



August 28, 2013

L-2013-254
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 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)

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. ML12056A045.
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.

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.

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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.

The purpose of this letter is to provide the first 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 28, 2013.

Respectfully submitted,



Joseph Jensen
Site Vice President
St. Lucie Plant

Enclosure:

First 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

cc: Director, Office of Nuclear Reactor Regulation
NRC Regional Administrator
NRC Resident Inspector

Attachment 2

First 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 & 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.

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 August 19, 2013.

- Submittal of August 2013 6-Month submittal (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	
Submit Overall Integrated Plan	Feb 2013	Complete	
Submit 6 Month Updates:			
Update 1	Aug 2013	Complete	
Update 2	Feb 2014	Not Started	
Update 3	Aug 2014	Not Started	
Update 4	Feb 2015	Not Started	
Update 5	Aug 2015	Not Started	
FLEX Strategy Evaluation	Feb 2014	Started	
FLEX Strategy Walkthrough Demonstration	Feb 2014	Not Started	

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Perform Staffing Analysis	Oct 2014	Started	
Modifications:			
Unit 1 Implementation Outage	Mar 2015	Not Started	
Unit 2 Implementation Outage	Nov 2015	Not Started	
Storage:			
Storage Implementation	Mar 2015	Not Started	
FLEX Equipment:			
Procure On-Site Equipment	Oct 2014	Started	
Procedures:			
Create Site-Specific FSGs	Mar 2014	Started	
Create Maintenance Procedures	Mar 2014	Not Started	
Training:			
Develop Training Plan	June 2014	Not Started	
Training Complete	Mar 2015	Not Started	
Unit 1 FLEX Implementation	Mar 2015	Not Started	
Unit 2 FLEX Implementation	Nov 2015	Not Started	
Full Site FLEX Implementation	Nov 2015	Not 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" [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.

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. Location 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.

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 revised electrical connection figures. Note the 480 volt connections will now be made using procedurally controlled breakers rather than using transfer switches.

4.5 Boration Requirements for Shutdown Margin

The Reference 1 FLEX response (page 37 of 102) discussed boration requirements for shutdown margin. Boration requirements have been developed using a generic analysis to encompass future Fuel Cycles. The analysis determined that SIT injection during the 2-6 hr cooldown to 120 psia SG pressure provides sufficient boration to maintain 1% Shutdown Margin with All Rods In and Xenon free conditions for an RCS cold leg temperature of > 300F. Additional boration is required to maintain 1% Shutdown Margin with All Rods In and Xenon free conditions prior to further cooldown in Phase 3. A Charging Pump will be available in FLEX Phase 2 and 3.

4.6 RRC LUHS Pump

The Reference 1 FLEX response (page 68 of 102) indicated a pump would be provided from the Regional Response Center (RRC) 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 RRC pump is subject to final

procurement but is expected to be 5000 gpm at 150 psi. The LUHS Pump criteria mentioned in Reference 1 (page 72 of 102; 7162 gpm, 90 psi) will be altered to align with SAFER provided equipment and demonstrated to be sufficient for the purpose of reinstating Phase 3 Shutdown Cooling.

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 Open Items from Overall Integrated Plan and Draft Safety Evaluation

Overall Integrated Plan Open Item	Status
1 Seismic re-evaluation of site and submit to NRC Include insights in development of the FLEX integrated plan	Started
2 Flooding re-evaluation of site and submit to NRC Include insights in development of the FLEX integrated plan	Started
3 Establish location of RRC Staging Area (outside of 25 mile radius)	Started
4 Review FESB deployment routes for liquefaction	Not Started
5 Determine RRC staging area location and develop deployment routes to site	Started
6 Review Communications adequacy during Phase 2 staffing study	Not Started
7 Review Extend DC Shedding Approach regarding potential spurious actions	Started
8 Determine alternate plant locations for obtaining critical parameters remotely	Started
9 Review 480 VAC Diesel Generator FLEX Sizing	Complete. 350 kW DG/unit is required
10 Review 4.16 KVAC Diesel Generator RRC FLEX Sizing	Started
11 Analysis to maintain acceptable CR temperatures during ELAP, identify additional required strategies/ modifications	Not Started
12 Review EER operation up to 129°F for 72 hours or provide portable fans, initiate FSG/Time Validation as required	Not Started
13 Qualify U1 CST regarding tornado wind hazards, identify any required modifications	Started
14 Qualify RWT(s) regarding tornado wind hazards, identify any required modifications	Started
15 Review boron batching alternatives, determine approach, identify required modifications	Started
16 Perform analysis supporting survivability of one or more non-qualified water tanks	Started
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.	Started. See Section 4.6

