Pacific Gas and Electric Company®

**L. Jearl Strickland, P.E.**
Leader
Technical Services

Diablo Canyon Power Plant
P.O. Box 56
Avila Beach, CA 93424

805.595.6476
LJS2@pge.com

February 29, 2016

PG&E Letter DCL-16-025

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

10 CFR 50.4

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Pacific Gas and Electric Company's Sixth 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)

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. PG&E Letter DCL-13-007, "Pacific Gas and Electric Company'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 27, 2013

Dear Commissioners and Staff:

On March 12, 2012, the Nuclear Regulatory Commission issued Reference 1 to Pacific Gas and Electric Company (PG&E) directing PG&E 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 (BDB) external event. Specific requirements are outlined in Reference 1, Attachment 2.

Pursuant to Reference 1, Section IV, Condition C, PG&E submitted its overall integrated plan for mitigation strategies for BDB external events in Reference 2.

Pursuant to Reference 1, Section IV, Condition C.2, and in accordance with the direction provided in NEI 12-06, Revision 0, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," the enclosure to this letter provides PG&E's sixth six-month status report of its overall integrated plan.

PG&E is making no new or revised regulatory commitments (as defined by NEI 99-04) in this letter.

If you have any questions, or require additional information, please contact Mr. Scott Maze at (805) 542-9591

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

Executed on February 29, 2016.

Sincerely,

L. Jearl Strickland, P.E.
*Leader, Technical Services*

gwh/50466122-17
Enclosure
cc: Diablo Distribution
cc/enc: Marc L. Dapas, NRC Region IV Administrator
William M. Dean, NRC/NRR Director
Siva P. Lingam, NRR Project Manager
Binesh K. Tharakan, NRC Acting Senior Resident Inspector

Enclosure
PG&E Letter DCL-16-025

# Pacific Gas and Electric Company's Sixth Six-Month Status Report for the Implementation of NRC Order EA-12-049

# Pacific Gas and Electric Company's Sixth Six-Month Status Report for the Implementation of NRC Order EA-12-049

## 1. Introduction

Pacific Gas and Electric Company's (PG&E's) Letter DCL-13-007, "Pacific Gas and Electric Company'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 27, 2013 (Reference 1) (refer to Section 11 of this enclosure for a list of references), provided an overall integrated plan (OIP) documenting diverse and flexible coping strategies (FLEX) in response to Nuclear Regulatory Commission (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 (Reference 2). This enclosure provides the sixth update of milestone accomplishments since the submittal of PG&E Letter DCL-15-099, "Pacific Gas and Electric Company's Fifth 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)," dated August 26, 2015 (Reference 3), including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

## 2. Milestone Accomplishments

As of January 31, 2016, PG&E completed the following milestone accomplishments since the submittal of PG&E Letter DCL-15-099: Phase 2 and 3 modification design and installation for Unit 1; procedure guidance and implementation for Unit 1 strategies; maintenance program and testing for Unit 1 FLEX equipment; primary and secondary FLEX storage facilities; training on the Unit 1 strategies; Phase 2 communications equipment implementation; Unit 1 walk-throughs or demonstrations; and overall Unit 1 FLEX implementation.

## 3. Milestone Schedule Status

The following table provides an update to the milestone schedule status provided in PG&E Letter DCL-15-099. It provides the activity status of each item, and a revised target completion date where applicable. The target dates are subject to change as design and implementation details are developed.

The revised milestone target completion dates do not impact the overall Order implementation date for Unit 2.

| Activity | Target Completion Date | Activity Status | Revised Target Completion Date |
|---|---|---|---|
| Submit 20 day report | Apr 2012 | Complete | |
| Submit 60 day status report | Oct 2012 | Complete | |
| Submit Overall Integrated Plan | Feb 2013 | Complete | |
| **Submit 6-month status reports** | | | |
| 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 | |
| Update 6 | Feb 2016 | Complete | |
| Update 7 | Aug 2016 | Not started | |
| **Modifications timeline** | | | |
| Phase 1 Modifications | | | |
| a. Design | N/A | N/A | |
| b. Equipment Procurement | N/A | N/A | |
| c. Installation | N/A | N/A | |
| Phase 2 Modifications | | | |
| a. Design | 8/31/15 | Complete | |
| b. Large Equipment Procurement | 12/31/14 | Complete | |
| c. Ancillary Equipment Procurement | 10/27/15 | Started | 5/31/16 |
| d. Unit 1 Installation | 10/30/15 | Complete | |
| e. Unit 2 Installation | 5/31/16 | Not started | |
| Phase 3 Modifications | | | |
| a. Design | 8/31/15 | Complete | |
| b. Large Equipment Procurement | 12/31/14 | Complete | |
| c. Ancillary Equipment Procurement | 10/27/15 | Started | 5/31/16 |
| d. Unit 1 Installation | 10/30/15 | Complete | |
| e. Unit 2 Installation | 5/31/16 | Not started | |
| **Procedure guidance implementation** | | | |
| a. Unit 1 Strategies | 10/30/15 | Complete | |
| b. Unit 2 Strategies | 5/31/16 | Started | |
| c. Unit 1 Maintenance | 10/30/15 | Complete | |
| d. Unit 2 Maintenance | 5/31/16 | Started | |
| e. Unit 1 Testing | 10/30/15 | Complete | |
| f. Unit 2 Testing | 5/31/16 | Started | |
| **FLEX storage facilities** | | | |
| a. Primary Beyond-Design-Basis (BDB) Storage Facility | 9/30/15 | Complete | |

| Activity | Target Completion Date | Activity Status | Revised Target Completion Date |
|---|---|---|---|
| b. Secondary BDB Storage Facility | 10/27/15 | Complete | |
| **Staffing analysis** | | | |
| a. Phase 1 | | | |
| 1. Study Complete | 3/29/13 | Complete | |
| 2. NRC Submittal | 4/30/13 | Complete | |
| b. Phase 2 | | | |
| 1. Study Complete | 5/27/15 | Complete | |
| 2. NRC Submittal | 5/27/15 | Complete | |
| **Training completion for the strategies** | | | |
| a. Unit 1 | 10/30/15 | Complete | |
| b. Unit 2 | 5/31/16 | Started | |
| **National SAFER Response Center 2 (Phoenix) operational** | 8/28/14 | Complete | |
| **Communications equipment implementation (PG&E Letter DCL-12-110)** | | | |
| a. Phase 1 | 12/31/13 | Complete | |
| b. Phase 2 | 10/27/15 | Complete | |
| **Unit 1 Walk-throughs or Demonstrations** | 10/30/15 | Complete | |
| **Unit 2 Walk-throughs or Demonstrations** | 5/31/16 | Started | |
| **Unit 1 FLEX implementation complete** | 10/30/15 | Complete | |
| **Unit 2 FLEX implementation complete** | 5/31/16 | Not started | |

## 4. Changes to Compliance Method

The following identifies changes to PG&E Letter DCL-15-099, as applicable, and the reason for each change. All changes meet applicable Nuclear Energy Institute (NEI) 12-06, Revision 0, compliance methods.

Change 1 – "General Integrated Plan Elements"

(1) Clarified hazards for Diablo Canyon Power Plant (DCPP)

(a) External Flooding: Clarified emergency auxiliary saltwater (EASW) strategy and storage location of the backup EASW pumps.

(b) Extreme Cold, Snow, and Ice: NEI 12-06, Revision 0, provides screen out guidance for extreme cold for plants located below the 35th parallel. Although DCPP does not experience extreme cold temperatures, it is located slightly above the 35th parallel; therefore, extreme cold must be evaluated for the site.

(2) "Discussion of time constraints identified in Attachment 1A"

(a) Item (13): Added additional doors to maintain natural circulation: cable spreading room doors must also be propped open to maintain natural circulation to the control room. Time constraint revised from 60 to 90 minutes to ensure adequate time to perform actions within time constraint.

(b) Item (15): Clarified battery sequence and updated references to support reactor vessel level instrumentation system (RVLIS) availability during an extended loss of alternating current power (ELAP).

(c) Item (18): Revised the time constraint from 12 to 21 hours. Cooldown will begin within 1 hour of shutdown and will be completed in approximately 1.5 hours. The initiation of the cooldown is in accordance with plant emergency procedures and the change to the constraint time reflects the installation of the reactor coolant pump (RCP) low leakage seals and the requirement for boration to begin in Item 21. This updates the Unit 1 Compliance Letter DCL-16-003, "Pacific Gas and Electric Company's Notification of Full Compliance with Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049) for Diablo Canyon Power Plant Unit 1," dated January 5, 2016 (Reference 5).

