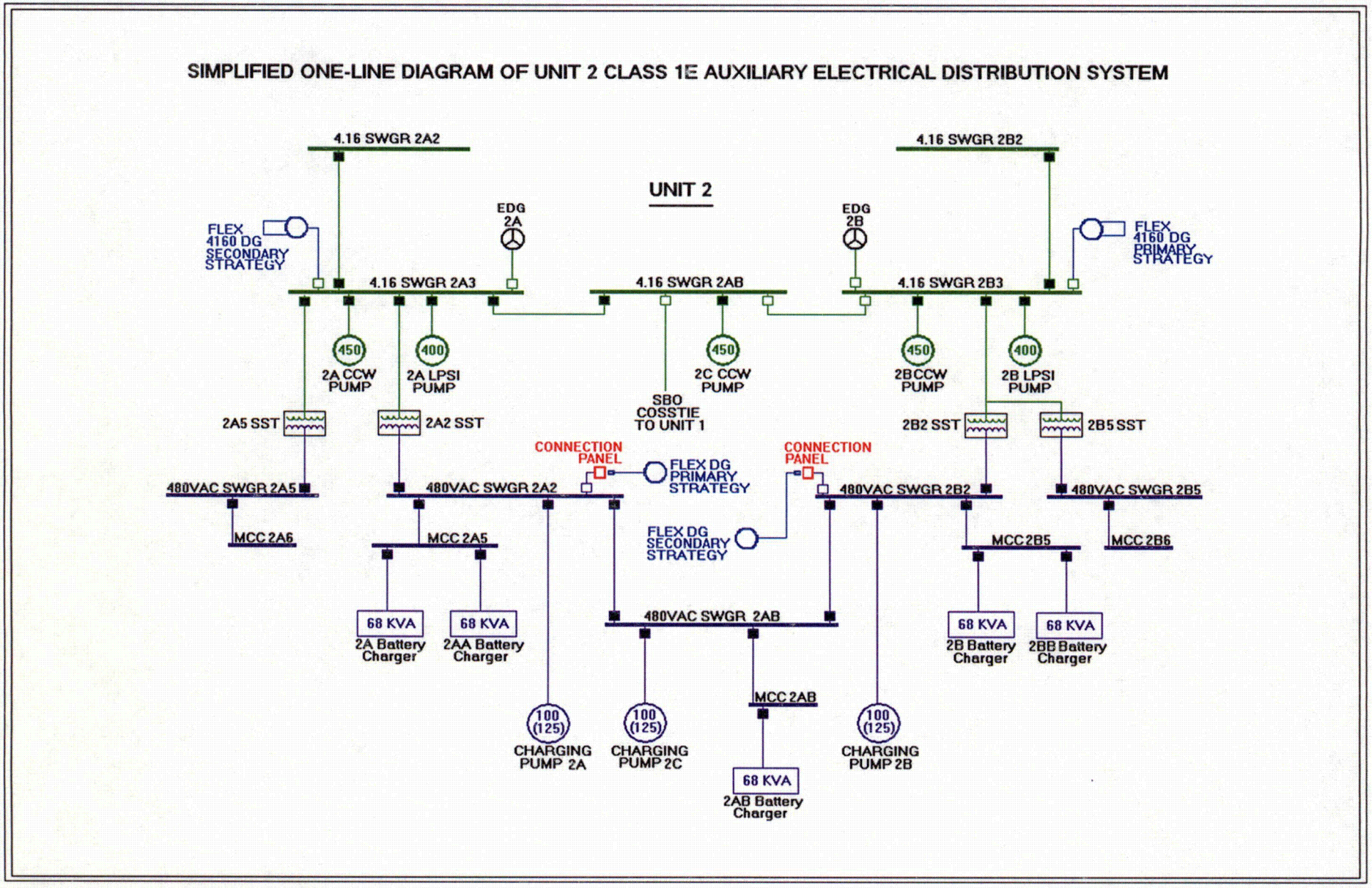
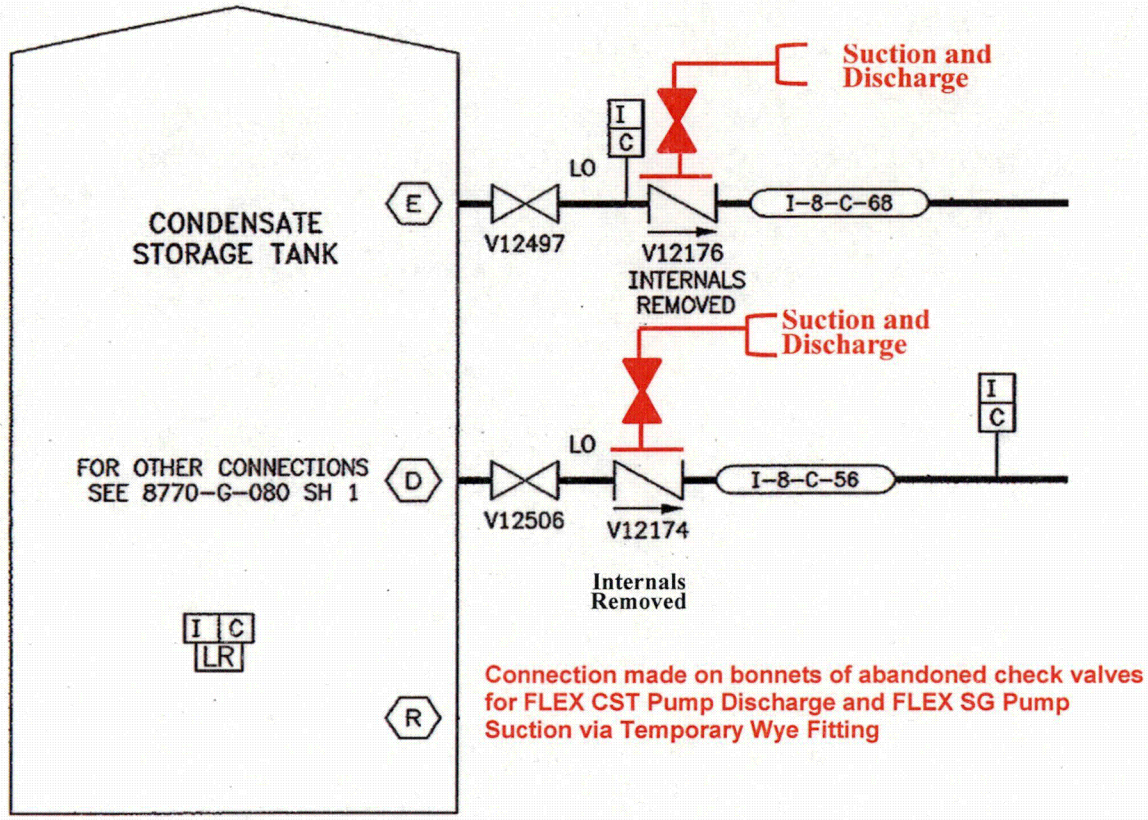
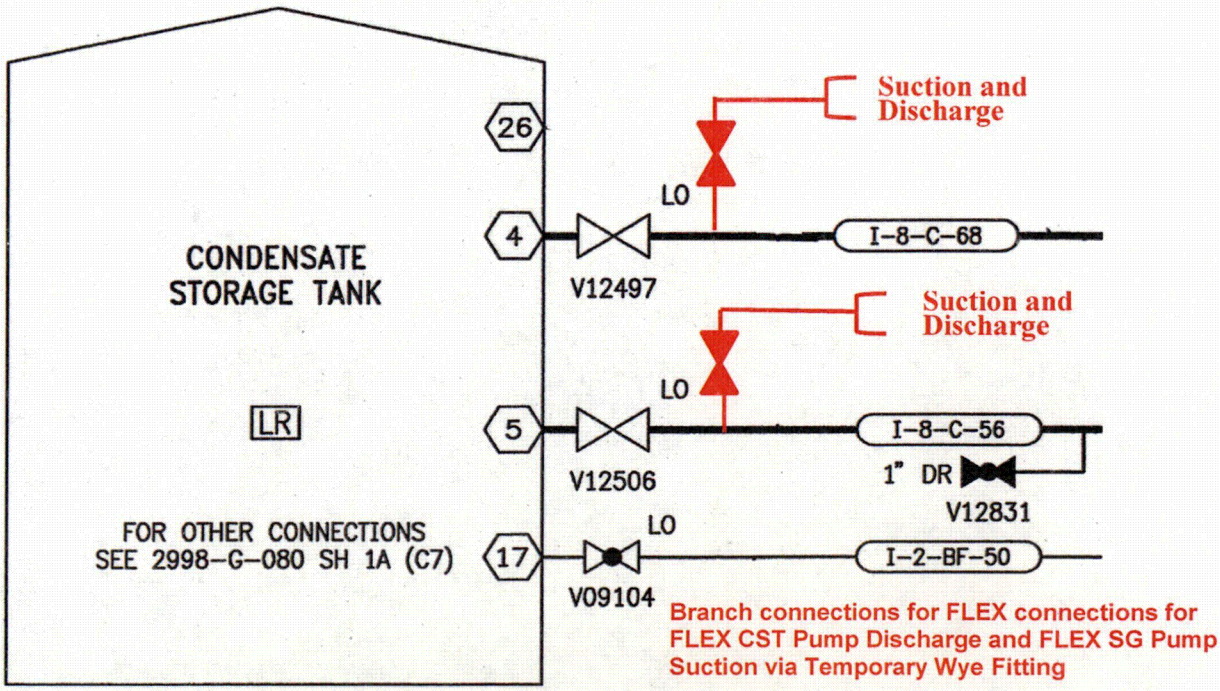