Overall Integrated Plan Open Item	Status
18 Review boron precipitation during Phase 1&2 (pool boiling) and Phase 3 (final cooldown) for Mode 6&5 w/o SGs	Started
19 Evaluate establishment of contract or letter of agreement for water supply by tanker trucks	Not Started
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.	Started
21 Review potential modification for an 8" relief path to prevent U1 containment overpressure in M5	Started
22 Review safeguard equipment initiation with respect to M5 containment vacuum analysis	Started
23 Review LUHS Pumping System RRC FLEX Sizing	Started
24 Ensure FHB L-shaped door can be opened in the required time frame or identify alternate venting approach	Complete. L-shaped door can be opened in required time frame
25 Provide Technical Basis for WCAP-17601-P deviations to NRC during six month updates	Ongoing. See Section 4.1
26 Time validation study for completing DC load shedding within specified time period	Not Started
27 Time validation study for Control Room ventilation	Not Started
28 Time validation study for Battery Room ventilation	Not Started
29 Time validation study for Electrical Equipment Room ventilation	Not Started
30 Time validation study for FHB ventilation and the deployment and staging of SFP makeup/spray capability	Not Started
31 Time validation study for 480 VAC diesel generator to the station 480 VAC bus or directly to designated equipment	Not Started
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	Not Started
34 Time validation study for CST FLEX pump deployment	Not Started
35 Time validation study for SG FLEX pumps for CST/AFW	Not Started
36 Time validation study for boration to establish Cold Shutdown Margin (M1-4 w/SGs)	Not Started
37 Time validation study for establishing power to SIT MOVs to isolate	Not Started
38 Time validation study for establishing RWT gravity flow path to RCS (include mid-loop conditions)	Not Started
39 Time validation study for SG FLEX pump for RWT/RCS	Not Started
40 Time validation study for batch boration to maintain borated water supply (M6 & 5 w/o SGs)	Not Started
41 Time validation study for venting containment in mid-loop conditions	Not Started
42 Time validation study for isolating Fuel Transfer Tube path.	Not Started
43 Time validation study for establishing containment vent path.	Not Started
44 Time validation study for isolating CCW Flow to Containment Fan Cooler Penetrations	Not Started

Overall Integrated Plan Open Item	Status
45 Time validation study for hoses for SFP makeup/spray in Phase 1	Not Started
46 Time validation study for SFP FLEX pump	Not Started
47 Time validation study for refueling FLEX equipment	Not Started
48 U1 & U2 Construct FLEX Equipment Storage Building Storage Building	Started
49 U1 & U2 Install external satellite phone antenna and docking stations for TSC & EOF	Started
50 U1 & U2 Install new cabling with disconnects for MCC supplying battery chargers. Alternate connections line side	Closed - Not Applicable See Section 4.5
51 U1 & U2 Change essential instrumentation source to vital 120VAC power panel	Started
52 U1 & U2 Install cabling to Class 1E 480 VAC Switchgear A&B for primary and alternate connection of 480 VAC FLEX DG	Started
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 Install cabling/disconnects for Class 1E 4.16 KVAC busses A&B	Started.
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	Not Started
57 U1 Install modifications for CST as required by tornado wind hazard analysis	Not Started
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	Started
60 U1 & U2 Install 2 connections per CST for refilling the CSTs via CST FLEX pump	Started
61 U1 & U2 Install 2 connections per CST for suction point for SG FLEX pump	Started
62 U1 & U2 Install 2 connections on AFW lines downstream of MVs for SG FLEX pump to feed both steam generators.	Started See Section 4.3
63 U1 & U2 Install single connections for taking suction on non-qualified tanks	Started
64 U1 & U2 Install modifications for RWT as required by tornado wind hazard analyses	Not Started
65 U1 & U2 Install RWT cross-connect sized for gravity fill as required by tornado wind hazard analyses	Started
66 U1 & U2 Install 2 connections per RWT for suction point for SG FLEX pump/CST FLEX Pump	Started
67 U1 & U2 Install 2 connections per RWT for CST FLEX pump discharge	Started
68 U1 & U2 Install 2 connections on LPSI pump discharge piping for RCS cold leg injection via FLEX pump	Started
69 U1 & U2 Install 2 connections on LPSI pump suction piping (Mode 6 with Rx head off/SG primary manways off)	Started

Overall Integrated Plan Open Item	Status
70 U1 Provide containment vent path to ensure sufficient RWT gravity flow for RCS makeup	Started
71 U1 & U2 Missile protect ICW line I-2 ½-CW-178 located on the exterior of U1 & U2 FHBs	Not Started
72 U1 & U2 Install ICW manifolds with hose connections and isolation valves for LUHS	Started.
73 New procedure for use of Satellite communications	Started
74 FSG: Establishing FLEX Control Room Ventilation	Started
75 FSG: Extended DC bus load shedding	Started
76 FSG: Damage assessment following event	Started
77 FSG: Accessibility considerations for personnel to enter areas to perform local manual actions	Started
78 FSG: Deployment and staging of portable equipment (Onsite and Offsite)	Started
79 FSG: Operation of the FLEX equipment (startup, shutdown, operational monitoring, minor troubleshooting)	Started
80 FSG: Operation of DFO transfueller, filling from U2 DFO tanks, filling FLEX portable equipment, etc	Started
81 FSG: Restore AC power or alternate power sources for specific plant equipment	Started
82 FSG: Lighting and communications necessary for ingress and egress to plant areas for deployment of FLEX strategies	Started
83 FSG: Deployment and operation of 480 VAC diesel generator	Started
84 FSG: Power restoration with ESF signals present due to de-energized instrument inverters	Started
85 FSG: Repowering selected station loads to support long term safety functions (load management)	Started
86 FSG: Operation of ADVs with backup compressed gas	Started
87 FSG: Deployment and operation of CST FLEX pump	Started
88 FSG: Maintaining flow to SGs, with identified backup sources and criteria for transferring between sources	Started
89 FSG: Deployment and operation of SG FLEX pump	Started
90 FSG/EOP-10 to address for FLEX RCS cooldown (cooldown, solid plant conditions, SIT isolation, Attach 1B)	Not Started
91 FSG: Guidance for SIT injection and isolation	Started
92 FSG: Establish RWT gravity flow to RCS and criteria for transfer to SG FLEX pump	Started
93 FSG: Guidance for boron mixing	Not Started
94 FSG: Deployment and operation of SFP FLEX pump	Started
95 FSG: Guidance for isolation of CCW penetrations for CFC Coolers	Not Started
96 FSG: Guidance for venting containment in M5/6 Once-Through-Cooling with LUHS (include CS Lockout)	Started
97 FSG: Deployment and operation of RRC 4.16 KVAC generator	Not Started
98 FSG: Deployment and operation of RRC pumping system for ICW	Not Started
99 FSG: Deployment and operation of SG FLEX pump: injection	Started