(d) Item (20): Clarified load shedding and battery alignment sequence. Updated time constraint from 21 to 19.5 hours and 9 to 7 hours to support RVLIS availability during an ELAP.

(e) Item (24): Revised time constraint from 24 to 26.5 hours to provide alignment of constraints. This updates the constraint in the Unit 1 Compliance Letter DCL-16-003 (Reference 5). This also updates the margin provided from 6.9 to 4.9 hours and the time this action must start from 22.9 to 20.9 hours into the event in order to meet this constraint.

(f) Item (25): Revised time constraints to place emergency auxiliary feedwater (EAFW) equipment into service from 41 to 39.9 hours per updated analysis.

(g) Item (28): Clarified Item 28 for the establishment of offsite resupply of diesel fuel oil within 72 hours.

(h) Item (29): Updated National Strategic Alliance for FLEX Emergency Response Center (NSRC) equipment time constraint from 72 to 121 hours to provided alignment of constraints.

(3) Under "Identify how strategies will be deployed in all modes," added statement of incorporation of NEI position paper titled "Shutdown/Refueling Modes," Revision 1, dated July 9, 2013 (NRC Accession No. ML13190A157), to enhance shutdown risk process and procedures.

(4) Under "Identify how programmatic controls will be met," the unavailability of FLEX portable equipment and permanent FLEX connection points will be managed using existing plant work control guidelines instead of equipment control guidelines.

(5) Removed references to OIP open items (OIs) as all OIs are now closed.

Change 2 – "Maintain Core Cooling and Heat Removal Strategy"

(1) Phase 1:

(a) Under "Core Cooling with SGs Available," clarified initial alignment of water sources to the turbine-driven auxiliary feedwater (TDAFW) pump and changed constraint from 41 to 39.9 hours to reflect current analysis.

(b) Under "Provide a brief description of procedures / strategies / guidelines," added a reference to the shutdown procedure.

(c) Under "Key reactor parameters," added:

1. Fire water tank level

2. Reference to FSG 07, "Loss of Vital Instrumentation or Control Power" (Reference 4) to add instruction for reading instruments locally.

(d) Under "Notes," clarified statement on sufficient reactor coolant system (RCS) vent path.

(2) Phase 2:

(a) Under "Key reactor parameters," added reference to FSG 07 to add instruction for reading instruments locally.

(b) Under "Notes," clarified statement on sufficient RCS vent path.

(c) Under "Storage / Protection of Equipment," for "Snow, Ice, and Extreme Cold," clarified that extreme cold is applicable to DCPP.

(d) Under "Equipment Storage - Secondary BDB Storage Facility," clarified that secondary storage location is west of the 500 kilovolt (kV) switchyard.

(3) Phase 3:

(a) Clarified that all four EASW pumps are FLEX equipment and stored onsite.

(b) Removed reference to NSRC providing backup EASW pumps.

(c) Clarified that residual heat removal (RHR) suction and accumulator isolation valves will be electrically manipulated from outside containment, and no containment entry is required.

(d) Clarified that DCPP will work with NSRC for the delivery of equipment.

(e) Under "Key reactor parameters," added reference to FSG 07 to add instruction for reading instruments locally.

(f) Under "Notes," clarified statement on sufficient RCS vent path.

(g) Under "Equipment Storage - Secondary BDB Storage Facility," clarified that secondary storage location is west of the 500 kV switchyard.

(h) Under "Strategy Connections," modified statement referring to containment fan cooler unit (CFCU) repowering for management of containment environment.

Change 3 – "Maintain RCS Inventory Control"

(1) Phase 1:

(a) Revised statement that cooldown will be initiated within 1 hour from 8 hours of declaration of an ELAP to reflect updated command and control procedures.

(b) Revised statement to clarify how emergency RCS (ERCS) makeup pumps are used by FLEX.

(c) Removed "high pressure FLEX pump" and replaced with "ERCS makeup pump" for consistency.

(d) Removed statement referring to accumulator isolation valves being closed to clarify that is not state-dependent.

(e) Under "Identify modifications," provided updated status on low-leakage RCP seals for Unit 1.

(f) Under "Key reactor parameters," removed statement about RVLIS and pressurizer level to reflect that RVLIS is available for duration of load shedding.

(g) Under "Key reactor parameters," added reference to FSG 07 to add instruction for reading instruments locally.

(2) Phase 2:

(a) Replaced "high pressure ERCS make-up pump" with "ERCS makeup pump" for consistency.

(b) Under "Key reactor parameters," removed statement about RVLIS and pressurizer level to reflect that RVLIS is available for duration of load shedding.

(c) Under "Key reactor parameters," added reference to FSG 07 to add instruction for reading instruments locally.

(d) Under "Storage / Protection of Equipment," for "Snow, Ice, and Extreme Cold," clarified that extreme cold is applicable to DCPP.

(e) Under "Equipment Storage - Secondary BDB Storage Facility," clarified that secondary storage location is west of the 500 kV switchyard.

(3) Phase 3:

(a) Removed reference to a backup of Phase 2 pumps and generators being supplied by NSRC.

(b) Under "Key reactor parameters":

1. Removed statement about RVLIS and pressurizer level to reflect that RVLIS is available for duration of load shedding.

2. Added reference to FSG 07 to add instruction for reading instruments locally.

Change 4 – "Maintain Containment"

(1) Phase 1:

(a) Clarified that PG&E has performed a containment evaluation based on the boundary conditions described in NEI 12-06, Revision 0, Section 2, and has determined that in Phase 1 there is no challenge to containment integrity. Added a reference to Calculation FLEX-011, "Diablo Canyon ELAP Containment Environment Analysis," Revision 0 (Reference 9).

(b) Under "Key containment parameters," added reference to FSG 07 to add instruction for reading instruments locally.

(2) Phase 2:

(a) Under "Key containment parameters," added reference to FSG 07 to add instruction for reading instruments locally.

(3) Phase 3:

(a) Added long-term containment integrity strategy based on analysis in Calculation FLEX-011 (Reference 9).

(b) Under "Key containment parameters," added reference to FSG 07 to add instruction for reading instruments locally.

Change 5 – "Maintain Spent Fuel Pool Cooling"

(1) Phase 1:

(a) Added statement that Phase 1 spent fuel pool (SFP) cooling is provided by boil-off.

(2) Phase 2:

(a) Revised to provide clarification for maximum SFP heat load associated with SFP makeup requirements.

(b) Revised to provide clarification of configuration and storage location of spray monitors.

(c) Under "Storage / Protection of Equipment," for "Snow, Ice, and Extreme Cold," clarified that extreme cold is applicable to DCPP.

(d) Under "Equipment Storage – Pre-staging inside the RCS," updated to show that four spray monitor nozzles will be stored inside the radiologically controlled area (RCA).

(e) Under "Equipment Storage Secondary BDB Storage Facility," clarified that secondary storage location is west of the 500 kV switch yard.

(f) Under "Connections" for "Primary Makeup," clarified that the flexible hose will be connected to the crane rail and not the hand rail for deployment.

(3) Phase 3:

(a) Clarified that DCPP has four FLEX EASW pumps onsite and they will not be provided by the NSRC.

Change 6 – "Safety Functions Support"

(1) Phase 1:

(a) Under "Electrical," clarified load shedding and battery alignment sequencing, and revised the total availability of the batteries from 24 to 26.5 hours. Updated time constraint for the various battery alignments from 21 to 19.5 hours and from 9 to 7 hours. All of these changes are to support maintaining RVLIS availability during an ELAP.

(b) Under "Ventilation," added additional doors in the cable spreading room and battery charger/inverter room to provide natural circulation to control room. Revised time constraint from 60 to 90 minutes to ensure adequate time to perform actions within time constraint.

(c) Under "Key parameters," added reference to FSG 07 to add instruction for reading instruments locally.

(2) Phase 2:

(a) Under "Ventilation/Lighting," for additional lighting, revised the number of generators to be deployed from six to two and added up to ten 120/240-volt (V) diesel-driven generator light towers at various FLEX staging and operating locations. Light towers will be stored at a FLEX storage facility.

(b) Under "Instrumentation," added diesel fuel section to reflect refueling strategy from onsite sources.

(c) Under "Key parameters," added reference to FSG 07 to add instruction for reading instruments locally. Added guidance for locally checking fuel tank level with dipstick.

(d) Under "Storage / Protection of Equipment," clarified in "Snow, Ice, and Extreme Cold" that extreme cold is applicable to DCPP.

(e) Under the Strategy for "Equipment Storage – Primary BDB Storage Facility," revised number of 120/240-V generators from three to two. In addition, added up to five 120/240-V diesel-driven generator light towers that will be stored at this facility.

