



August 28, 2013
RC-13-0123

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

Dear Sir/Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
SOUTH CAROLINA ELECTRIC & GAS COMPANY'S FIRST SIX-MONTH
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) (TAC NO. MF2338)

- 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
 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
 3. NEI 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision 0, dated August 2012
 4. South Carolina Electric & Gas Company'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 17, 2012
 5. South Carolina Electric & Gas Company's Overall Integrated Plan as Required by 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

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 1) to South Carolina Electric & Gas Company (SCE&G). Reference 1 was immediately effective and directs SCE&G to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling

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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 initial status report 60 days following issuance of the final interim staff guidance (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 2 endorses industry guidance document NEI 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the SCE&G initial status report regarding mitigation strategies. Reference 5 provided the SCE&G overall integrated plan.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Reference 3 provides direction regarding the content of the status reports. The purpose of this letter is to provide the first six-month status report pursuant to Section IV, Condition C.2, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The attached report provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

This letter contains no new regulatory commitments. If you have any questions regarding this report, please contact Bruce L. Thompson at (803) 931-5042.

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

8-28-2013

Executed on

Tom D. Gatlin

Thomas D. Gatlin

TS/TDG/wm

Attachment I SCE&G's 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

Attachment II Conceptual Sketches of Strategies

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**VIRGIL C. SUMMER NUCLEAR STATION UNIT 1 .
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12**

ATTACHMENT I

**SOUTH CAROLINA ELECTRIC & GAS COMPANY'S 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

South Carolina Electric & Gas Company (SCE&G) developed an Overall Integrated Plan (Reference 1 in Section 8), documenting the diverse and flexible strategies (FLEX), in response to Reference 2. 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), and are current as of August 12, 2013.

The development of the FLEX Strategies have been completed and provided as input to the scoping of the FLEX Modification Engineering development.

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.

Validation: No RAIs have been issued to Virgil C. Summer Nuclear Station (VCSNS) relative to the FLEX Overall Integrated Plan.

Walk-throughs or Demonstration(s) – Completion of training implementation precedes completing the walk-throughs and demonstration of the FLEX Support Guidelines scheduled for August 2015.

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	
Update 6	Feb 2016	Not Started	
Update 7	Aug 2016	Not Started	
FLEX Strategy Evaluation	Aug 2013	Complete	
Walk-throughs or Demonstrations	Aug 2015	Not Started	
Perform Staffing Analysis	Jul 2014	Not Started	

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Modifications:			
Modifications Evaluation	Dec 2013	In Progress	
Unit 1 Design Engineering Evaluation	Jan 2015	In Progress	
Unit 1 Implementation Outage	Nov 2015	Not Started	
Storage:			
Design Storage Building	Jul 2014	In Progress	
Storage Implementation	Jul 2015	In Progress	
FLEX Equipment:			
Procure On-Site Equipment	Oct 2014	In Progress	
Develop Strategies with RRC	Nov 2014	Not Started	
Install Off-Site Delivery Station (if Necessary)	Aug 2013	Complete	
Procedures:			
PWROG issues NSSS-specific guidelines	May 2013	Complete	
Create Site-Specific FSGs	Feb 2014	Not Started	Feb 2015
Create Maintenance Procedures	Oct 2014	Not Started	
Training:			
Develop Training Plan	Jan 2015	Not Started	
Training Complete	Jul 2015	Not Started	
Unit 1 FLEX Implementation	Nov 2015	Not Started	
Submit Completion Report	Jan 2016	Not Started	

4 Changes to Compliance Method

This section describes and documents changes to the information provided in the SCE&G Overall Integrated Implementation Plan that meet NEI 12-06 compliance methods. Each change is listed with the justification provided.

In Section 10: Maintain Core Cooling & Heat Removal:

1. Change: In subsection, *“Maintain Core Cooling & Heat Removal: Phase 1 Details: Key Reactor Parameters,”* add “• Reactor Vessel Level Indication System (RVLIS)” to the Additional Instrumentation list.

Justification: This change adds RVLIS to the list of key reactor parameters.

2. Change: In subsection, *“Maintain Core Cooling & Heat Removal: PWR Portable Equipment Phase 2, SG Makeup/FLEX Feed Header,”* in the first paragraph, change “...moving the pump from its nearby protected storage location and connecting its suction to the CST” to read

“...moving the pump from its nearby protected storage location (if necessary) and aligning the suction connection to the CST...”

Justification: This change reflects enhancing VCSNS strategy by storing the FLEX Steam Generator (SG) Makeup Pump in its deployment location adjacent to the suction and discharge connections in a protected structure. This also reflects the diverse Condensate Storage Tank (CST) suction paths available to the FLEX SG Makeup Pump.

3. Change: In subsection, “*Maintain Core Cooling & Heat Removal: Phase 2 Details: Identify modifications,*” in the fourth bullet, change “at least 500 gallons per minute” to read “approximately 1500 gallons per minute...” and add “, feed an RBCU,” after “This water can be used to fill the CST.”

Justification: This change reflects enhancing size of the FLEX Service Water Pond (UHS) Pump to provide adequate flow to diverse discharge paths.

In Section 11: Maintain RCS Inventory Control:

4. Change: In subsection, “*Maintain RCS Inventory Control: PWR Portable Equipment Phase 2,*” change “It is preliminarily planned to store the RXMU FLEX pump...” to read “The mechanical piping modifications and planned storage location for the RXMU FLEX pump are...”