Figure 2 PSL FLEX Electrical Connections (Unit 2) (Rev 0A)

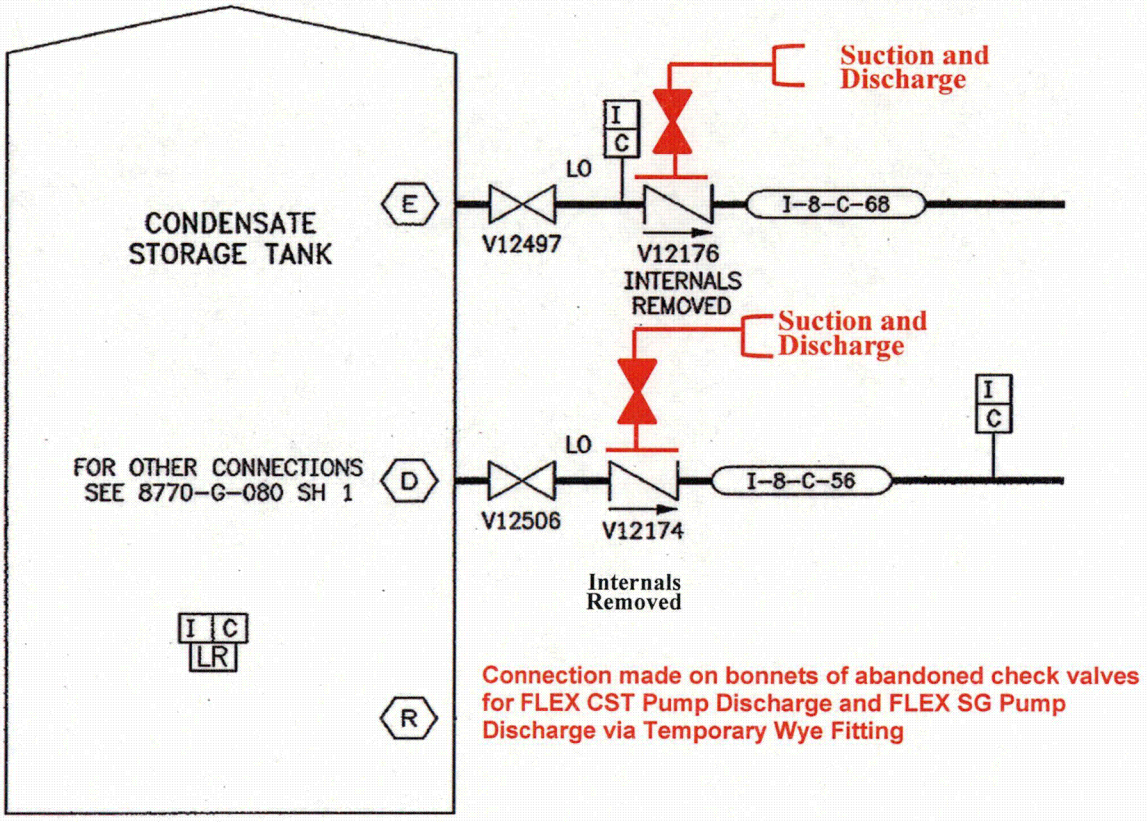


Portion of Drawing 8770-G-080 Sh. 4

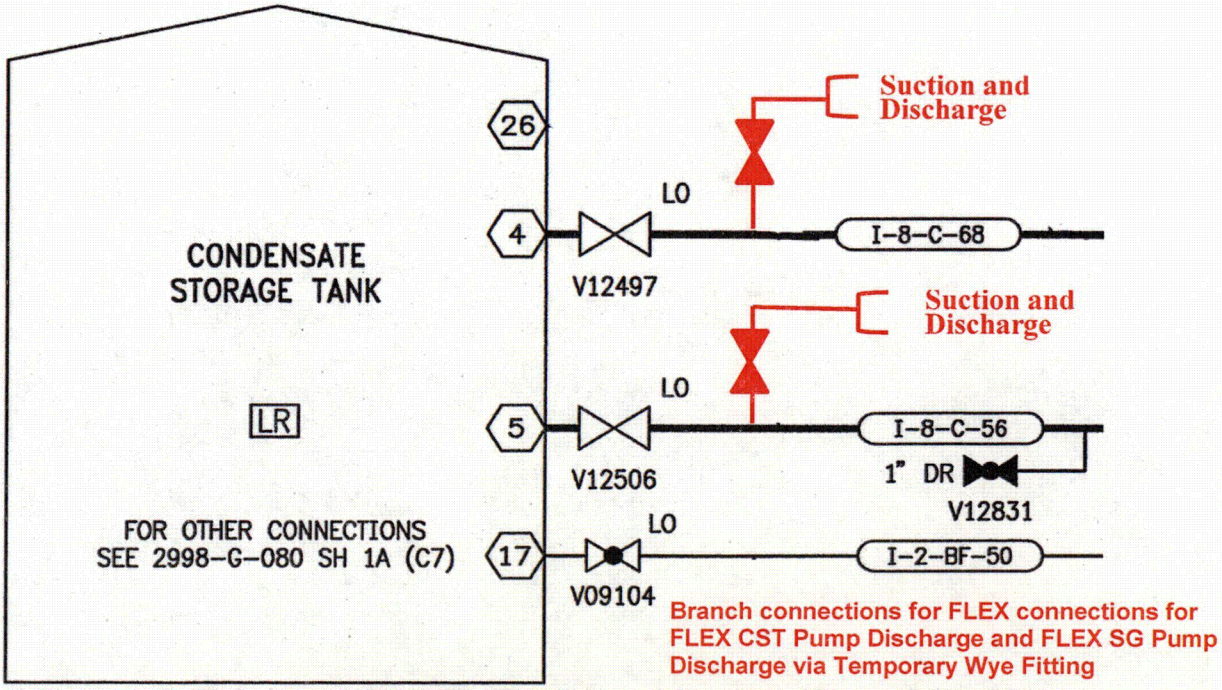


Portion of Drawing 2998-G-080 Sh. 2B

Figure 11 Connections for CST FLEX Pump Suction on CSTs (Rev 1)