Overall Integrated Plan Open Item	Status
for vapor bound LPSI pump	
99A FSG: Transition from FLEX Equipment to Plant Equipment	Started
100 Implement FLEX program stipulating the required administrative controls to be implemented	Started

Alpha suffixes indicate additional items beyond those identified in Reference 1

Draft Safety Evaluation Open Item	Status
Draft NRC Safety Evaluation has not been received.	N/A

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

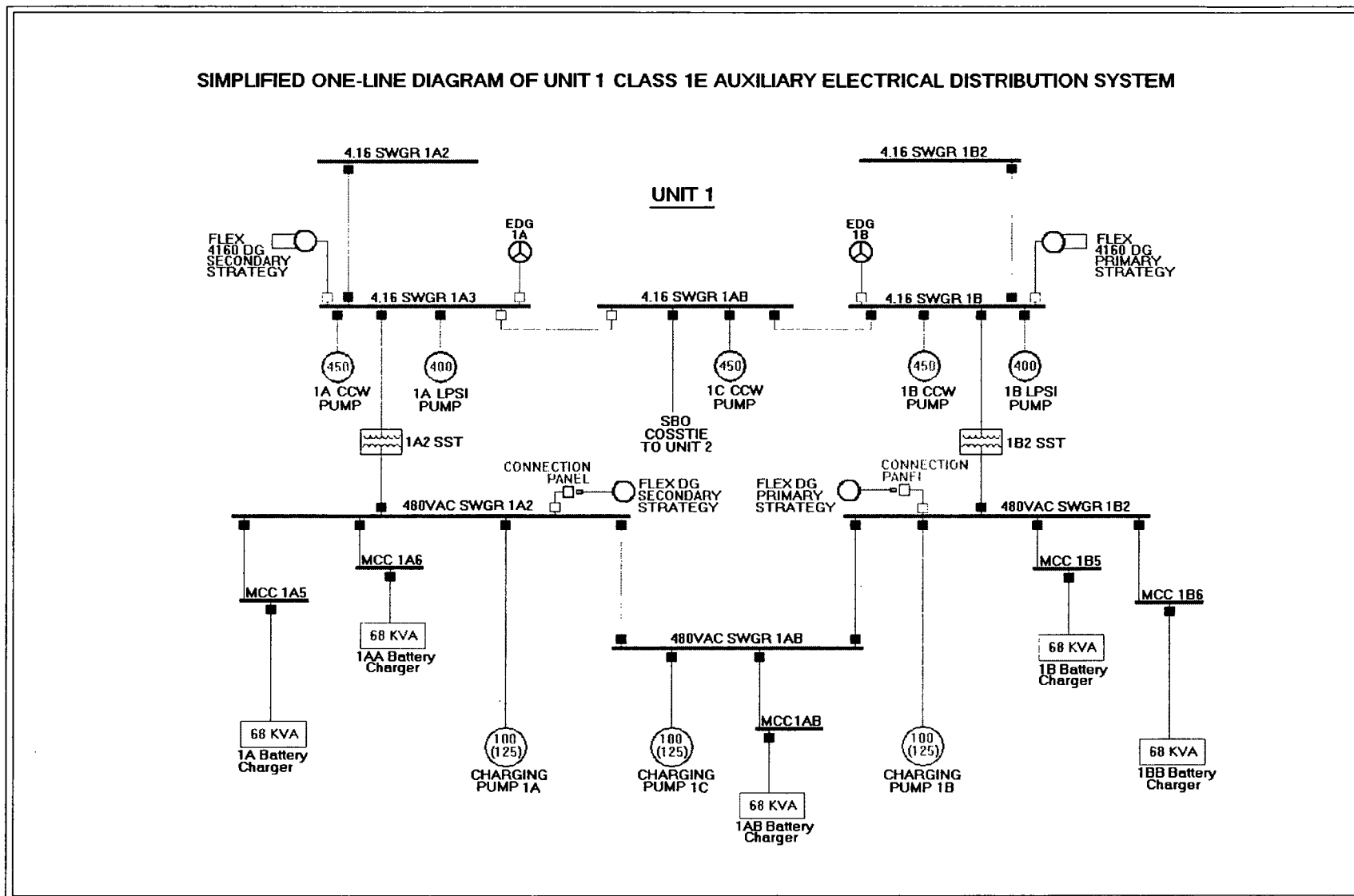


Figure 1 PSL FLEX Electrical Connections (Unit 1) (Rev 0A)