Justification: This change identifies the location of the mechanical modification and provides a more definitive location for the Reactor Makeup (RXMU) FLEX pump.

5. Change: In subsection, “*Phase 2 Deployment Conceptual Design,*” under “*Strategy,*” change “Deployment of the stored backup DG will be from a FLEX storage facility, assumed to be inside the protected area of the station. The backup DG will be transported to the west side of the station, near the installed ASI DG.” to read “Power to the pumps will be from the EEB DG. As alternate power supply will be provided from the FLEX DG via stored cable.”

Justification: This change reflects the revised power supply schemes for the Alternate Seal Injection (ASI) pump and RXMU Pump.

In Section 12: Maintain Containment:

6A. Change: In subsection, “*Maintain Containment: PWR Portable Equipment Phase 3:*” in the *Primary Strategy* paragraph, remove the paragraph starting with “The primary strategy is...” and replace with “The primary strategy is to provide cooling water flow to one train of RBCU cooling, utilizing the FLEX UHS Pump at Location #1 or #2 (Figure 6). Permanent connections will be made on both “A” and “B” train common Service Water (SW) supply headers that feed the RBCUs. The discharge of the direct-engine-driven FLEX UHS pump will be connected to either the “A” or “B” train SW connection via flexible hoses to provide the needed cooling water flow. For the train receiving cooling water, one of the two RBCU slow-speed fan motors will be re-powered from a portable electric-diesel-generator.”

6B. Change: In subsection, "*Phase 3 Deployment Conceptual Design*," in the first row of the table in the *Strategy* column remove "...and Transfer Pumps..."; and in the *Modifications* column, change the text starting with "Fire hose/hardened..." to read "Hardened Connections/Fire Hose to "A" or "B" Service Water Headers to the RBCUs, on the 436 foot elevation of the Intermediate Building and Auxiliary Building, respectively for "A" and "B" trains of SW."

Justification: The above changes to this section provide a revision to the source of water to the Reactor Building Cooling Units (RBCUs) from the FLEX Feed Header (the original concept) to a direct pumping from the Service Water (SW) Pond. Removing the RBCU cooling water from the FLEX Feed Header substantially reduces the size of the header piping and prioritizes the preferentially cleaner sources of water for use in steam generator and Spent Fuel Pool (SFP) makeup.

In Section 13: Maintain Spent Fuel Cooling:

7A. Change: In subsection, "*Maintain Spent Fuel Cooling: PWR Portable Equipment Phase 2*," after the words "supplying water to the pool..." add "utilizing the FLEX Feed Header permanent connection and FLEX SG Feed Pump (Figure 8)"

7B. Change: In subsection, "*Phase 2 Details: Identify modifications*," delete the text starting with "No New Modifications..." and replace with "Modifications to install a FLEX Feed header so that low pressure water sources can be connected to feed the Spent Fuel Pool through a hardened connection."

Justification: The above changes to this section provide clarification that the primary strategy to provide SFP makeup is from the FLEX Feed Header utilizing the FLEX SG Feed Pump.

In Section 14: Safety Function Support:

8. Change: Change "250 KW" to read "300 kilowatts" throughout the section.

Justification: This change revises the size of the FLEX DG and Electrical Equipment Building (EEB) DGs.

In Attachment 3: FLEX Portable Equipment

9. Change: Change "250 KW plus" to read "300 kilowatts" throughout the section.

Justification: This change revises the size of the FLEX DG and EEB DGs.

10. Change: In subsection, "*PWR Portable Equipment Phase 2*," in the Two (2) FLEX SG Makeup Pumps row under column *Performance Criteria*, change "300 plus gallons per minute at 300 plus pounds per square inch gauge" to read "500 plus gallons per minute at 500 plus

pounds per square inch gauge”; and under column *Maintenance/PM requirements*, change “...in FLEX Storage Building” to read “...in Containment Access Ramp Storage”.

Justification: This change revises the size and clarifies the storage location for the FLEX SG Makeup Pumps.

11. Change: In subsection, “*PWR Portable Equipment Phase 2*,” in the Two (2) FLEX UHS Pumps row under column *Performance Criteria*, change “...500 plus gallons per minute...” to read “...1500 plus gallons per minute...”; and under column *Maintenance/PM requirements*, change “in Services Water Pump House” to read “(1) in ERB & (1) in FLEX Storage Building”.

Justification: This change revises the storage location for the FLEX UHS Pumps.

12. Change: In subsection, “*PWR Portable Equipment Phase 2*,” in the One (1) RXMU FLEX Pump row under column *Performance Criteria*, change “Portable pumps or fire truck with capacity of 500+ gallons per minute at 150+ pounds per square inch gauge” to read “40-60 gallons per minute at 1500 plus pounds per square inch gauge”; and under column *Maintenance/PM requirements*, change “... (1) in ERB & (1) in FLEX Storage Building” to read “... Stored in the Auxiliary Building”.

Justification: This change revises the size and clarifies the storage location for the RXMU FLEX Pump.

13. Figures

Figure 1 – Conceptual Phase 1&2 Coping for SG Feed Makeup was revised and reissued in Attachment II of this submittal. The significant changes to the figure are as follows: (1) removed reference to RBCUs located on the FLEX Feed Header and (2) changed the connection labeled “to SFP” to show it as a permanent connection.