(f) Under the Strategy for "Equipment Storage – Secondary BDB Storage Facility," added up to five 120/240-V diesel-driven generator light towers that will be stored at this facility. Three 120/240-V generators will be removed from this facility. Two 100-gallon fuel caddies and a diesel oil transfer pump with transfer hoses will also be stored at this facility.

(g) Under Modifications for "BDB Storage Facility," clarified that secondary storage location is west of the 500 kV switchyard.

(h) Added that an additional diesel fuel oil transfer pump and transfer hoses will be stored at the Unit 1 turbine building buttress area.

(i) Under the Strategy for "Deployment," changed the number of 120/240-V generator distribution panels (with associated electrical connection cables) that will be staged at the 85 ft elevation from three to two. For outdoor lighting, up to ten 120/240-V diesel-driven generator light towers will be staged and deployed at the various FLEX equipment staging and operating locations. A 100-gallon fuel caddy and a diesel fuel oil transfer pump with transfer hoses will be staged at the top of the underground diesel fuel oil tanks at the west side of the turbine building on the 85 ft elevation and deployed.

(j) Under the Strategy for "Connections," added that the diesel fuel oil transfer pump will be connected to the top of the underground diesel fuel oil storage tanks.

(k) Under the Modifications for "Connections," added that the diesel fuel oil transfer pump uses an existing suction connection on each of the seismically qualified underground diesel fuel oil tanks.

(l) Under the "Protection of connections," added that the diesel fuel oil transfer connects are located inside existing manways for protection.

(m) Under the Strategy for "Alternative Method," clarified that there are two underground diesel fuel oil tanks and various existing nozzles and inspection ports that could be used, if necessary.

(3) Phase 3:

(a) Added clarifying information explaining the difference between Phase 3 and Phase 2 equipment and direct current loads.

(b) Added information explaining the NSRC 480-V diesels that will interface with the FLEX 480-V load centers.

(c) Revised Section for clarity.

(d) Add reference to Phase 2 continued onsite delivery of diesel fuel oil will be through existing memoranda of understanding (MOUs) and formal contracts with local offsite suppliers.

(e) Remove reference to NSRC-supplied Phase 2 pumps and generators.

(f) Under "Key parameters," added fuel tank level and added instruction for taking level of fuel tank locally with a dipstick. Added a reference to FSG 07 to add instruction for reading instruments locally.

Change 7- Table 1, "PWR Portable Equipment Phase 2"

(1) In "Maintenance / Preventive Maintenance requirements," clarified that DCPP will comply with the Electric Power Research Institute (EPRI) Preventive Maintenance Basis Database for each of the portable equipment listed in the table.

(2) In "List of portable equipment":

(a) Added note to clarify that the four EASW pumps are used in Phase 3 and are stored onsite.

(b) Changed the number of auxiliary saltwater vacuum breaker vault dewatering pumps from two to three.

(c) Changed the number of 120/240-V portable diesel-driven generators from six to two.

(d) Changed the number of portable diesel-driven generators with lighting masts from eight to ten.

(3) Under "Notes," clarified that a backup set of Phase 2 pumps and generators will be provided by the NSRC. Removed the various references to the (a) notation in table.

Change 8 – Table 3, "Phase 3 Response Equipment/Commodities"

(1) Added note that diesel fuel supply and transports will be provided through MOUs and contracts with local offsite suppliers.

(2) Removed table note that fuel transport equipment will be provided by the NSRC.

Change 9 – Attachment 1A, "Sequence of Events Timeline"

(1) Action Item 13:

(a) Added doors in cable spreading room to natural ventilation path.

(b) Revised time constraint from 1 to 1.5 hours to ensure adequate time to perform actions within time constraint.

(c) Revised Remarks/Applicability from 1 to 1.5 hours to ensure adequate time to perform actions within time constraint.

(2) Action Item 14: revised elapsed time from 1.25 to 1 hour to ensure adequate time to perform actions within time constraint.

(3) Action Item 15:

(a) Revised elapsed time from 1.5 to 1 hour to ensure adequate time to perform actions within time constraint.

(b) Revised References to include DCPP Calculation FLEX-015, "Diablo Canyon FLEX Battery 11 and 21 Coping Analysis," Revision 0.

(c) Revised Remarks/Applicability description of load shedding to reflect that RVLIS is available for duration of load shedding.

(4) Action Item 18:

(a) Revised Elapsed Time from 3.5 to 1 hour in order to satisfy the 24-hour injection requirements.

(b) Revised Time Constraint from 12 to 21 hours in order to satisfy the 24-hour injection requirements.

(c) Revised References to add DCPP Calculation FLEX-002, "Westinghouse Calculation CN-FSE-13-2-Redacted, Boration Calculation," Revision 0, which is the DCPP Westinghouse Basis for the RCS injection and RCP seal function.

(5) Action Item 20:

(a) Revised Elapsed Time from 21 to 18 hours to ensure uninterrupted emergency DC and vital emergency 120-V instrumentation and controls.

(b) Revised Time Constraint from 18 to 19.5 hours to ensure adequate time to perform actions within time constraint.

(c) Revised References to add DCPP Calculation FLEX-015, "Diablo Canyon FLEX Battery 11 and 21 Coping Analysis," Revision 0.

(d) Revised Remarks/Applicability to reflect new analysis.

(6) Action Item 24:

(a) Revised Elapsed time from 30 to 24 hours to reflect new analysis.

(b) Revised Time Constraint from 30 to 27 hours to ensure adequate time to perform actions within time constraint.

(c) Revised References to add a reference to DCPP Calculation FLEX-015, "Diablo Canyon FLEX Battery 11 and 21 Coping Analysis," Revision 0.

(d) Revised Remarks/Applicability to reflect new analysis.

(7) Action Item 25: revised Time Constraint from 41 to 39.9 hours based on an updated analysis.

Change 10 – OIP Attachment 2, "DCPP Units 1 and 2 Implementation Milestone Schedule"

Refer to Section 3 of this Enclosure.

Change 11 – OIP Attachment 3, "Conceptual Sketches"

See Attachment 1 for all revised Figures.

Figure Revisions:

1. Updated Figures 6E and 7E to more accurately reflect new FLEX connection in RHR system.

2. Updated Figures 8C and 9D to more accurately show the EAFW pump discharge hose routing in the safety injection pump room, and identify the connection point (Check Valves SI-1-8922A and SI-2-8922A).

3. Updated Figures 10 and 11 to more accurately reflect new FLEX connection in the chemical and volume control system.

4. Updated Figures 16 and 17 to more accurately reflect how SFP hose is fastened.

5. Updated Figures 21 and 22 to correct typo ("sliced" should be "spliced").

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

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

## 6. Open Items from Overall Integrated Plan

All OIP open items have been closed. The following provides a summary of actions taken to close the open items which remained open in the last update in Reference 3.

OI-6

PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Revision 0, Section 5.3.3.

> Status: This item is complete. Procedures for Unit 1 were issued on October 31, 2015. Unit 2 procedures have been developed and will be implemented by May 31, 2016.

## 7. NRC FLEX Audit RAI Updates

Refer to PG&E Letter DCL-16-003, DCPP Unit 1 Compliance letter (Reference 5), for PG&E-provided closure responses to all open audit questions.

## 8. Interim Staff Evaluation Open and Confirmatory Item Updates

All NRC Interim Staff Evaluation open item and confirmatory items have been responded to and are considered complete. The following provides PG&E's response to the NRC Interim Staff Evaluation confirmatory items that remained open in the last update in Reference 3.

Confirmatory Item 3.1.1.4.A (049-RAI-DCPP-006):

*Off-Site Resources – Confirm RRC local staging area, evaluation of access routes, and method of transportation to the site.*

> Response: This Item is complete. PG&E has established a contract with Pooled Equipment Inventory Company (PEI Co) and has joined the National Strategic Alliance to FLEX Emergency Response (SAFER) Team Equipment Committee for offsite facility coordination. PG&E confirmed that PEI Co is ready to support DCPP with Phase 3 equipment stored in the National SAFER Response Centers in accordance with the site-specific SAFER Response Plan.

Confirmatory Item 3.2.1.B:

*RCS cooling and heat removal, and RCS inventory control – The licensee provided information regarding the analysis from WCAP-17601 applicable to DCPP in response to NRC staff requests. The NRC staff is continuing to review this information to ensure the licensee sufficiently justifies the analysis being applied. Additional information may be needed to confirm appropriate use of the analysis.*

Response: This item is complete. During the NRC FLEX/SFP Level instrumentation audit, PG&E provided a comparison of parameters used in the WCAP-17601 analysis and the DCPP-specific RCS inventory and boration analysis. The DCPP values are consistent or bounding when compared to the values used within the WCAP-17601 analysis. Therefore, the WCAP-17601 analysis is applicable to DCPP.