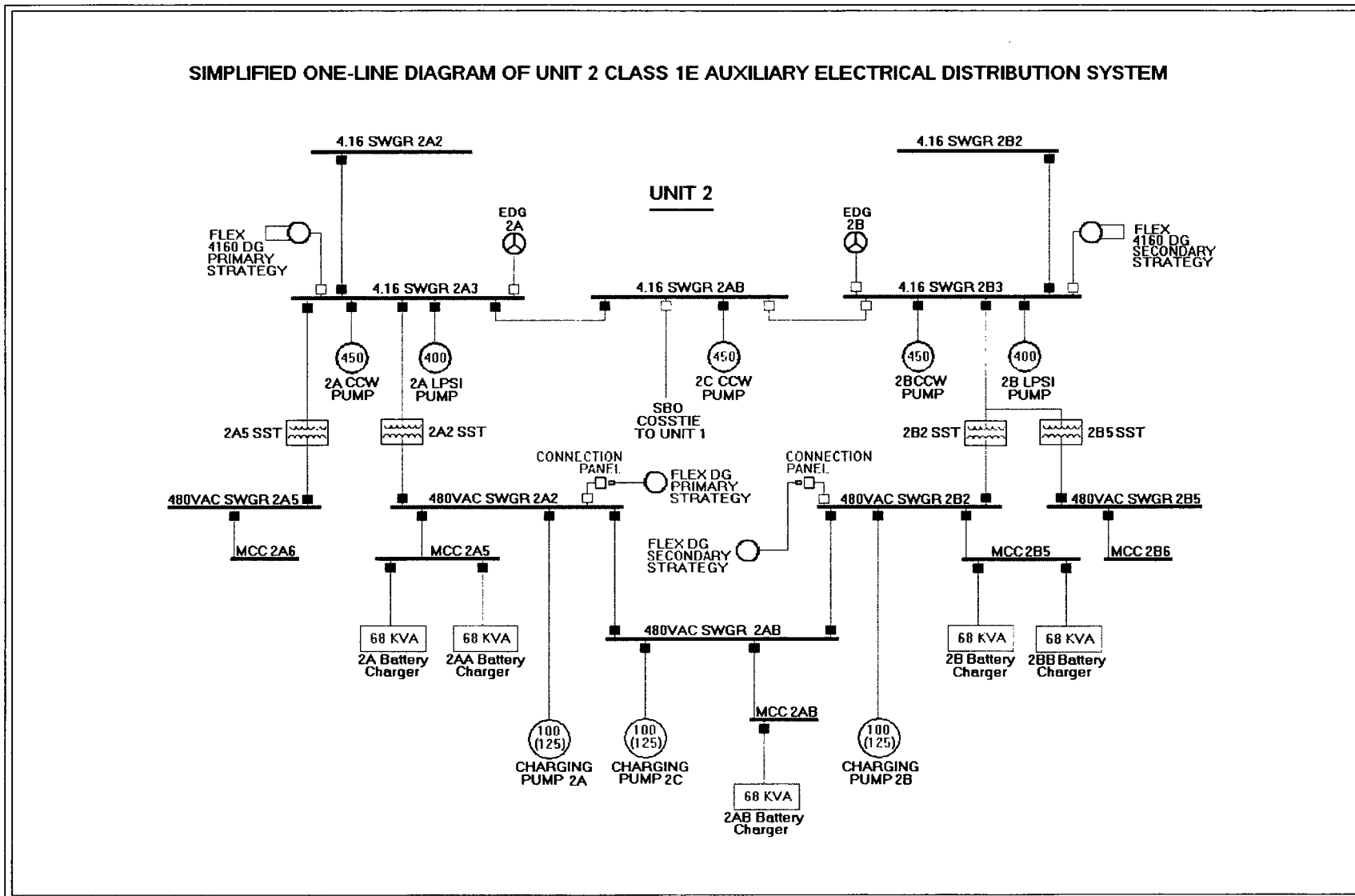
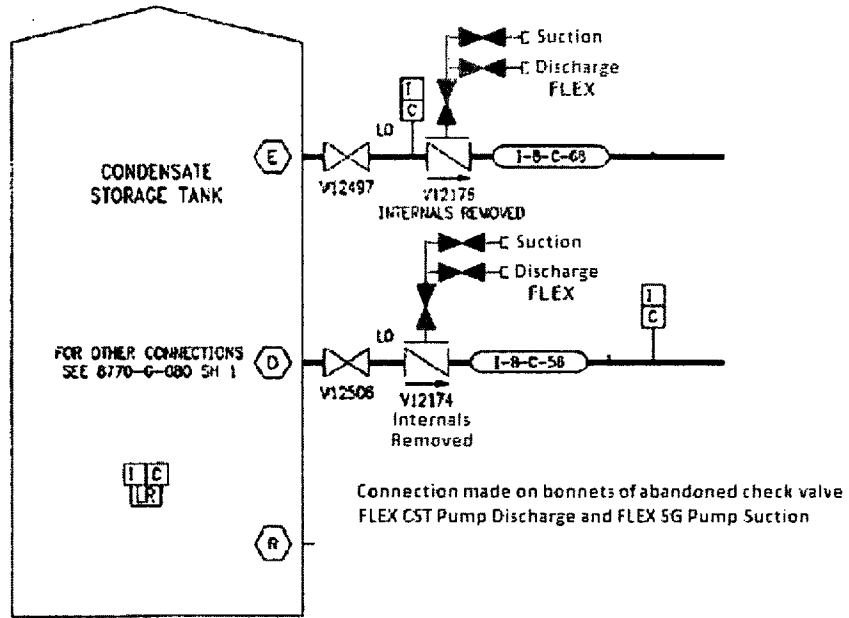
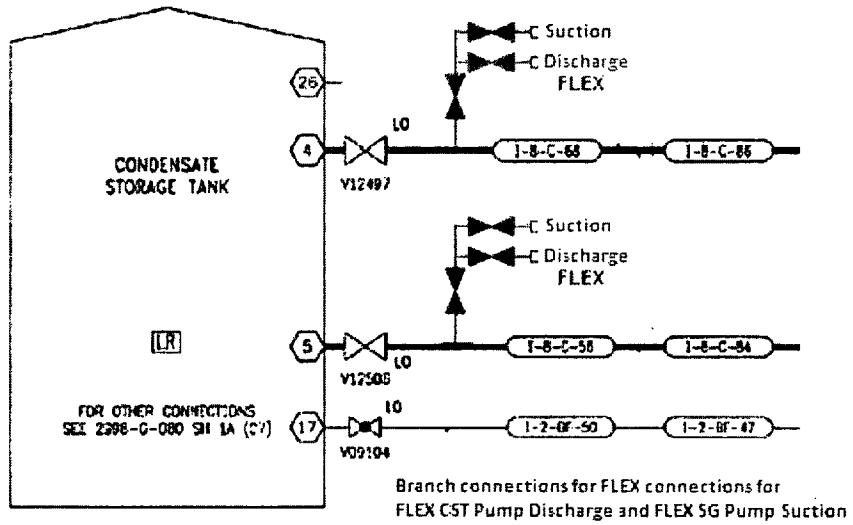