Figure 2 – Conceptual Diverse Strategy for Supplying the FLEX Feed Header was revised and reissued in Attachment II of this submittal. The significant changes to the figure are as follows: (1) identified the approximate deployment locations of the FLEX SG Feed Pumps; (2) identified that a booster pump is needed to provide suction to the North FLEX Feed Header when aligned to the CST; (3) identified the protected suction from the CST via Emergency Feedwater (EFW) as a strategy for the East FLEX Feed Header; and (4) identified clarified the location that other water sources would feed the FLEX SG Feed Pump suction.

Figure 4 – Conceptual Strategy for Reactor Makeup and Reactivity Control was revised and reissued in Attachment II of this submittal. The significant changes to the figure are as follows: (1) reflected the size of the EEB DGs as 300 kW; (2) added the conceptual power source from the FLEX DG; and (3) added a reference to Figures 5 and 10 for clarity.

Figure 5 – Conceptual Coping Strategies for Support Functions from EEB was revised and reissued in Attachment II of this submittal. The significant changes to the figure are as follows:

(1) reflected the size of the EEB DG as 300 kW; (2) added additional details of transfer switches and connections; and (3) added the ASI/RXMU FLEX Pump power supply from the FLEX DG via 1DA2Y and temporary cable.

Figure 6 – Conceptual FLEX UHS Water Supply Routing to Spent Fuel Pool / Containment Cooling was revised and reissued in Attachment II of this submittal. The significant changes to the figure are as follows: (1) changed the location of the FLEX UHS Pump suction from the SW Pump House; (2) identified the diverse locations for FLEX UHS Pump suction; and (3) changed the title to remove reference to “Spent Fuel Pool”.

Figure 7 – Conceptual FLEX UHS Pump was deleted since the strategy for FLEX UHS Pump suction are not longer in the SW Pump House. Figure 6 provides the revised FLEX UHS Pump deployment locations.

Figure 8 – Conceptual FLEX Feed Header Layout was revised and reissued in Attachment II of this submittal. The significant changes to the figure are as follows: (1) reflected the removal of connection to the RBCUs from the FLEX Feed Header and (2) identified the storage and deployment location of the east FLEX SG Feed Pump in the CAR Storage area.

Figure 9 – Conceptual Phase 1 Coping Strategy to Repower Battery Chargers was revised and reissued in Attachment II of this submittal. The significant changes to the figure are as follows: (1) added additional electrical feeds from the FLEX DG to the RBCU Fans, ASI Pump, and RXMU FLEX Pump; and (2) added a reference to Figure 10 for clarity.

Figure 10 – Conceptual Coping Strategy to Repower RBCU Fan(s), Batteries, ASI/RXMU FLEX Pump was added in Attachment II of this submittal to provide clarity of the proposed power supplies for Safety Function Support. The new figure: (1) provides a schematic of the electrical feeds from the FLEX DG to the RBCU Fans, ASI Pump, and RXMU FLEX Pump and (2) includes a reference to Figure 9 for clarity.

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

SCE&G expects to comply with the order implementation date, and no relief/relaxation is required at this time.

6 Open Items from Overall Integrated Plan and Draft Safety Evaluation

None

7 Potential Draft Safety Evaluation Impacts

There are no potential impacts to the Draft Safety Evaluation identified at this time.