Confirmatory Item 3.2.1.4.A

*The licensee used the MAAP code in performing its ELAP analyses. Aspects of the MAAP code analyses, such as boundary conditions, nodalization, and the selection of code options for modeling key physical phenomena, were not discussed in the Integrated Plan. Provide an understanding of the above issues to assess the technical adequacy of the code and determining the code's range of applicability.*

Response: This item is complete. PG&E utilized Modular Accident Analysis Program (MAAP) 4.0.7 in a calculation prepared as part of the response to Institute of Nuclear Power Operations Event Report (IER) L1-11-4, Item 1. The MAAP code was used to model the plant in general and estimate plant coping time capability. For the purposes of the FLEX coping, the MAAP code is used to assess cooling water requirements for decay heat removal.

Under the conditions modeled, MAAP provides reasonable estimates of secondary plant behavior under a wide range of circumstances and is capable of modeling this type of scenario. The results of the model were only used to evaluate consumption of secondary side cooling water (makeup requirements to the steam generators).

An evaluation of this nature relies primarily on the ability of the MAAP code to perform straightforward mass and energy balances and does not credit aspects of the MAAP code where constraints such as boundary conditions, nodalization, and the selection of code options for modeling key physical phenomena are critical. PG&E recognizes that these constraints are critical when trying to analyze highly dynamic conditions such as two-phase flow and thermal-hydraulics in the reactor core. Therefore, PG&E does not credit any model outputs aside from secondary side cooling water consumption.

Confirmatory Item 3.2.1.6.A:

*On pages 70 through 73 in the Integrated Plan, the licensee listed elapsed times and time constraints in different columns in Attachment 1A (sequence of events timeline). The review determined that the times listed in the elapsed time column and the time constraint column often are the same and provide no margin between the elapsed time and the time constraint time. Provide clarification on how early a step must be begun to meet the time constraint, when the licensee actually expects to begin performing the step, and information on what margin exists for these critical actions, and whether the time can be reasonably met.*

Response: This Item is complete. PG&E provided a complete response to this item in PG&E Letter DCL-16-003 (Reference 5).

Confirmatory Item 3.2.4.4.A:

*Communications – Confirm that upgrades to the site's communications systems have been completed.*

Response: This item is complete. Refer to Section 9 for specific responses.

Confirmatory Item 3.4.A:

*NEI 12-06, Section 12.2 lists minimum capabilities for offsite resources for which each Licensee should establish the availability. Discuss implementation of Guidelines 2 through 10 in NEI 12-06, Section 12.2.*

Response: This Item is complete. PG&E has established a contract with PEI Co and has joined the National SAFER Team Equipment Committee for offsite facility coordination. PG&E confirmed that PEI Co is ready to support DCPP with Phase 3 equipment stored in the National SAFER Response Centers in accordance with the site-specific SAFER Response Plan.

## 9. Planned Communications Equipment Status Updates

All Communication Items are now complete. PG&E submitted its response to a request for additional information (RAI) regarding the Recommendation 9.3 Communications Assessment in PG&E Letter DCL-12-110, "Pacific Gas and Electric Company's Response to Recommendation 9.3 Communications Requests 1 and 3 and the Evaluation of Existing Communications Systems Power Supplies," dated October 29, 2012 (Reference 6). In its response, PG&E committed to provide a status update of the planned communications equipment in the six-month status reports prepared pursuant to NRC Order EA-12-049, Section IV.C.2. The following is a status update of the action taken to close the items that remained open as of the last update in Reference 3.

Communications Item 4:

As discussed in PG&E Letter DCL-14-076, "Pacific Gas and Electric Company's Third 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)," dated August 21, 2014 (Reference 7), a radio console will not be installed in the operational support center. PG&E will store radios, batteries, and chargers in a FLEX storage facility to support continued radio communications. This equipment will be stored in a FLEX storage facility by October 27, 2015.

Status: This item is complete. The radios, batteries, and chargers were relocated to a FLEX storage facility as part of Phase 2 on October 27, 2015.

Communications Item 5:

As discussed in PG&E Letter DCL-12-110, PG&E committed to procure portable generators and equipment to ensure that adequate power will exist to support extended operations. This equipment will be placed in service with approved procedures as part of Phase 2, which is scheduled for October 27, 2015.

Status: This item is complete. PG&E has procured portable diesel generators and equipment to support extended operations of the BDB communications equipment. Procedures FSG 55, "Supply FLEX 208-V Power to Control Room and TSC," Revision 0, and FSG 56, "Supply FLEX 480-V Power to Telecommunications Equipment," Revision 0, were issued to provide instructions to repower the BDB communications equipment.

Communications Item 6:

As discussed in PG&E Letter DCL-12-110, PG&E committed to relocate the SmartMsg and Zetron pager systems from their current location to an existing structure that is seismically robust. This will be completed by October 27, 2015.

As discussed in PG&E Letter DCL-13-012, "30-Day Response to Request for Additional Information Regarding the Recommendation 9.3 Communications Assessment," dated February 21, 2013 (Reference 8), the paging system battery will be battery backed, with capability to be provided from a portable diesel generator, to ensure that adequate power will exist to support extended operations beyond 24 hours.

Status: This item is complete. PG&E relocated the SmartMsg and Zetron pager systems to an existing seismically robust structure. Refer to Communications Item 5 for a status of the portable diesel generators.

Communications Item 7:

As discussed in PG&E Letter DCL-13-012, PG&E committed to establish credited manual actions and their procedures in accordance with NEI 12-01 and NRC Order EA-12-049. Credited manual actions and procedures for the Phase 1 communications are scheduled to be completed by December 31, 2013. Credited manual actions and procedures for the Phase 2 communications are currently scheduled to be completed by October 27, 2015.

Status: This item is complete. Instructions from Procedure OP K-9, "Instructions for Operation of the DCPP Radio System," were moved to Procedure FSG 47, "Operation of FLEX Communications Equipment," Revision 0. FSG 47 provides instructions on how to use the Phase 1 and 2 BDB communications equipment. PG&E concluded that there were no credited manual actions for Phase 2 communications. Phase 2 of this item is complete.

Communications Item 8:

As discussed in PG&E Letter DCL-13-012, PG&E committed to establish maintenance procedures for the planned enhancements, including operability testing, in accordance with NEI 12-01 and NRC Order EA-12-049. Maintenance procedures for the Phase 1 communications are currently scheduled to be completed by December 31, 2013. Maintenance procedures for the Phase 2 communications are currently scheduled to be completed by October 27, 2015.

Status: This item is complete. PG&E issued eight permanent maintenance procedures on the BDB communications equipment on October 26, 2015. These maintenance procedures provide instructions to maintain the BDB communications equipment. The following procedures issued are listed below:

(1) MP T-BDB-001, "BDB Communications Equipment Inventory," Revision 0
(2) MP T-BDB-002, "BDB Communications Equipment Functional Test," Revision 0
(3) MP T-BDB-003, "BDB Football Battery Replacement," Revision 0
(4) MP T-BDB-004, "BDB Hand Held Radio Battery Maintenance," Revision 0
(5) MP T-BDB-005, "BDB Iridium Satellite Phone Battery Maintenance," Revision 0
(6) MP T-BDB-006, "BDB Communications Trailer and Fiber Maintenance," Revision 0
(7) MP T-BDB-007, "Operations BDB Radio Maintenance," Revision 0
(8) MP T-BDB-008, "Fire BDB Radio Maintenance," Revision 0

Communications Item 9:

As discussed in PG&E Letter DCL-13-012, PG&E committed to establish periodic inventory checks for the planned enhancements in accordance with NEI 12-01 and NRC Order EA-12-049. Periodic inventory checks for the Phase 1 communications are currently scheduled to be completed by December 31, 2013. Periodic inventory checks for the Phase 2 communications are currently scheduled to be completed by October 27, 2015.

Status: This item is complete. PG&E issued permanent Procedure MP T-BDB-001, "BDB Communications Equipment Inventory," Revision 0, on October 26, 2015. MP T-BDB-001 provides inventory instructions on the Phase 1 and 2 equipment.

Communications Item 10:

As discussed in PG&E Letter DCL-13-012, PG&E committed to develop training plans for response personnel in plant groups such as the Emergency Response Organization, Fire, Security, Emergency Planning, Operations, Engineering, and Maintenance. The training plans will be developed in accordance with DCPP procedures using the systematic approach to training and will be implemented to ensure that the required DCPP staff is trained in accordance with NEI 12-01 and NRC Order EA-12-049. Training for applicable plant staff on the Phase 1 communications equipment was scheduled to be completed by December 31, 2013. Training for plant staff on the Phase 2 communications equipment is currently scheduled to be completed by October 27, 2015.