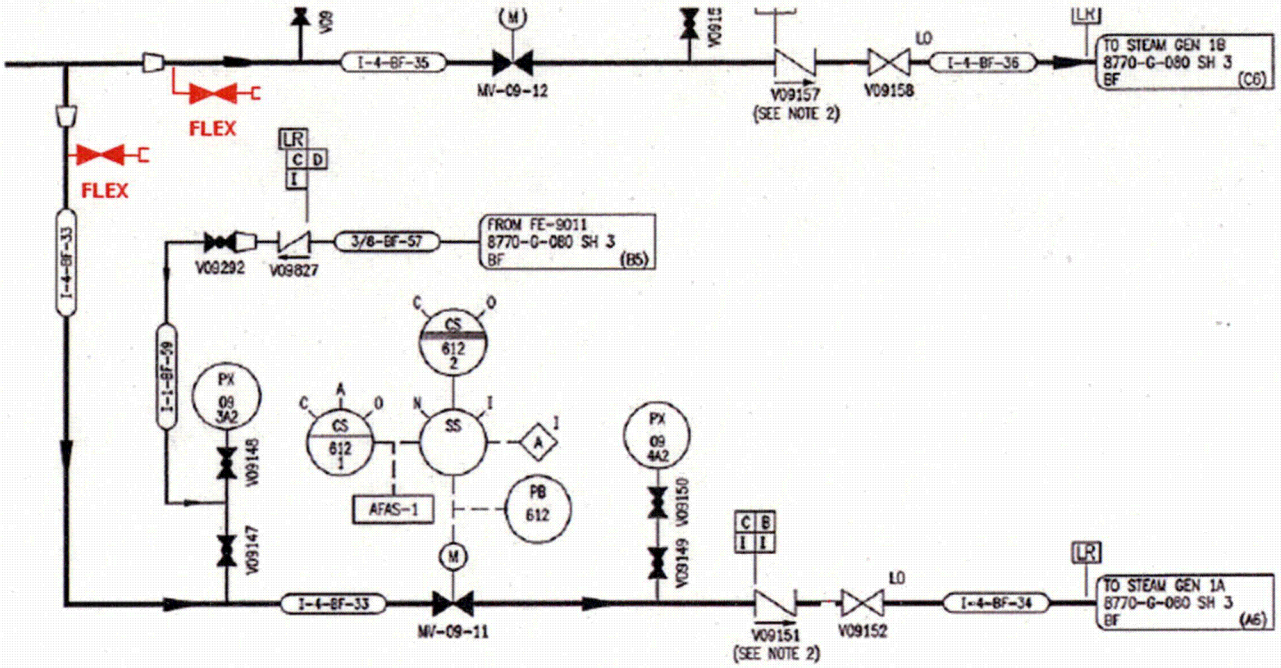
Portion of Drawing 8770-G-080 Sh. 4



Portion of Drawing 2998-G-080 Sh. 2B

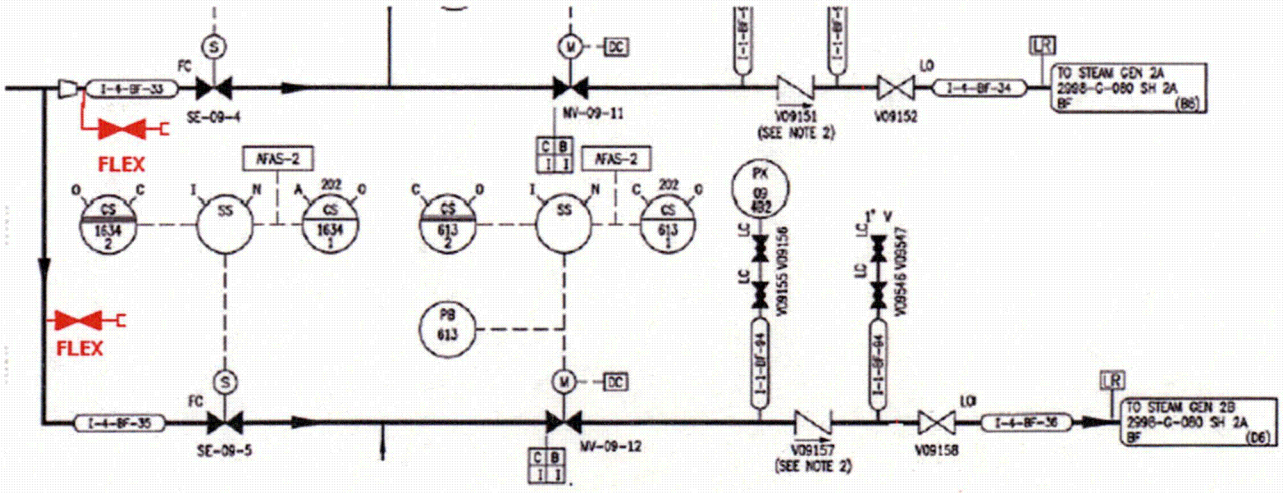
Figure 12 Connections for CST/SG FLEX Pump Discharge for CST Fill (Rev 1)

Install a 4" isolation valve and hose connection to the AFW pump 1C(2C) discharge piping for Steam Generator Injection by using a FLEX pump.