8 References

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

1. SCE&G'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. 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.

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ATTACHMENT II

CONCEPTUAL SKETCHES OF STRATEGIES

Figure 1 – Conceptual Phase 1&2 Coping for SG Feed Makeup

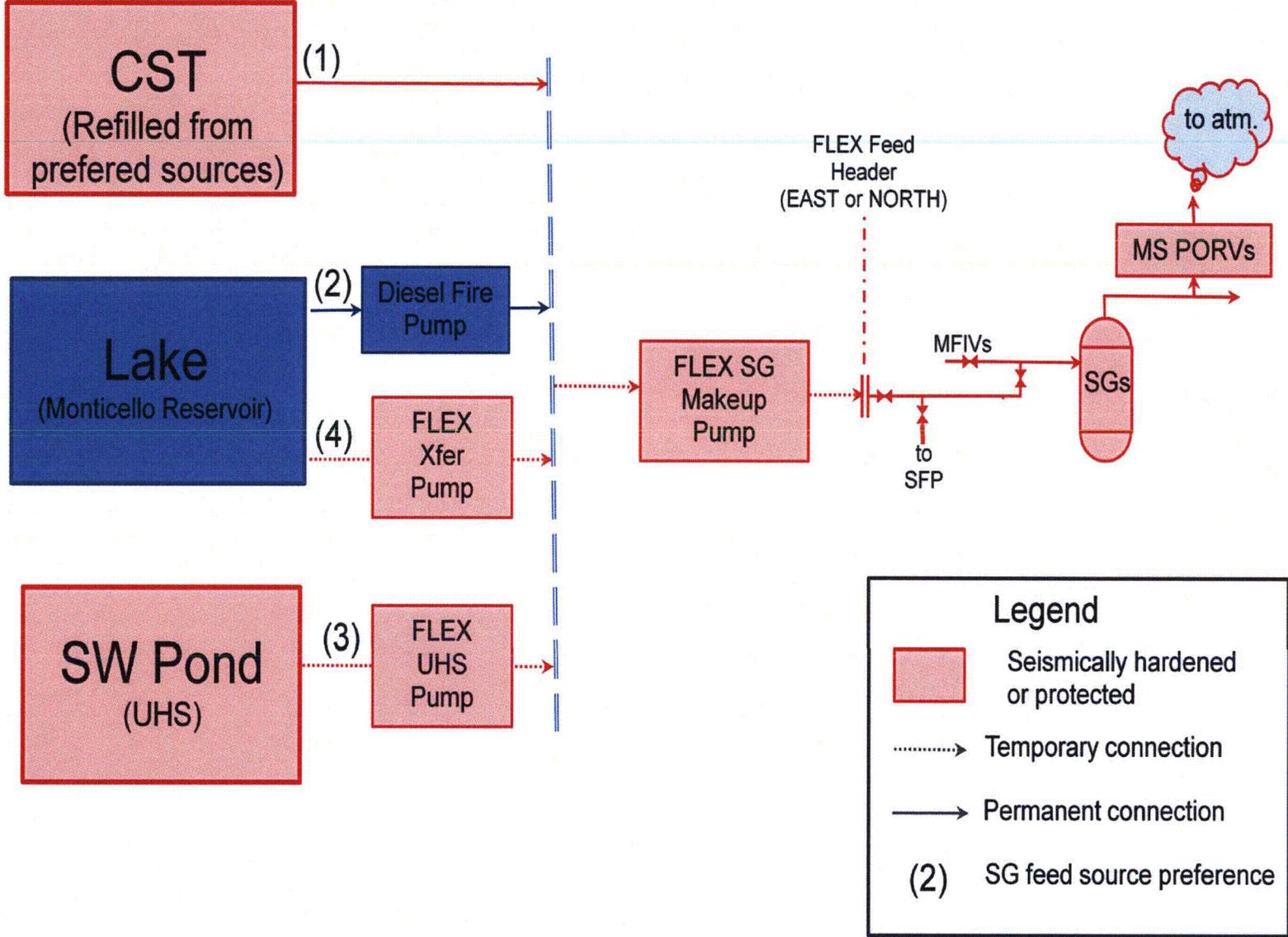


Figure 2 – Conceptual Diverse Strategy for Supplying the FLEX Feed Header