Status: This item is complete. Training plans for response personnel were developed in accordance with the systematic approach to training process. Operations and emergency response personnel completed training on the Phase 1 and 2 communications equipment on September 30, 2015.

Communications Item 11:

As discussed in PG&E Letter DCL-12-110, PG&E committed to relocate onsite Field Monitoring Team (FMT) satellite phones to the onsite FMT vehicle. Currently, the onsite FMT satellite phones are not stored in a structure that is considered to be seismically robust in accordance with NEI 12-01. This commitment will be implemented as part of Phase 2, which is scheduled for October 27, 2015.

Status: This item is complete. PG&E relocated the onsite FMT satellite phones to the Primary FLEX Storage Equipment Facility, which is seismically robust in accordance with NEI 12-01 and NEI 12-06, Revision 0.

Communications Item 12:

As discussed in PG&E Letter DCL-13-012, PG&E committed to provide power from an uninterrupted power supply with 6 hours of back-up power to the control room and technical support center (TSC) fixed satellite phones by October 27, 2015.

Status: This item is complete. PG&E improved the uninterrupted power supply to provide the control room and TSC fixed satellite phones with power for a 24-hour duration.

## 10. Potential Draft Safety Evaluation Impacts

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

## 11. References

(1) PG&E Letter DCL-13-007, "Pacific Gas and Electric Company'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 27, 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

(3) PG&E Letter DCL-15-099, "Pacific Gas and Electric Company's Fifth 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," dated August 26, 2015

(4) DCPP FLEX Support Guideline FSG 07, "Loss of Vital Instrumentation or Control Power"

(5) PG&E Letter DCL-16-003, "Pacific Gas and Electric Company's Notification of Full Compliance with Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049) for Diablo Canyon Power Plant Unit 1," dated January 5, 2016

(6) PG&E Letter DCL-12-110, "Pacific Gas and Electric Company's Response to Recommendation 9.3 Communications Requests 1 and 3 and the Evaluation of Existing Communications Systems Power Supplies," dated October 29, 2012

(7) PG&E Letter DCL-14-076, "Pacific Gas and Electric Company's Third 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," dated August 21, 2014

(8) PG&E Letter DCL-13-012, "30-Day Response to Request for Additional Information Regarding the Recommendation 9.3 Communications Assessment," dated February 21, 2013

(9) DCPP Calculation FLEX-011, "Diablo Canyon ELAP Containment Environment Analysis," Revision 0

Figure Revisions:

- Updated Figures 6E and 7E to more accurately reflect new FLEX connection in RHR system.
- Updated Figures 8C and 9D to more accurately show the EAFW pump discharge hose routing in the safety injection pump room and identify the connection point (Check Valves SI-1-8922A and SI-2-8922A).
- Updated Figures 10 and 11 to more accurately reflect new FLEX connection in the chemical and volume control system.
- Updated Figures 16 and 17 to more accurately reflect how SFP hose is fastened.
- Updated Figures 21 and 22 to correct typo ("sliced" should be "spliced").