Portion of Drawing

8770-G-080 Sh. 4

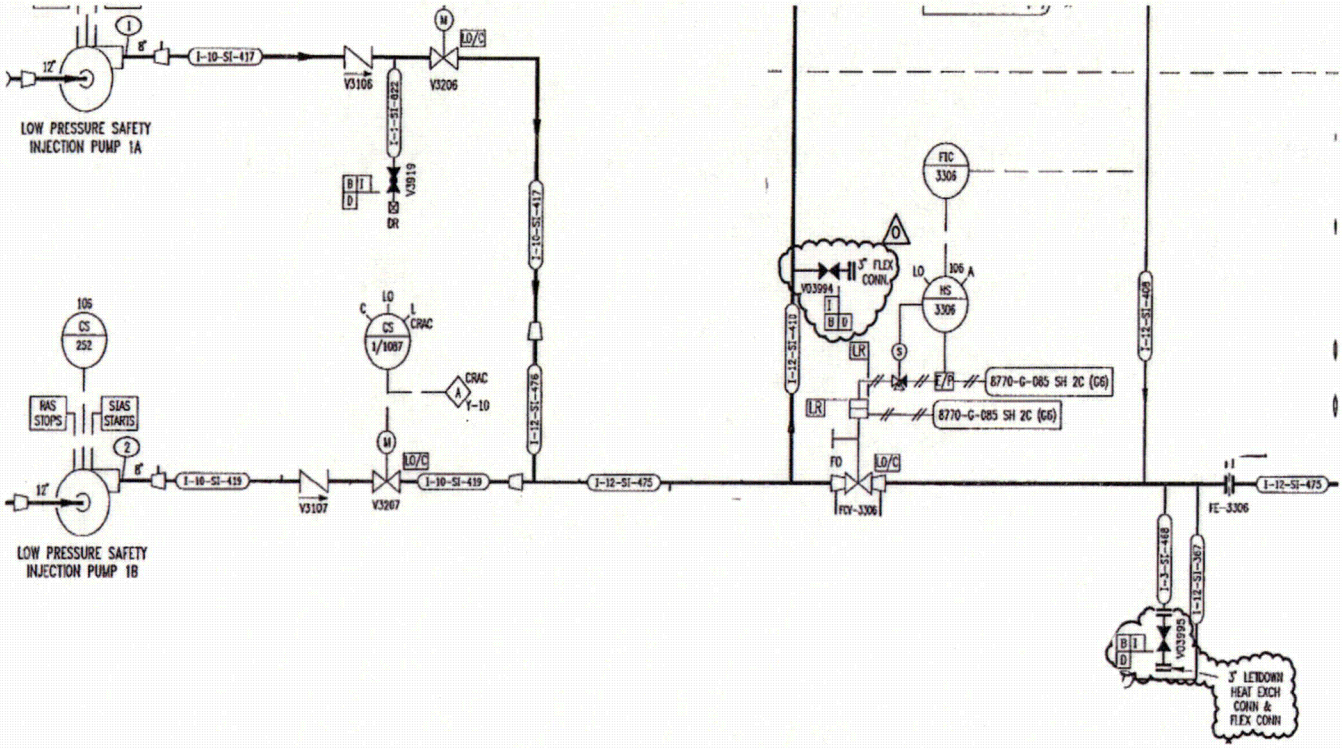


Portion of Drawing

2998-G-080 Sh. 2B

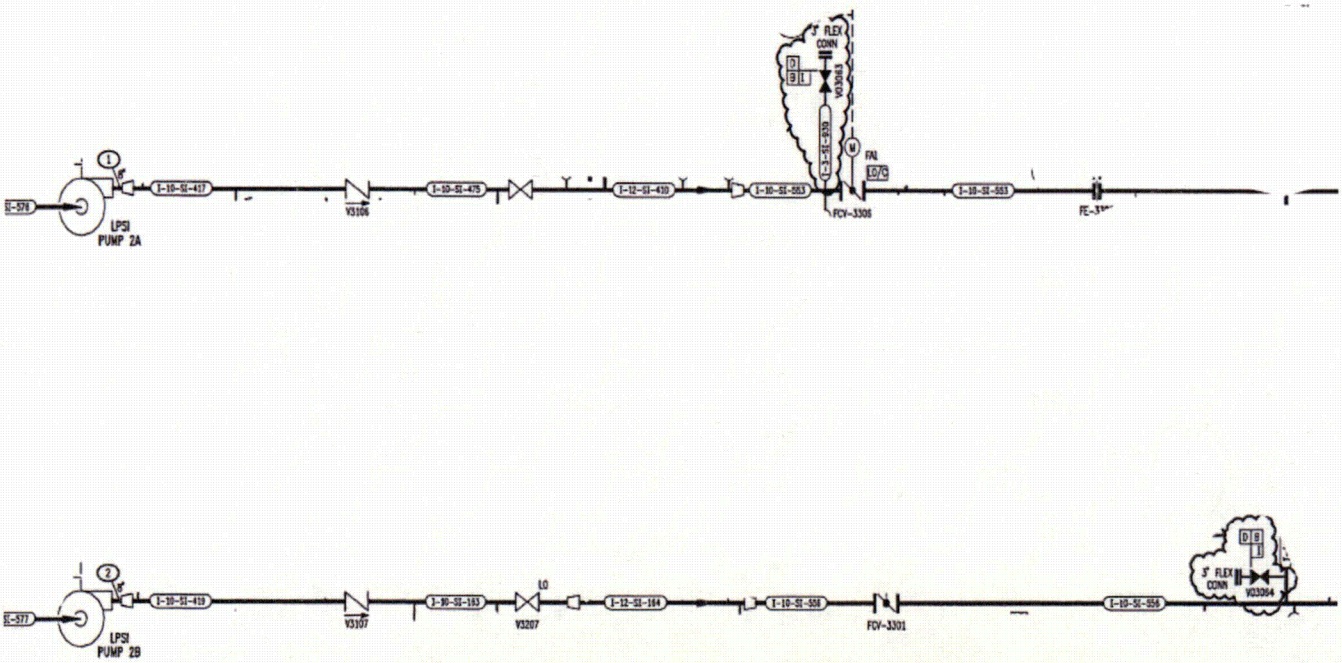
Figure 13 Connections for SG FLEX Pump Discharge to AFW Pump Discharge Lines (Rev 0A)

Install primary and secondary 3" isolation valves & hose connections on the LPSI 1A/1B Pumps common discharge piping. For RCS cold leg injection with FLEX SG Pump drawing suction from the RWT.