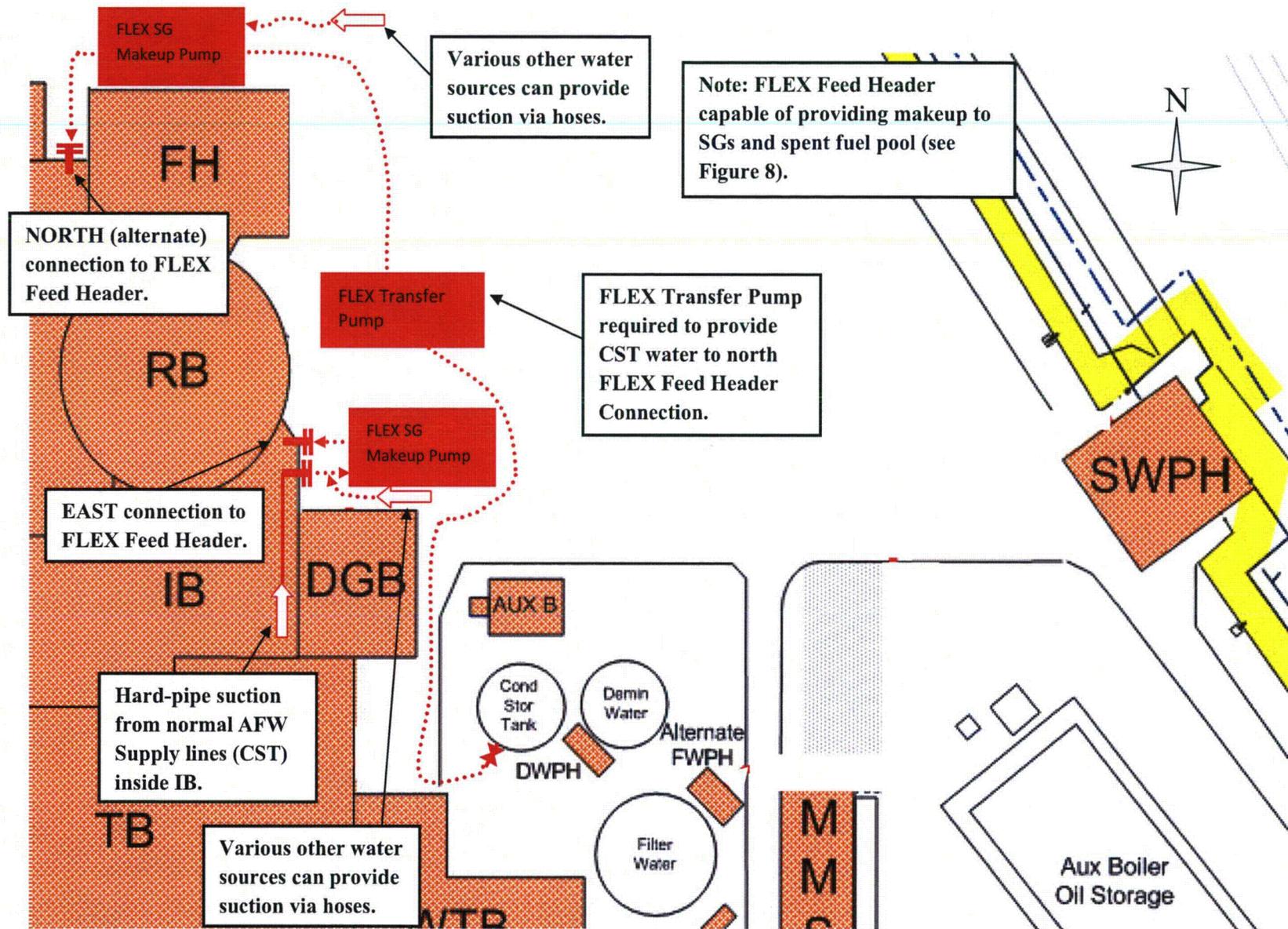


Figure 3 – Conceptual Phase 2 Coping for Refilling of CST

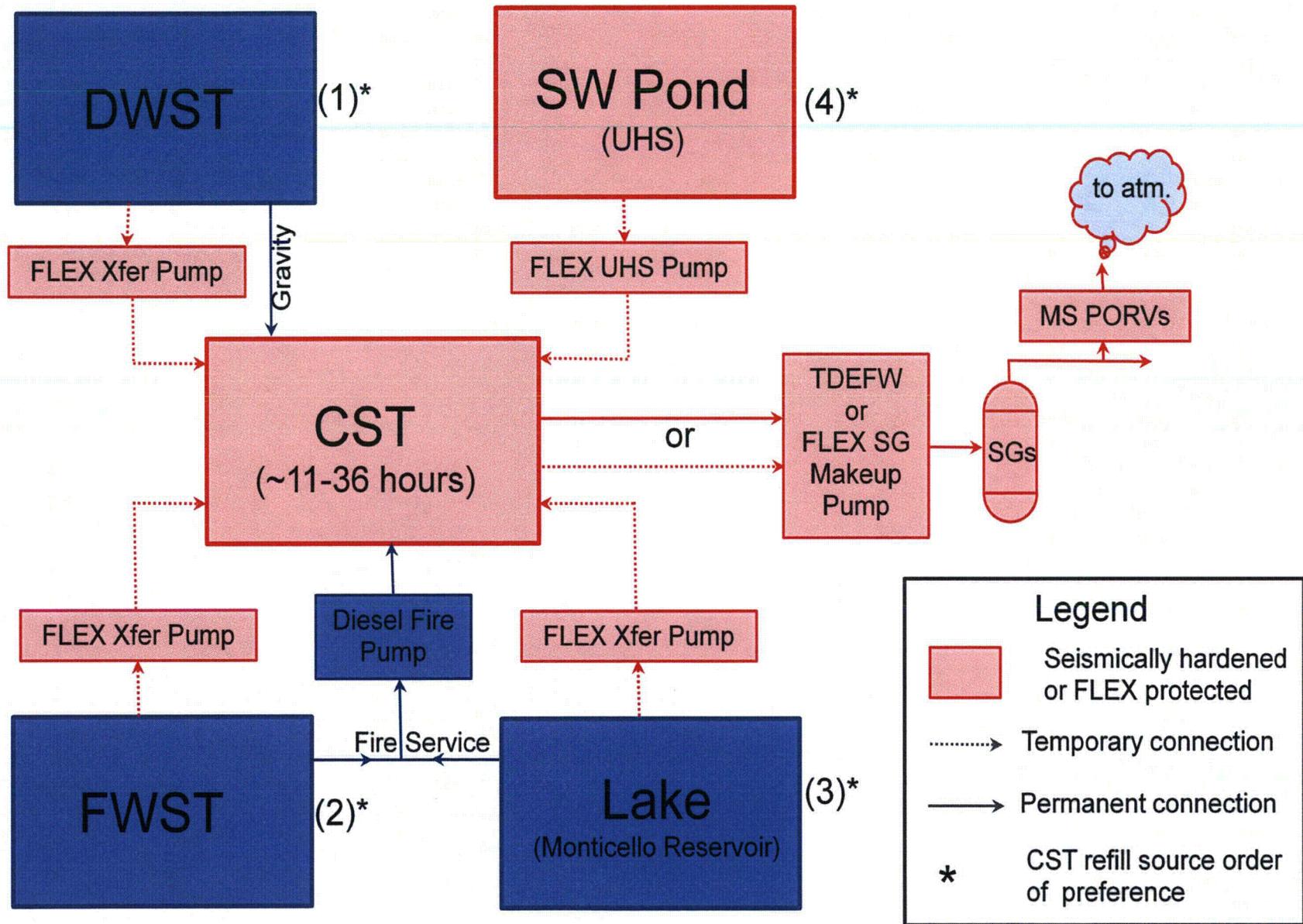
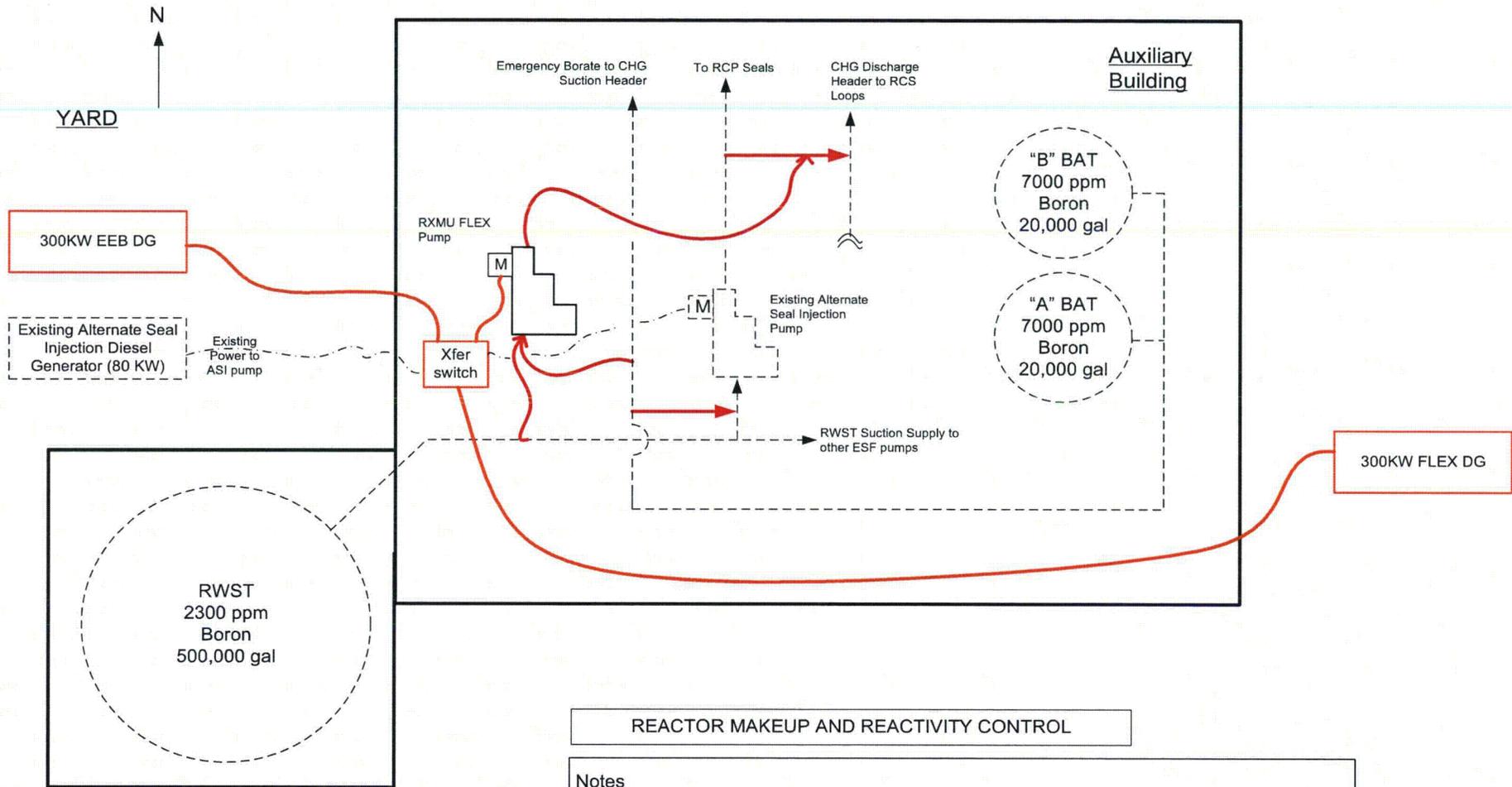