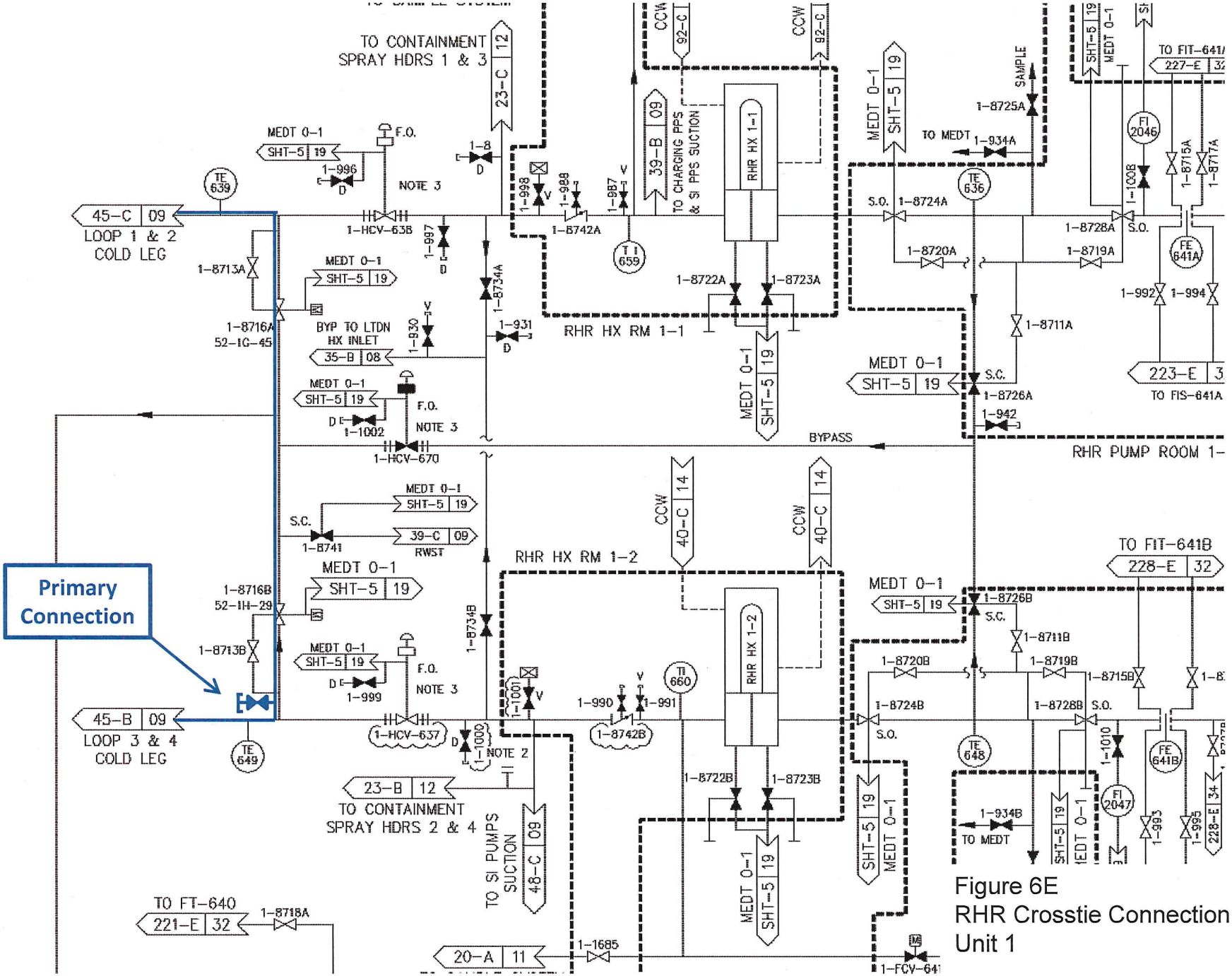



Figure 6E
RHR Crosstie Connection Point
Unit 1

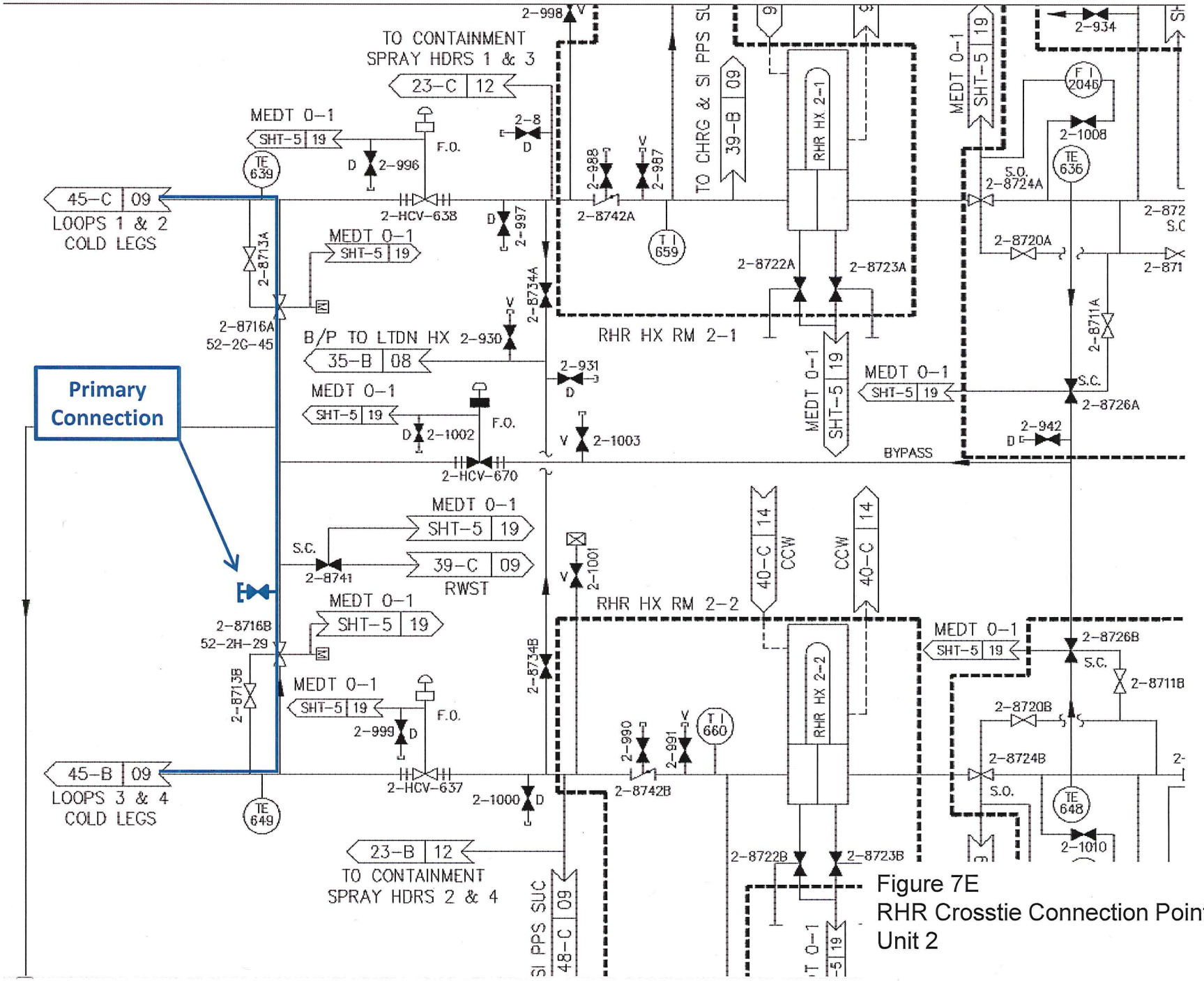



Figure 7E
RHR Crosstie Connection Point
Unit 2

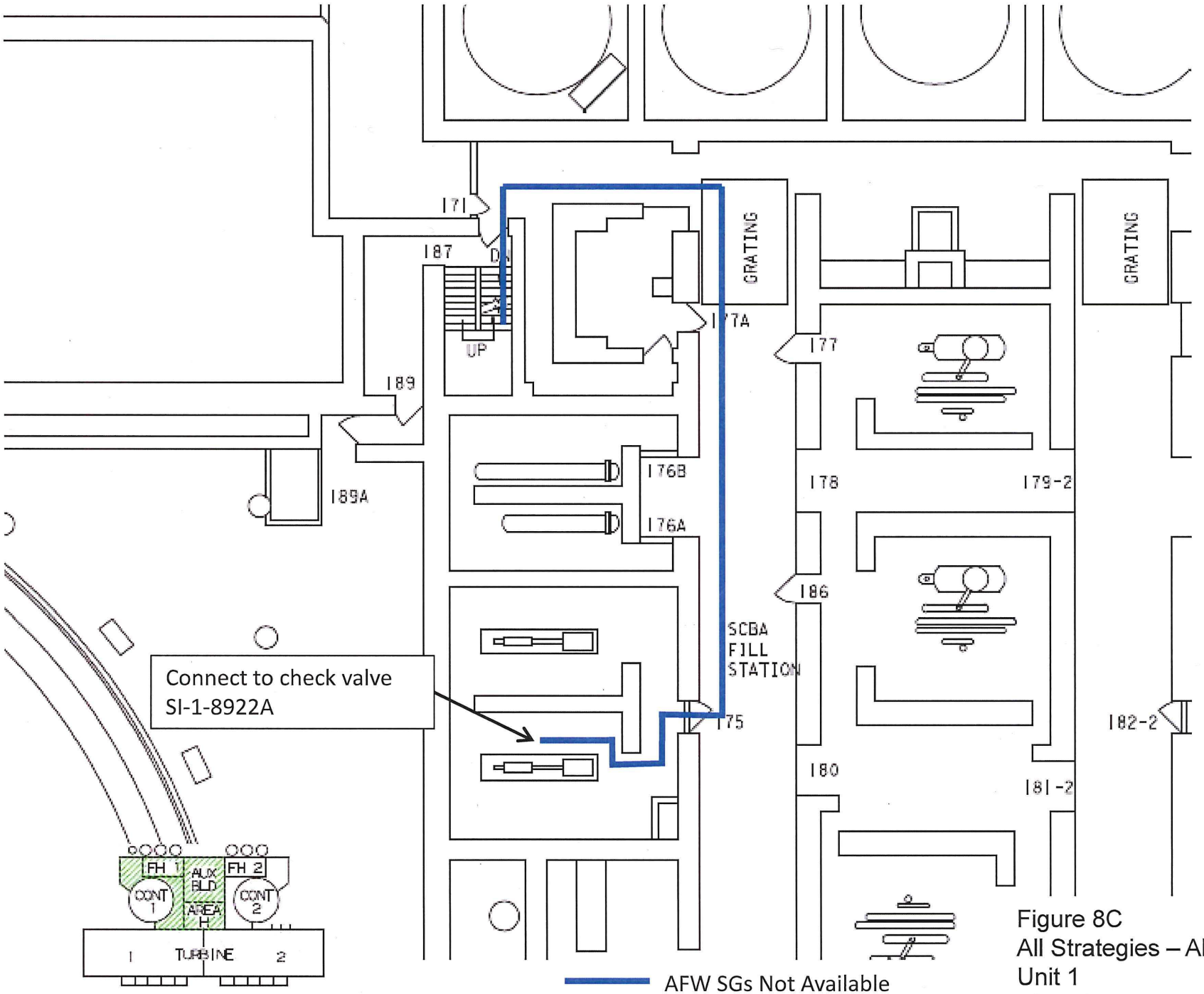



Figure 8C
All Strategies – Alternate
Unit 1
Elevation 85'