Figure 2 PSL FLEX Electrical Connections (Unit 2) (Rev 0A)

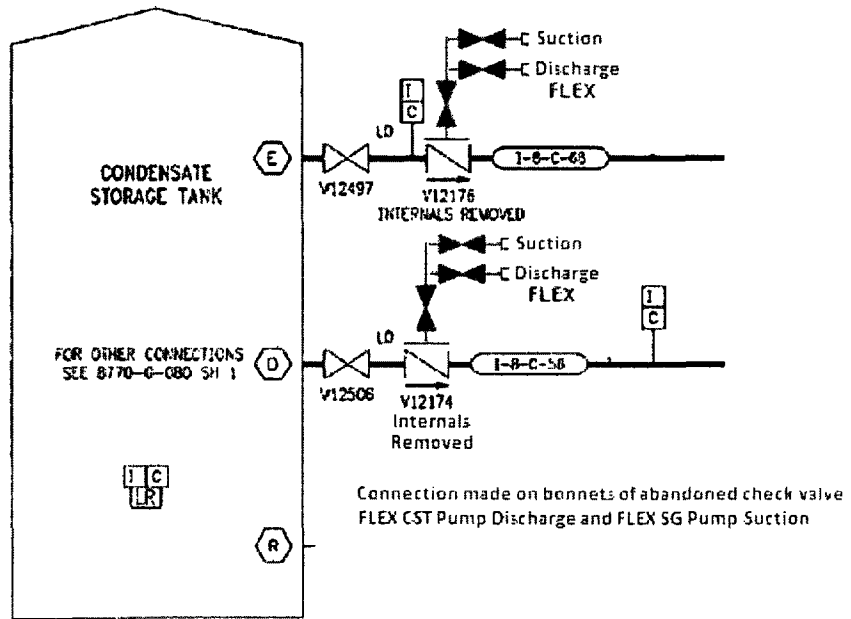


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8770-G-080 Sh. 4

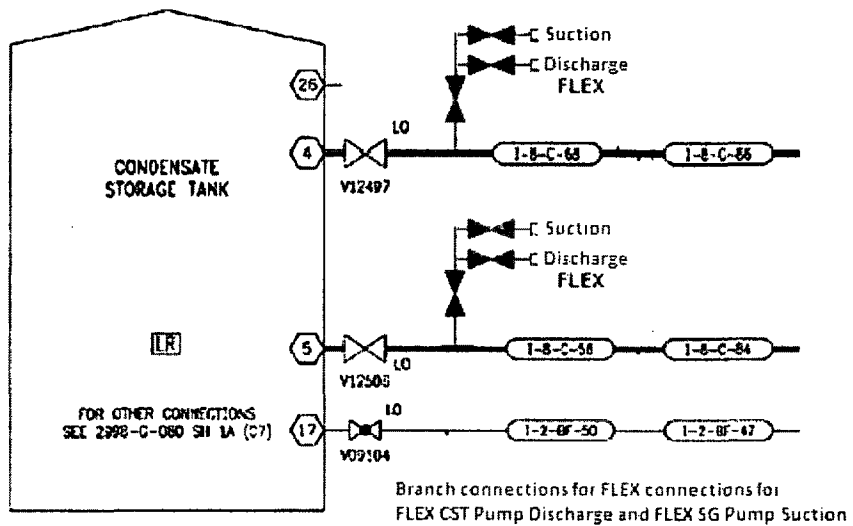


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Figure 11 Connections for CST FLEX Pump Suction on CSTs (Rev 0A)