Portion of Drawing 8770-G-078 Sh. 130B

Install 3" isolation valves and hose connections on each of the LPSI 2A & 2B Pumps discharge piping. For RCS cold leg injection with FLEX SG Pump drawing suction from the RWT.



Portion of Drawing 2998-G-078 Sh. 130B

Figure 14 Connections for SG FLEX Pump Discharge to LPSI Pump Discharge Lines (Rev 1)

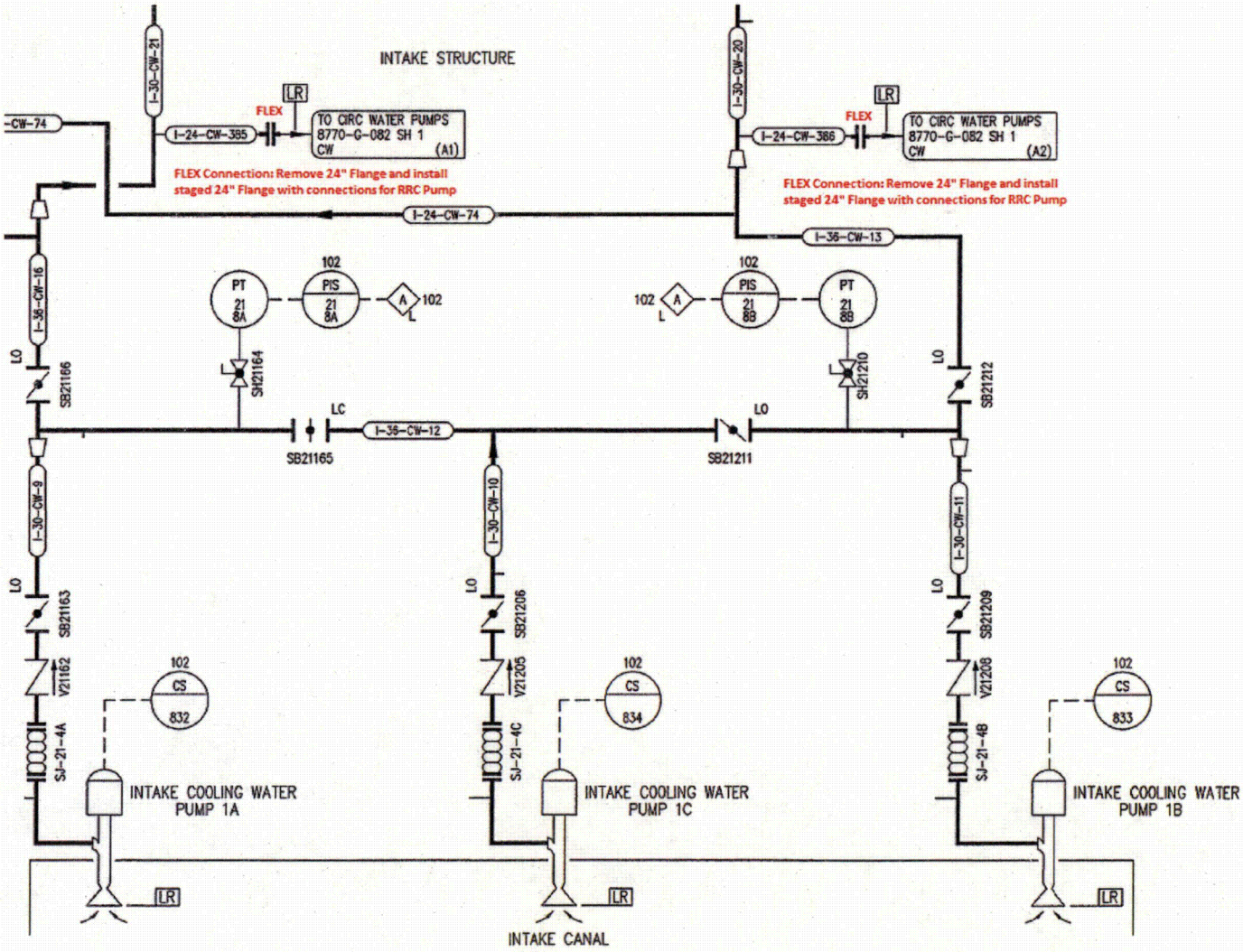


Figure 17 Connections for NSRC LUHS Pumping System (Unit 1) (Rev 0A)