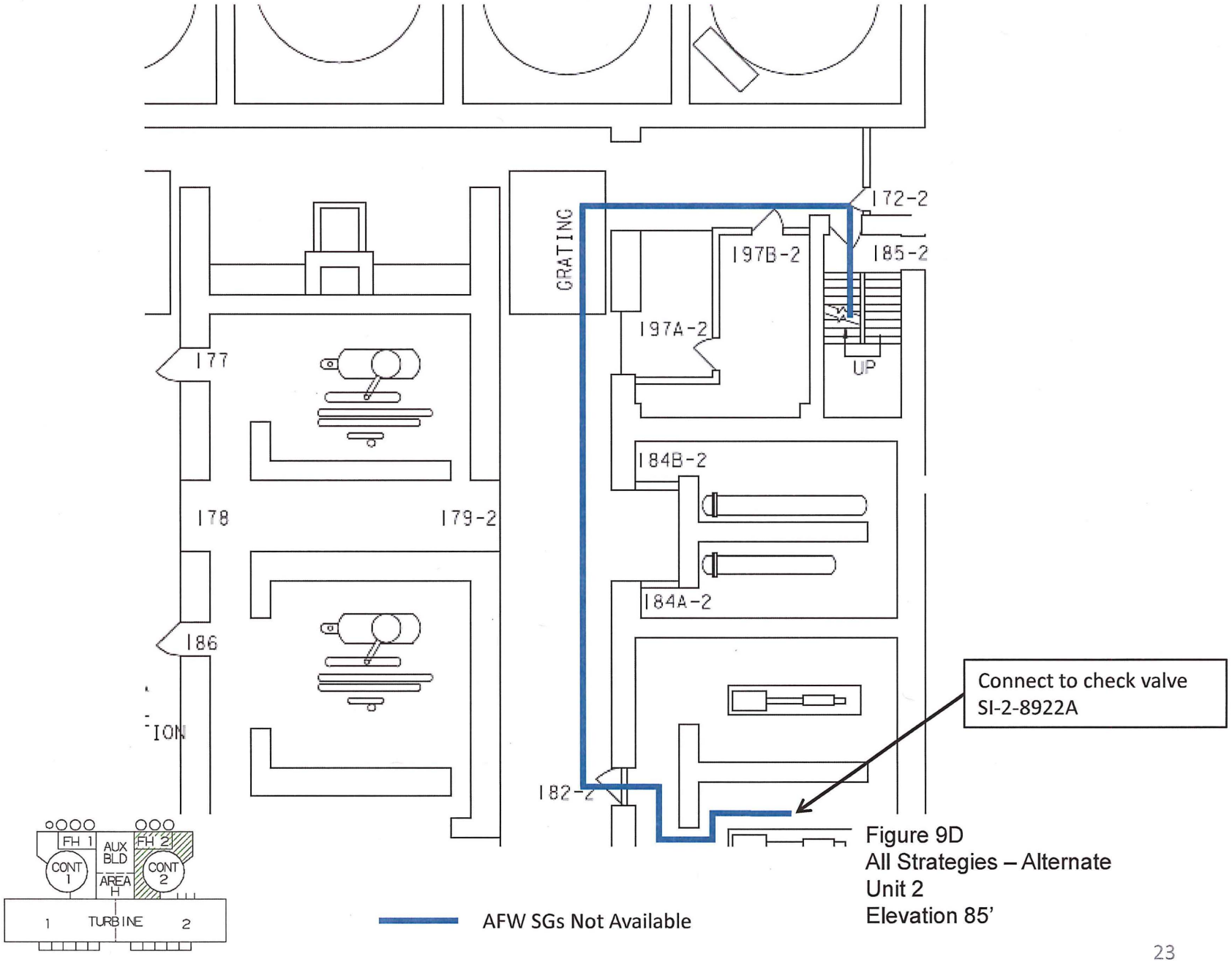



Figure 9D
All Strategies – Alternate
Unit 2
Elevation 85'