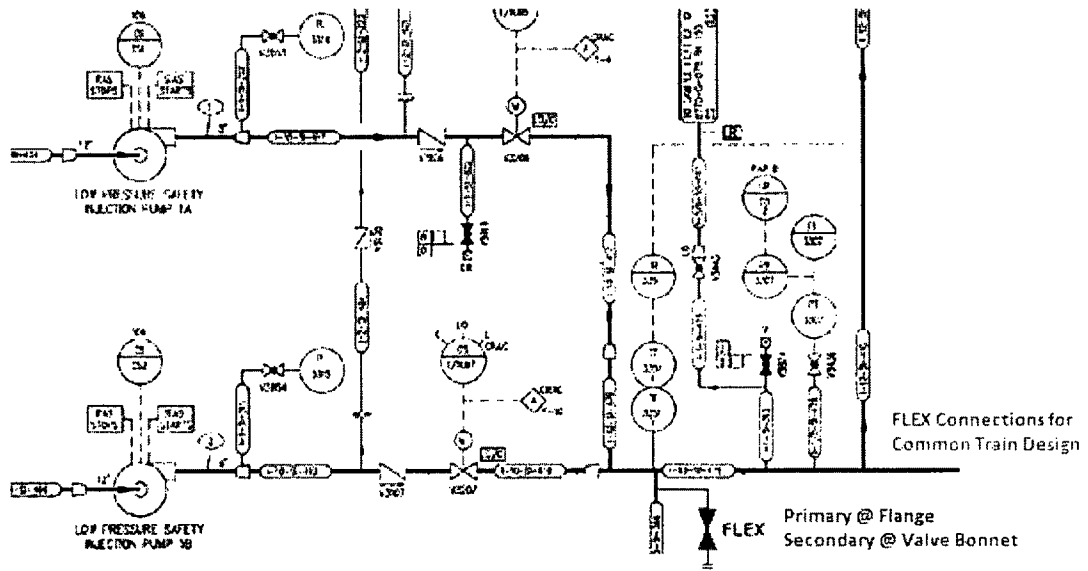
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Portion of Drawing
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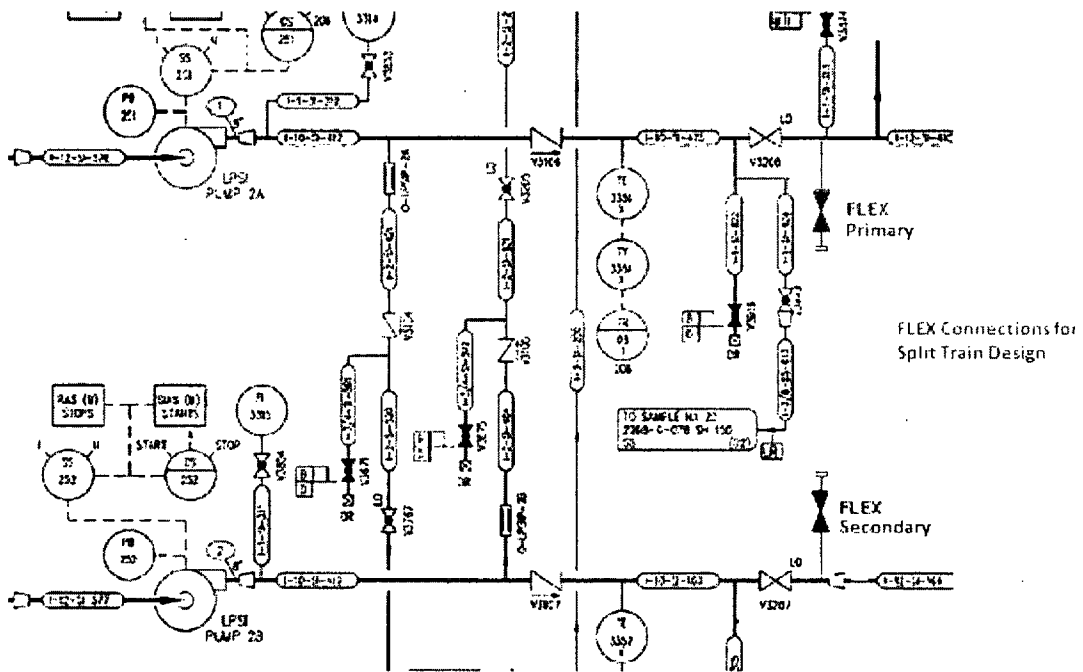
Figure 12 Connections for CST/SG FLEX Pump Discharge for CST Fill (Rev 0A)

Install a 3" – 4" isolation valve and hose connection on the LPSI 1A/1B and LPSI 2A/2B discharge piping. For RCS cold leg injection with FLEX pump drawing suction from the RWT.