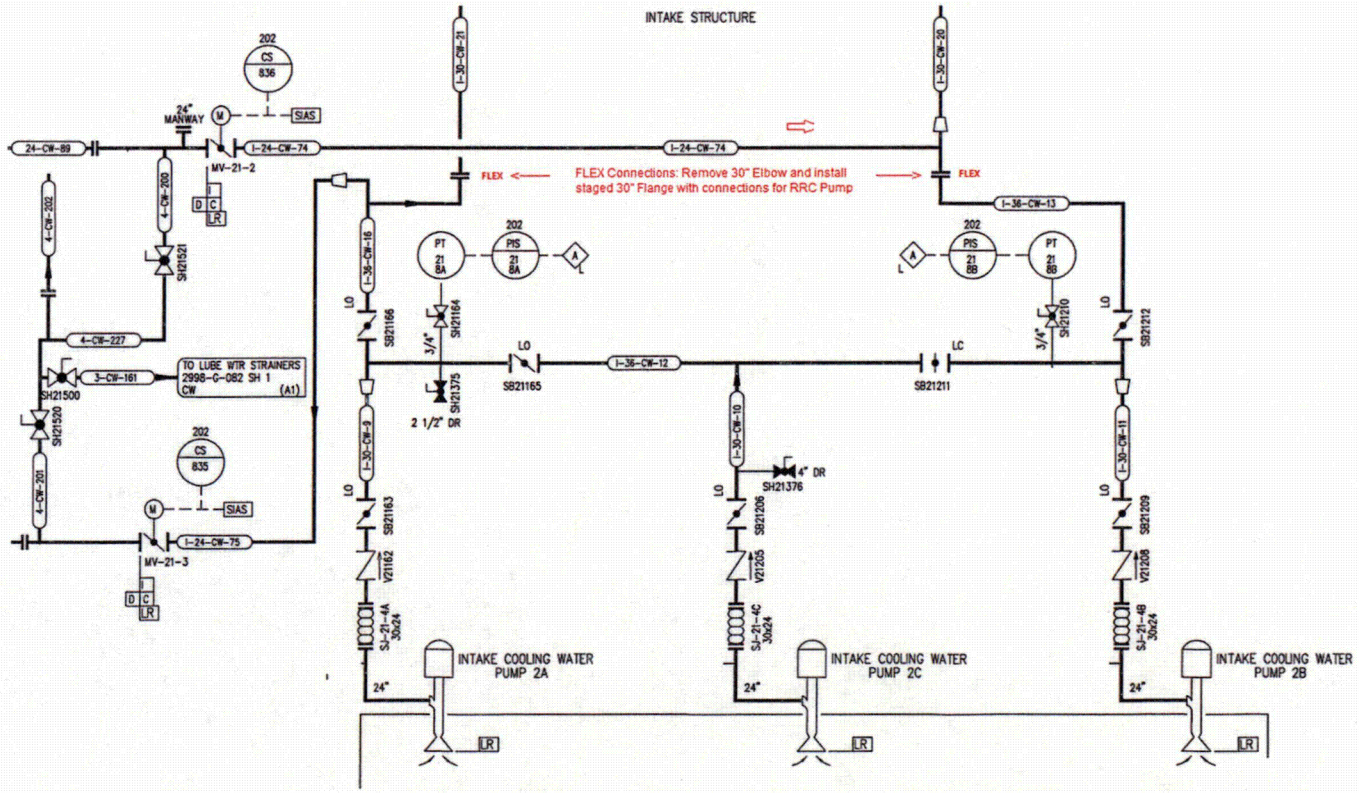


Figure 18 Connections for NSRC LUHS Pumping System (Unit 2) (Rev 0A)

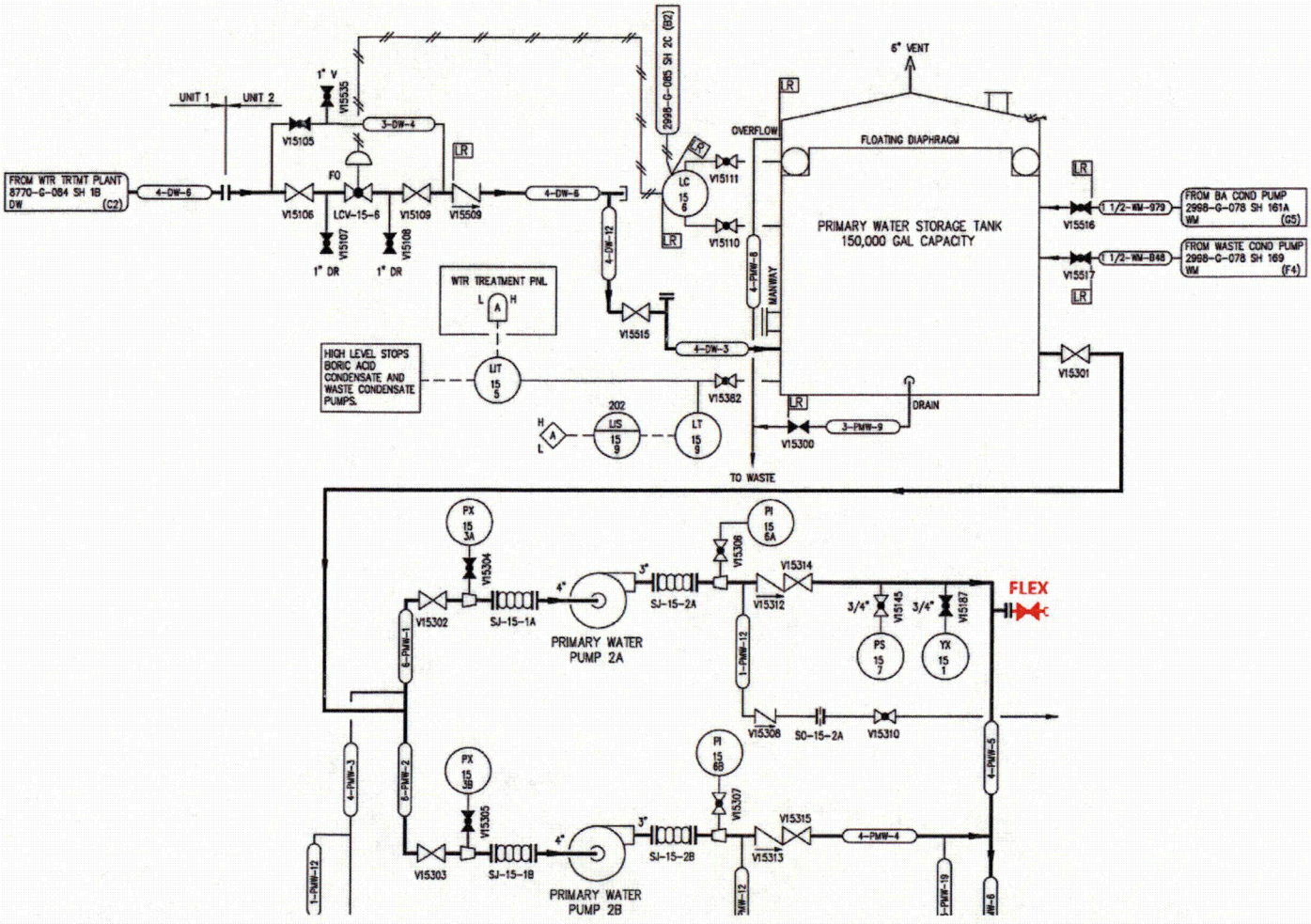


Figure 21 Connections for CST/SG FLEX Pump Suction From PWSTs (Unit 2, Unit 1 Similar) (Rev 0A)