Figure 4 – Conceptual Strategy for Reactor Makeup and Reactivity Control



REACTOR MAKEUP AND REACTIVITY CONTROL

- Notes**
- 1) Dashed Items are existing piping, SSCs and electrical conductors.
 - 2) See Figure 5 and Figure 10 for additional information regarding diverse power supplies.

Figure 5 – Conceptual Coping Strategies for Support Functions from EEB

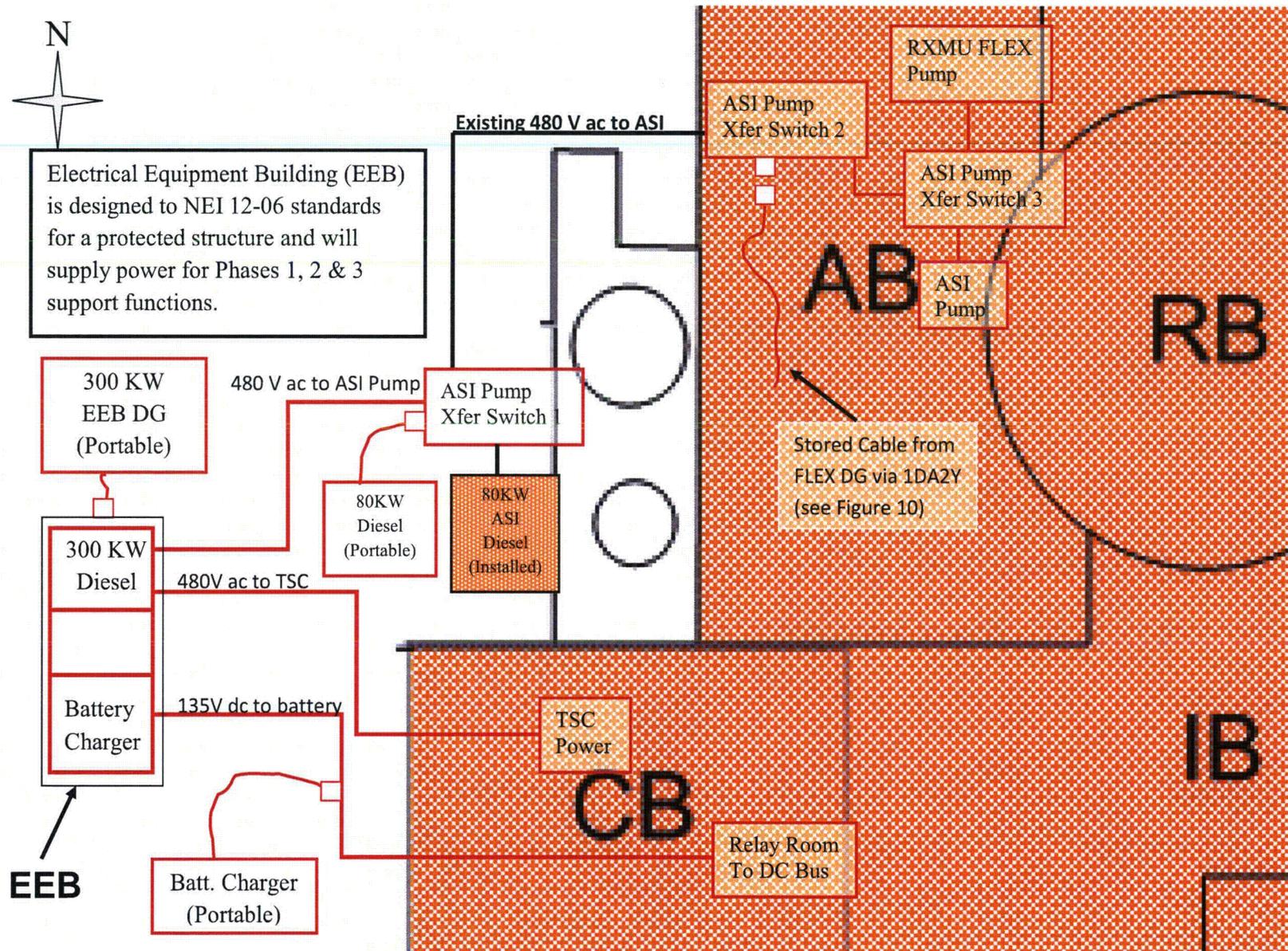
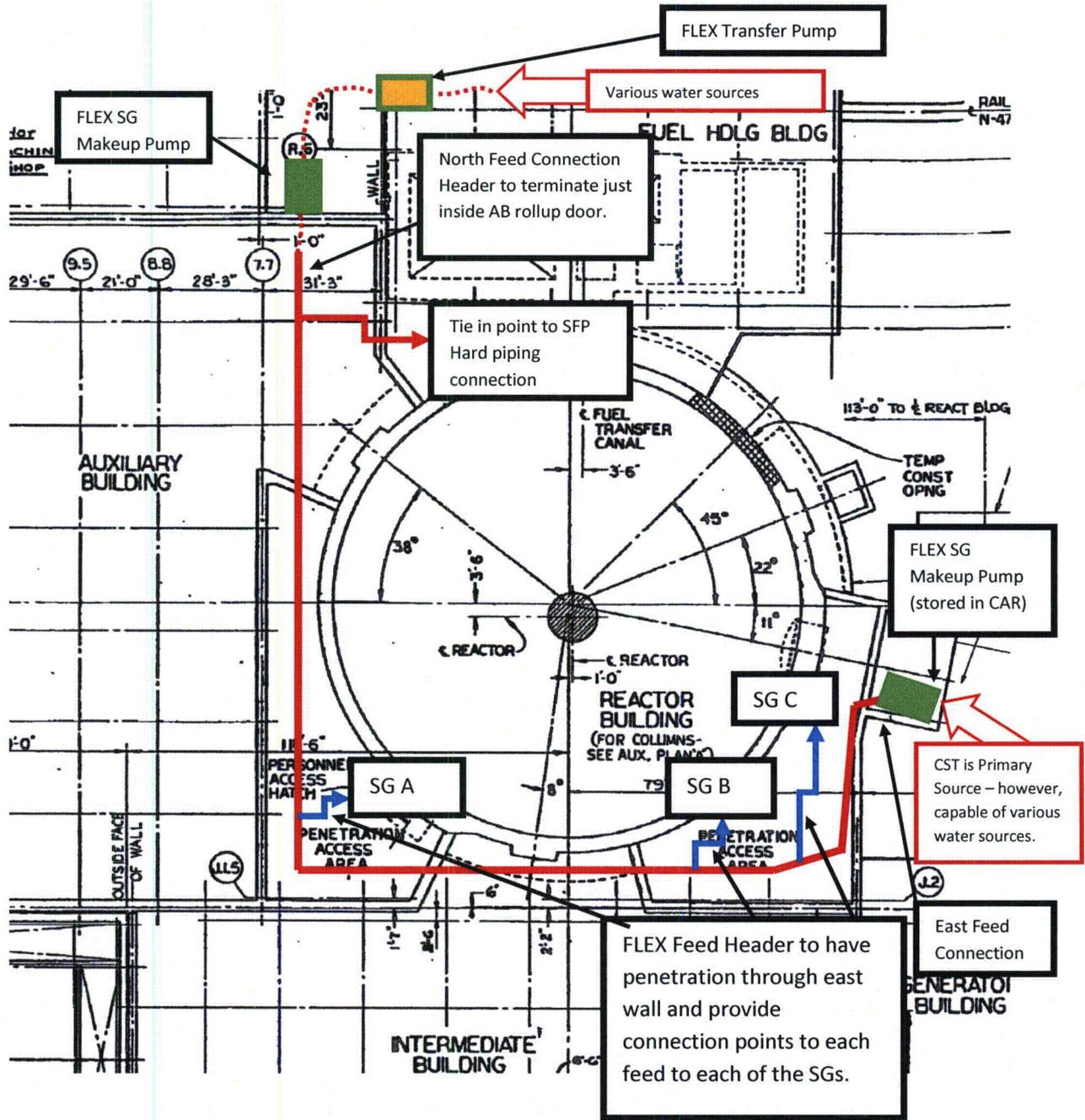