Portion of Drawing

8770-G-078 Sh. 130B



Portion of Drawing

2998-G-078 Sh. 130B

Figure 14 Connections for SG FLEX Pump Discharge to LPSI Pump Discharge Lines (Rev 0A)

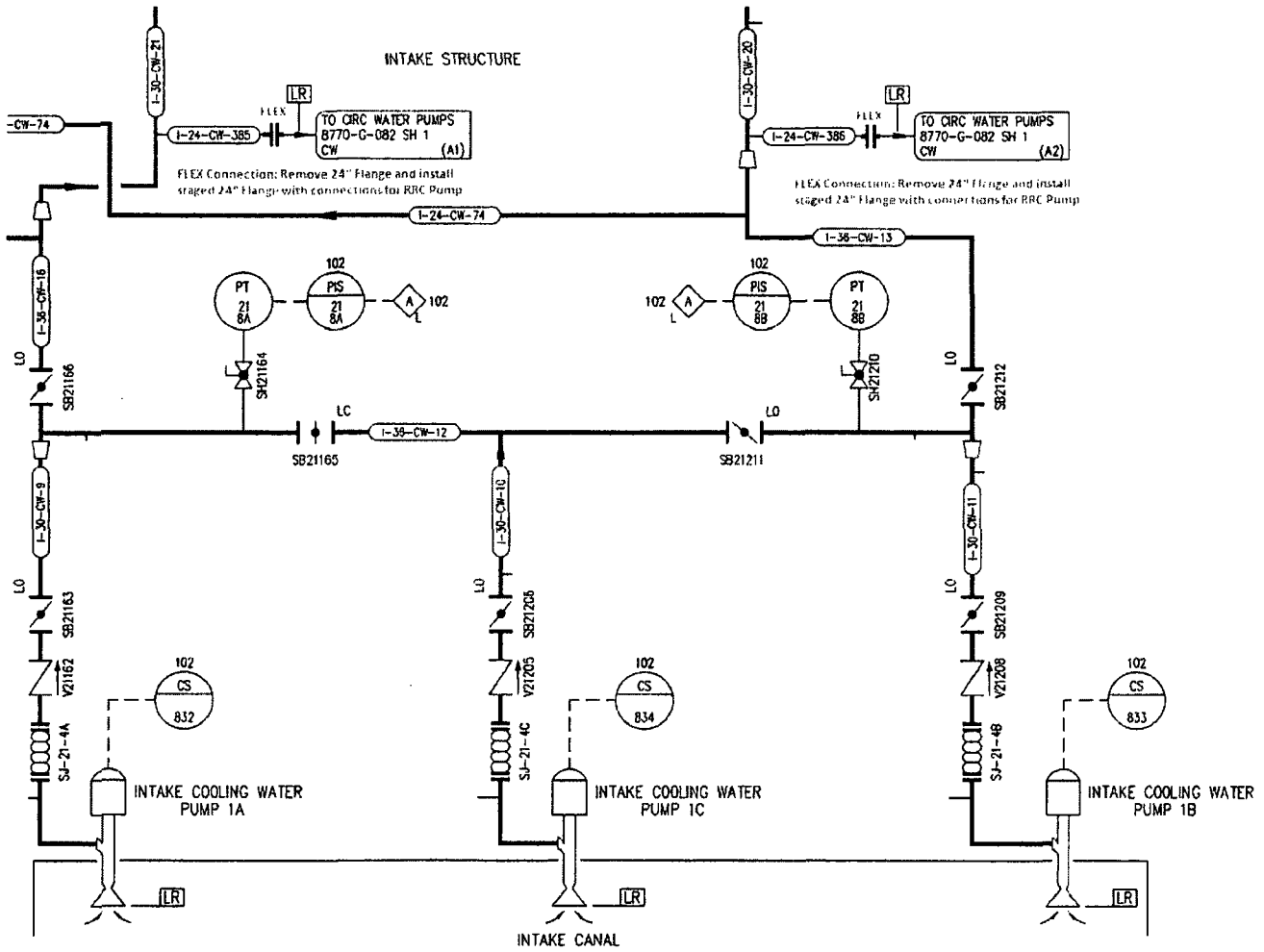


Figure 17 Connections for RRC LUHS Pumping System (Unit 1) (Rev 0A)