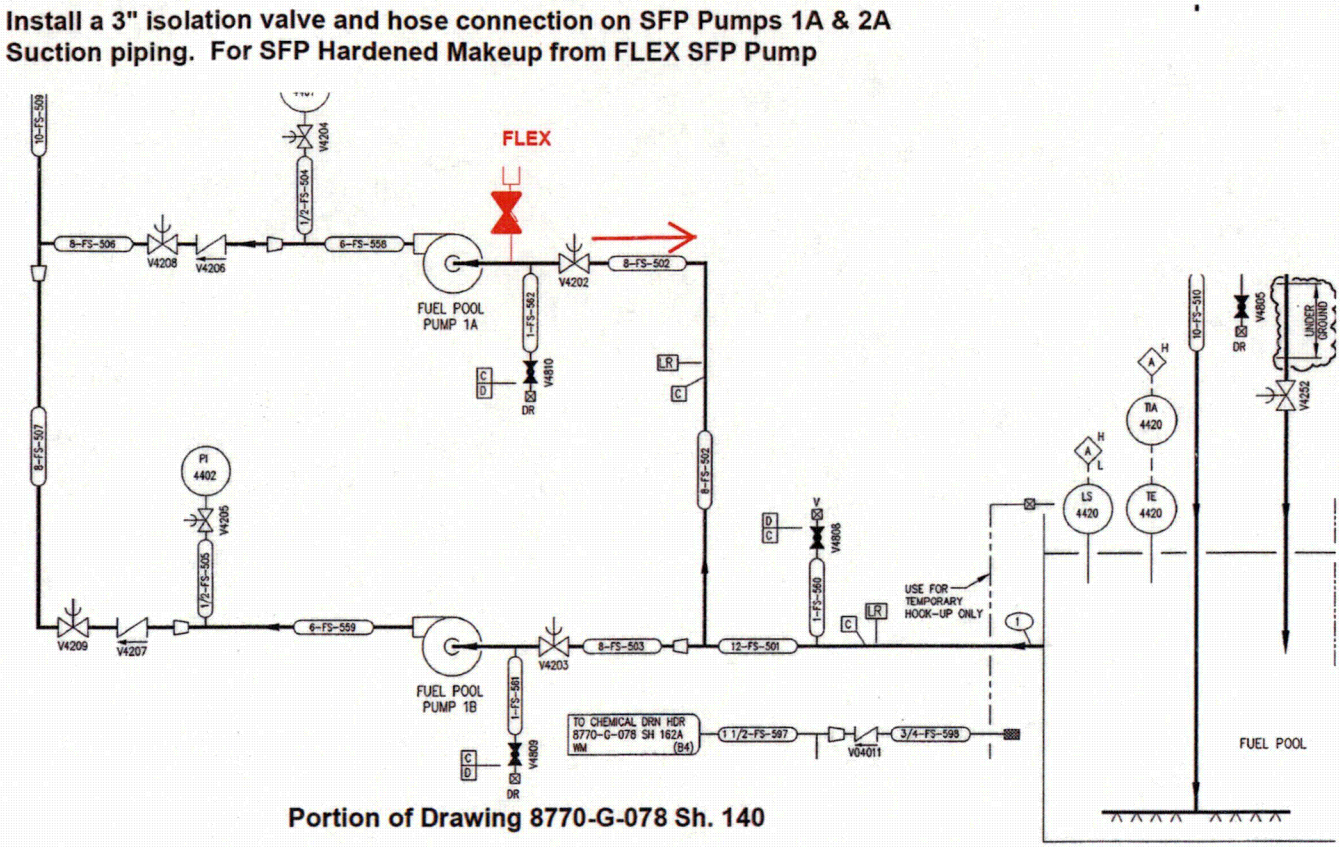
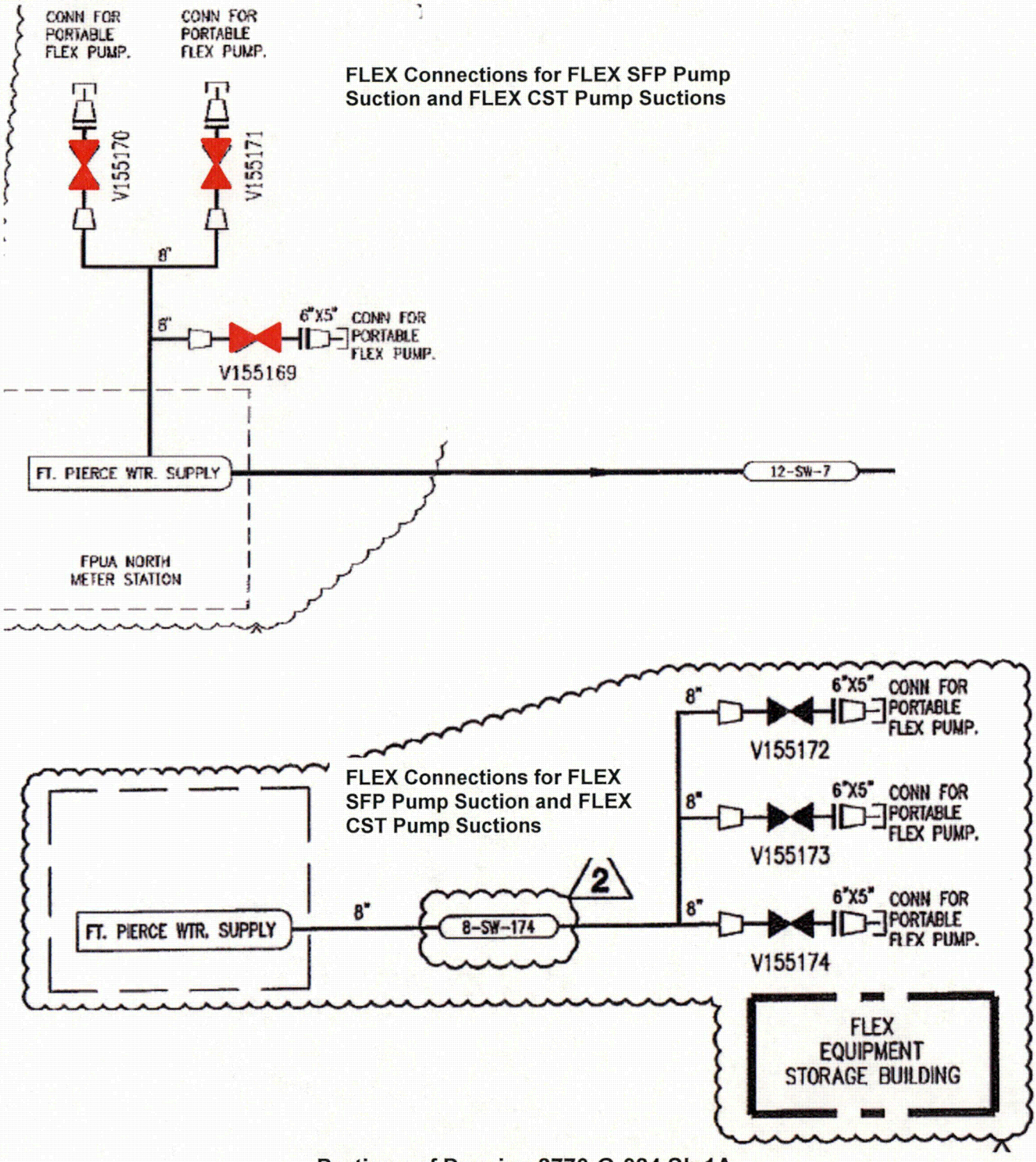
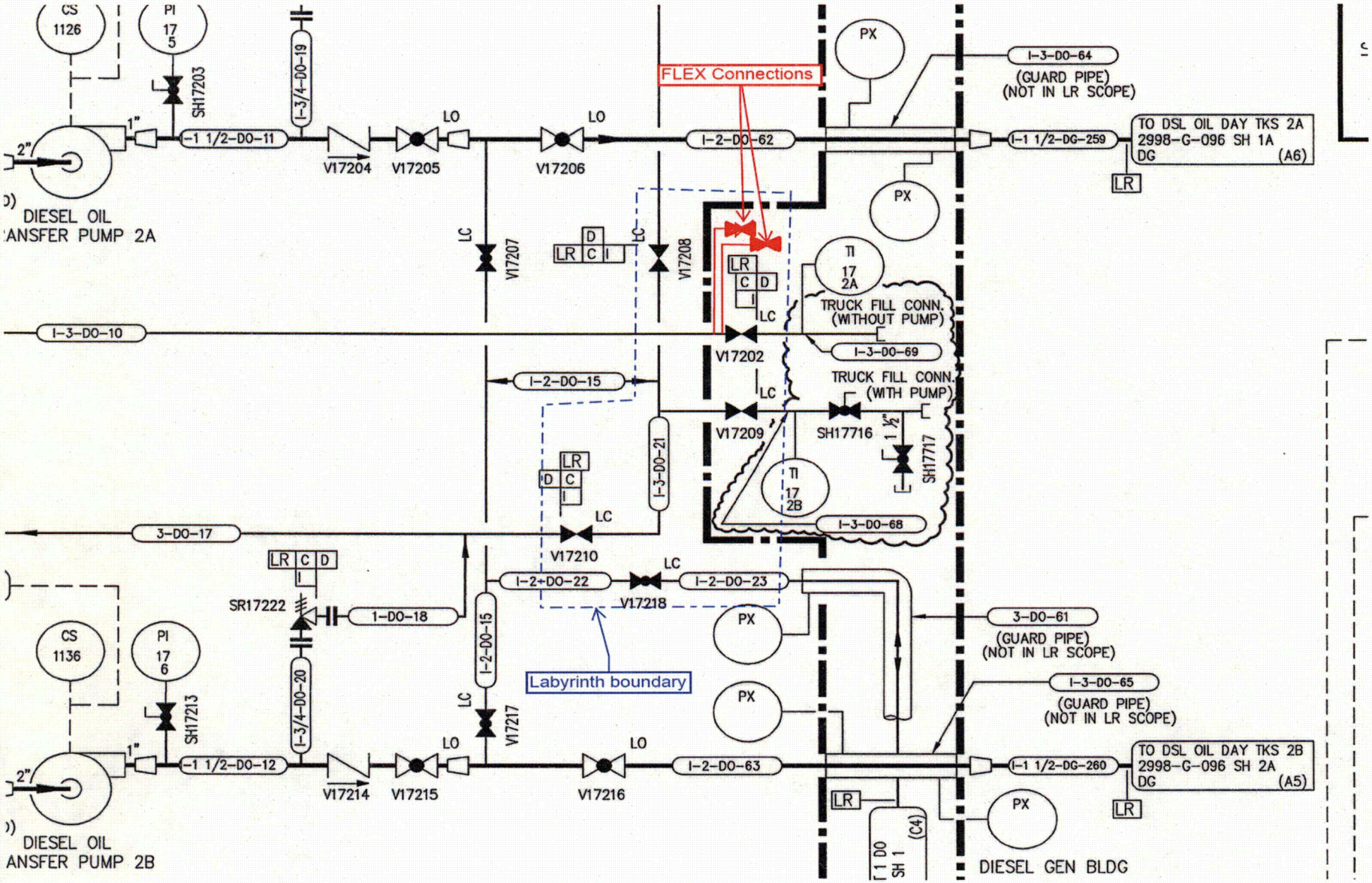


Figure 22 Connection for SFP FLEX Pump Discharge to Fuel Pool Pump (Unit 1, Unit 2 Similar) (Rev 0)



Portions of Drawing 8770-G-084 Sh 1A

Figure 23 Connections for Secondary Water Sources (Ft. Pierce Utilities) for SFP FLEX Pump Suction and FLEX CST Pump Suctions (Rev. 0)



Portion of 2998-G-086 Sh. 1

Figure 24 Connections for Diesel Oil Gravity Drain Connections from Unit 2 Diesel Oil Storage Tanks (Rev 0)