Figure 7 – Conceptual FLEX UHS Pump

Deleted for 8/28/13 update.

Figure 8 – Conceptual FLEX Feed Header Layout



Reference Drawing E-001-061

Figure 9 – Conceptual Phase 1 Coping Strategy to Repower Battery Chargers

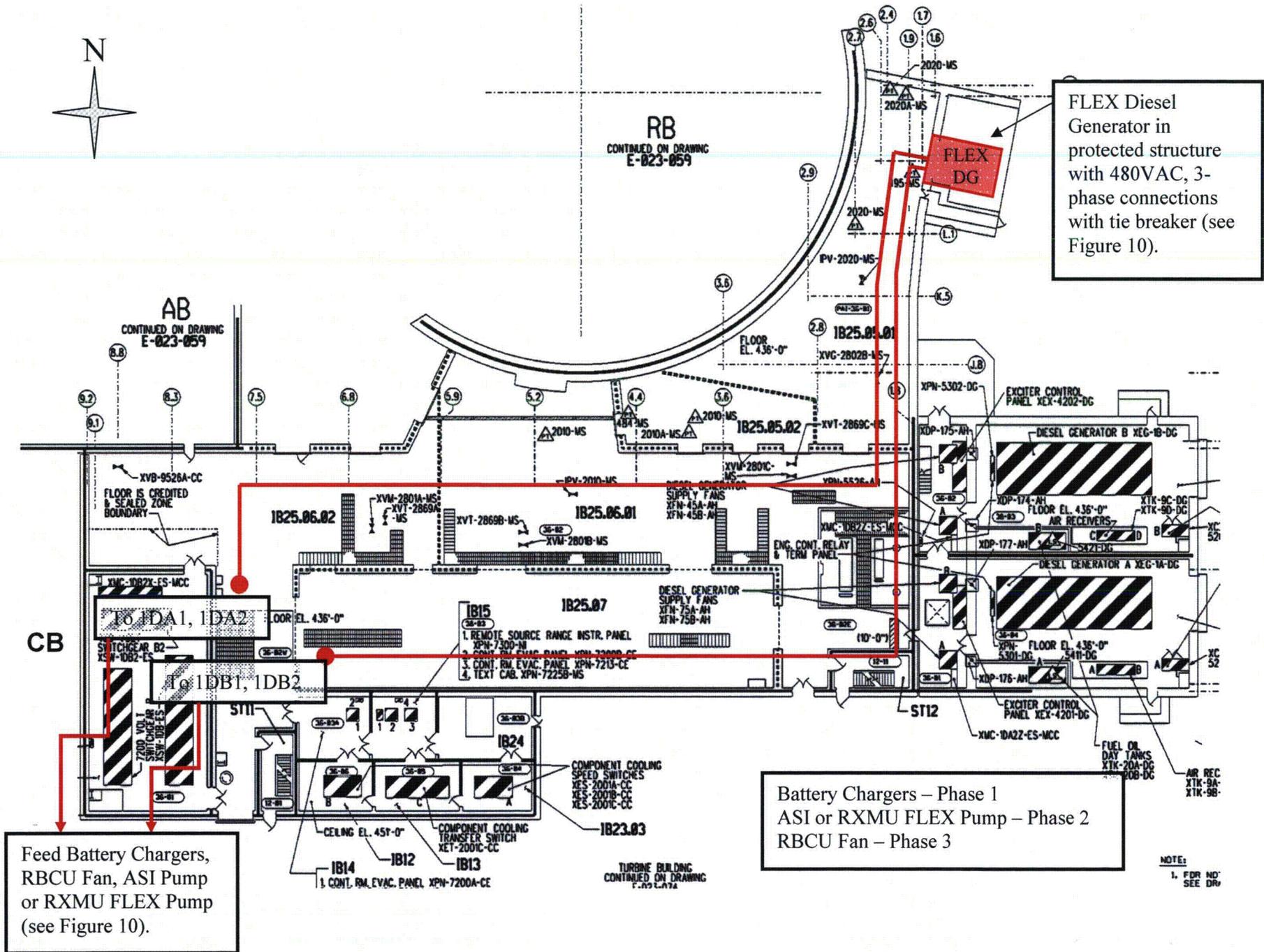


Figure 10 – Conceptual Coping Strategy to Repower RBCU Fan(s), Batteries, ASI/RXMU FLEX Pump