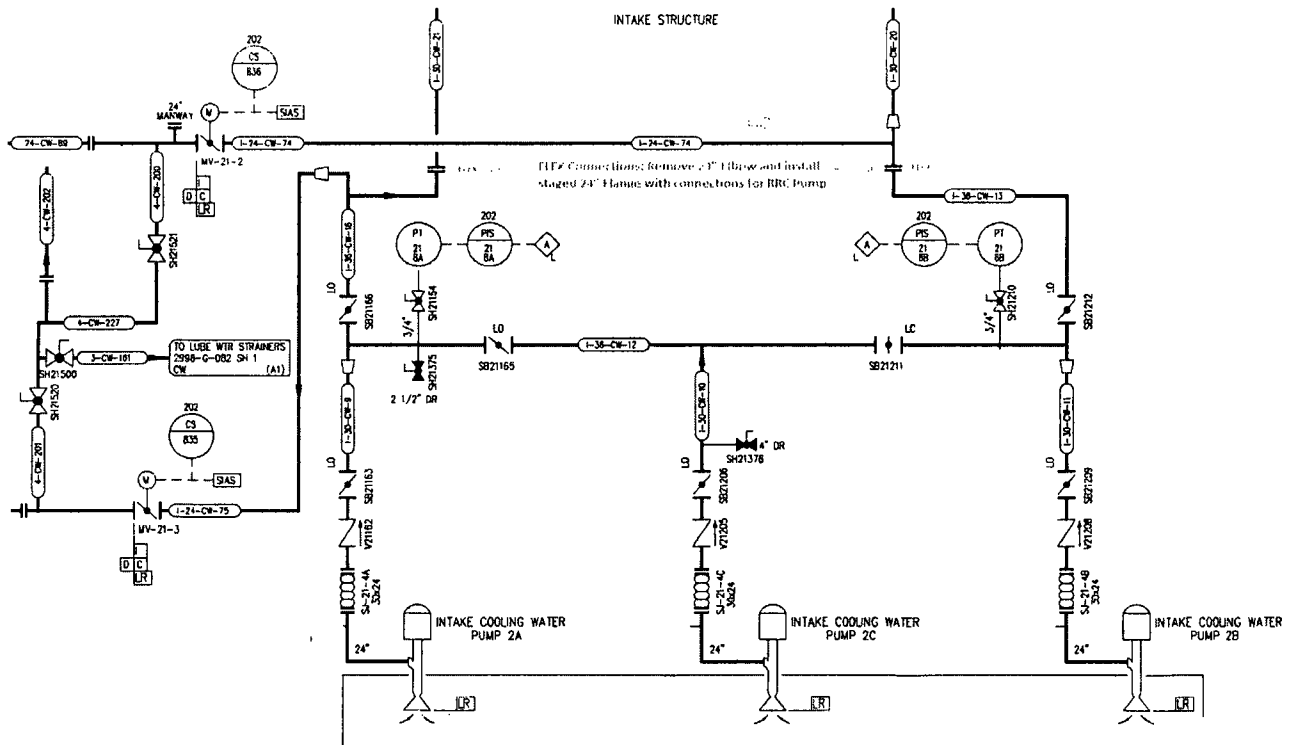


Figure 18 Connections for RRC LUHS Pumping System (Unit 2) (Rev 0A)

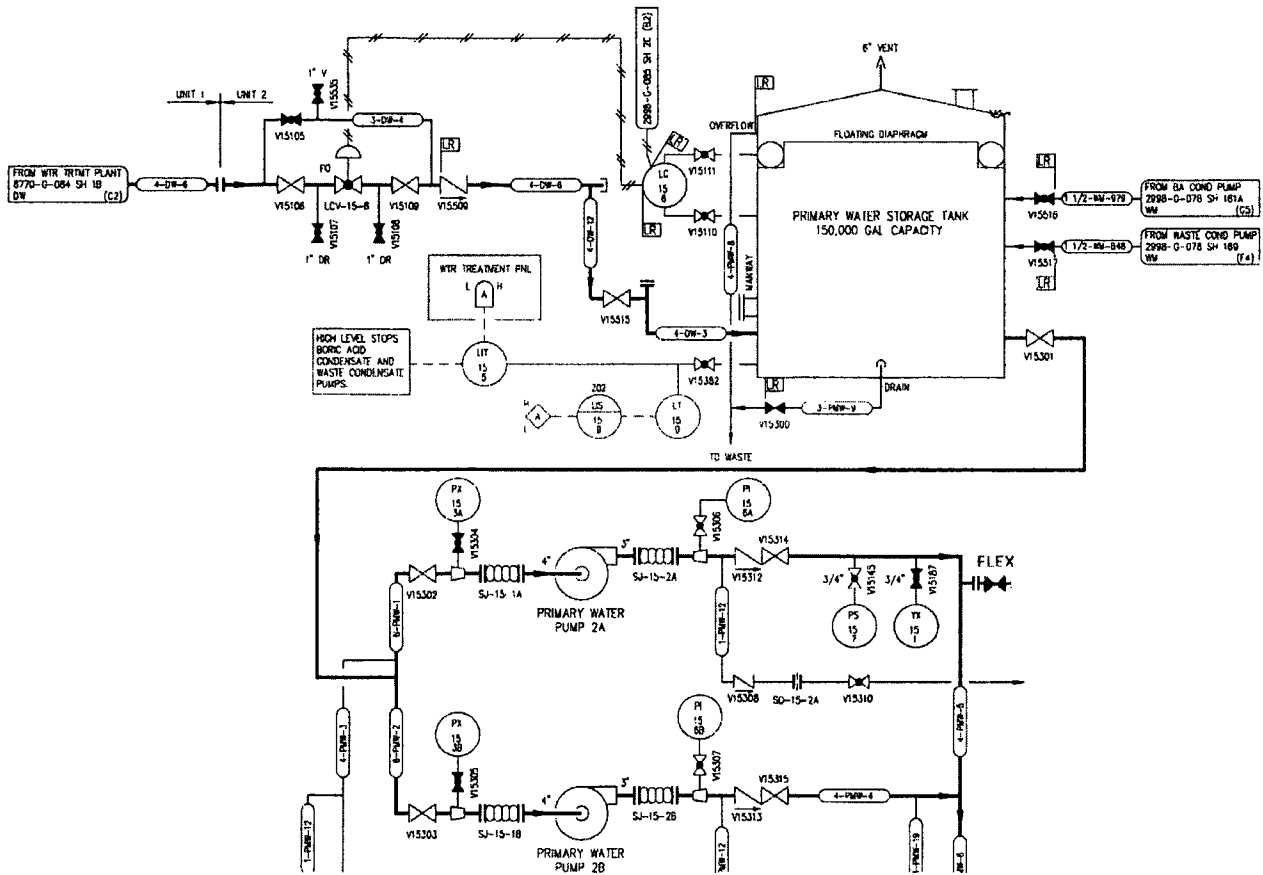


Figure 21 Connections for CST/SG FLEX Pump Suction From PWSTs (Unit 2, Unit 1 Similar) (Rev 0A)