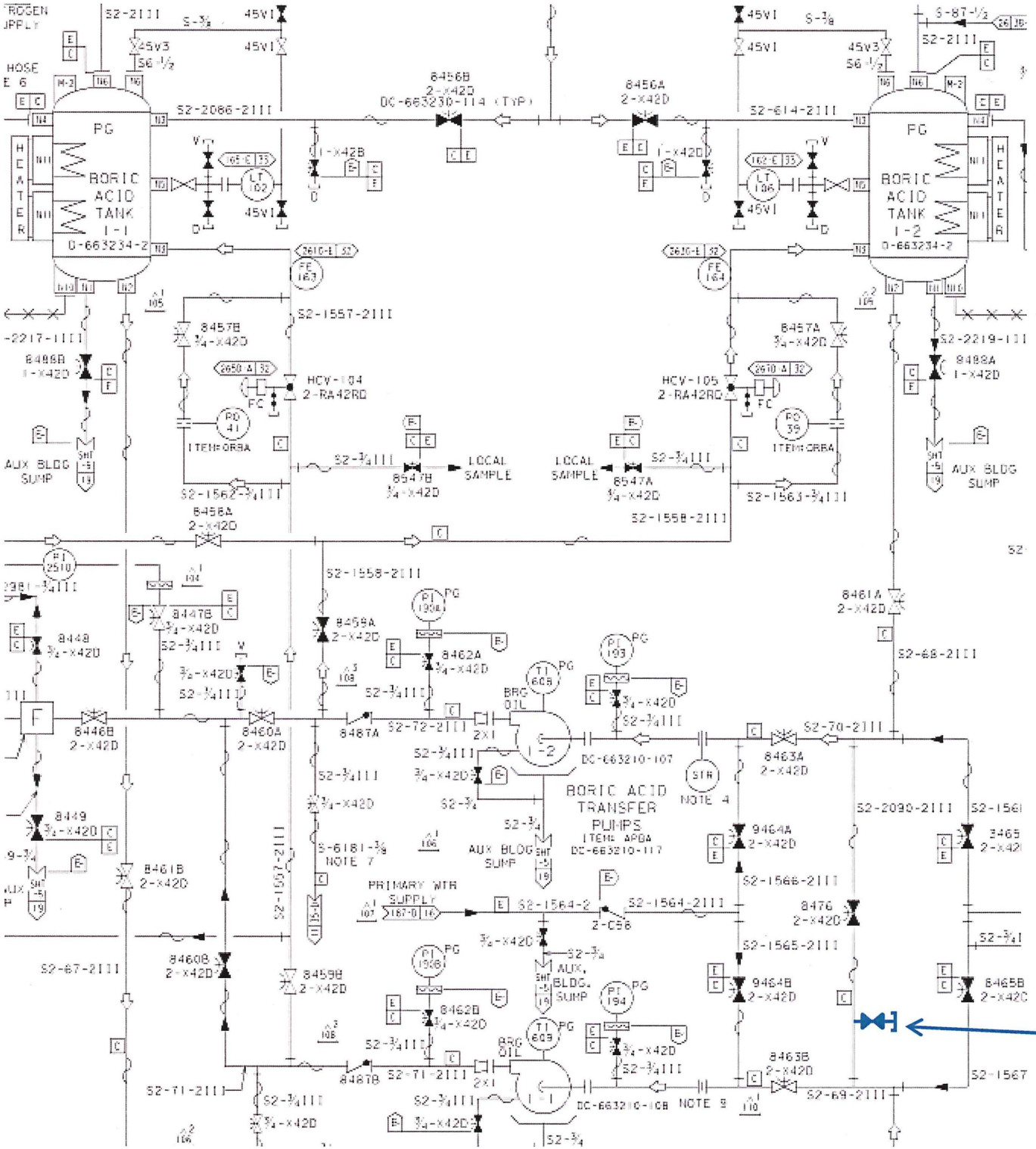



Figure 10
BAST Suction Connection Point
Unit 1

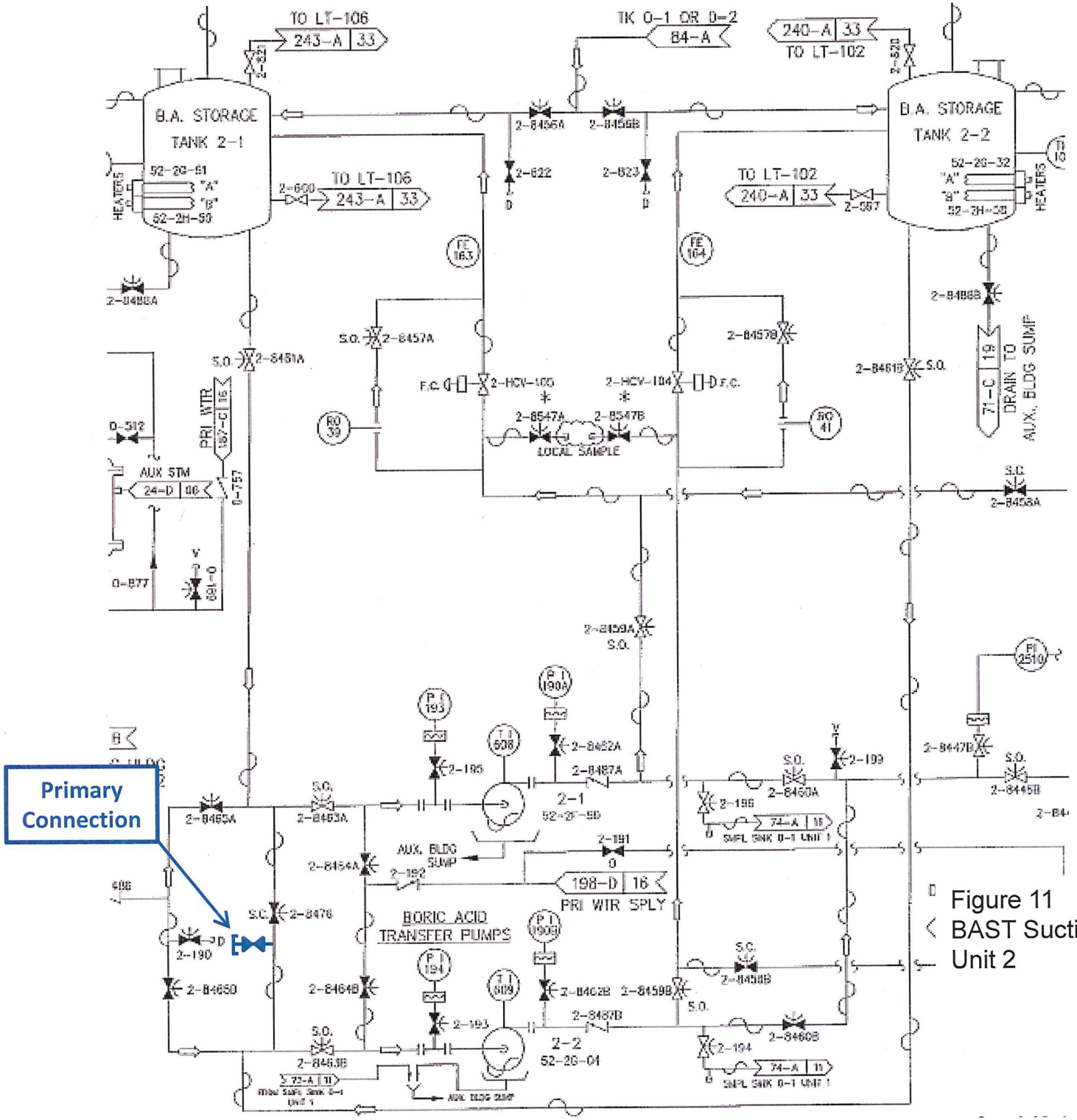
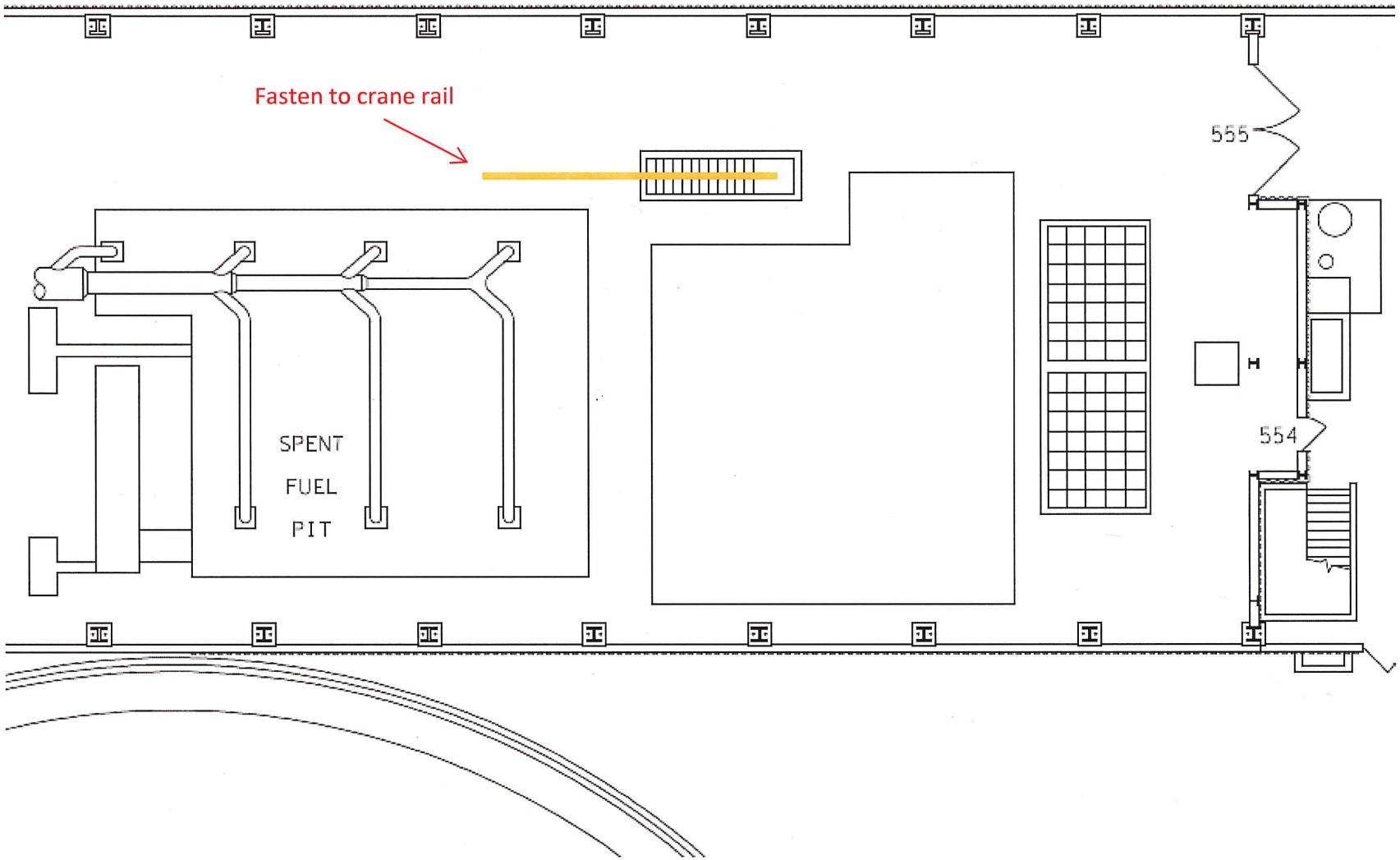



Figure 11
BAST Suction Connection Point
Unit 2



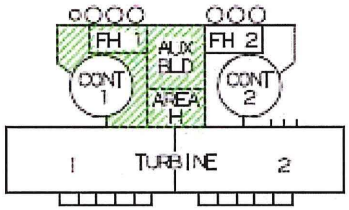
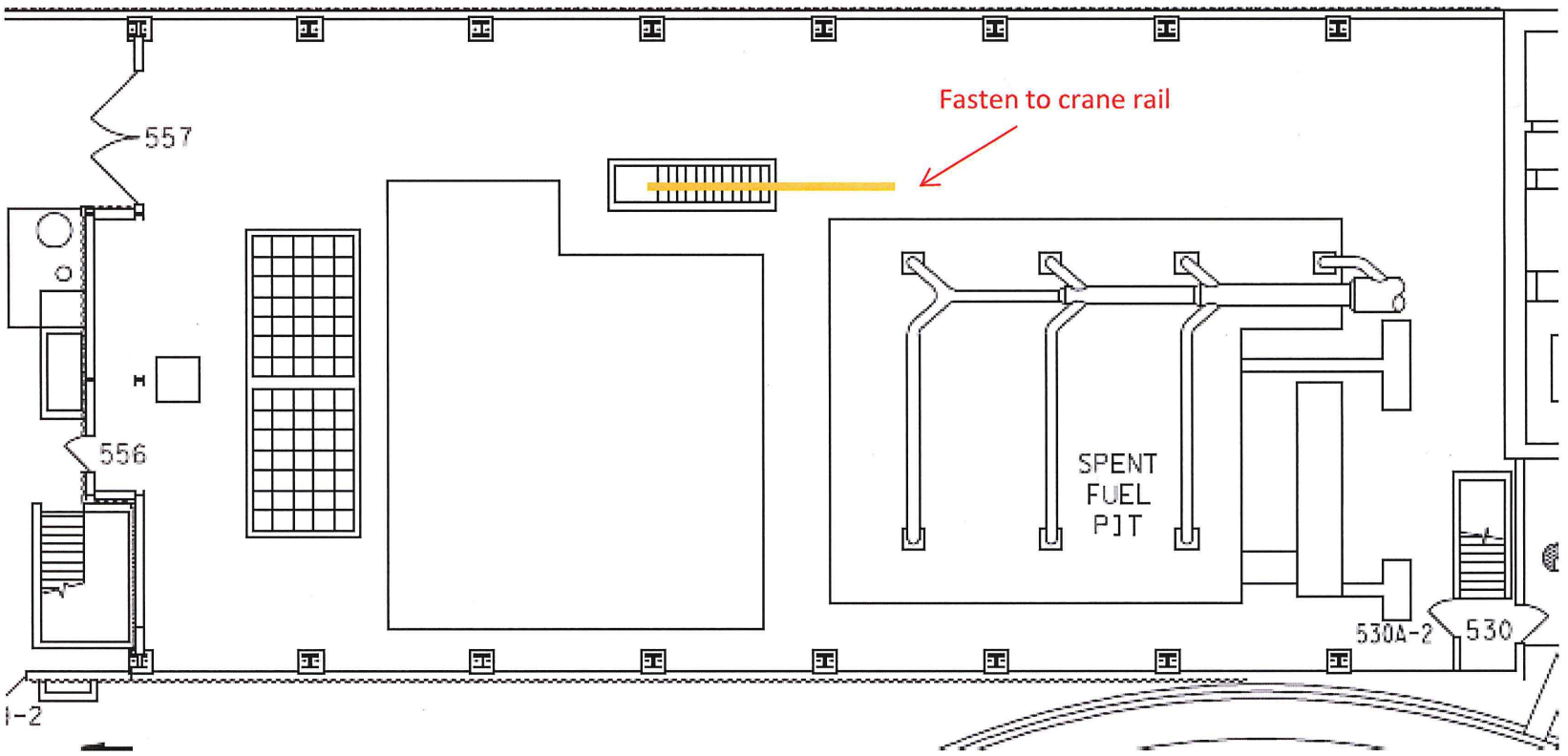




Figure 16
Spent Fuel Pool Primary Connection
Unit 1
Elevation 140'



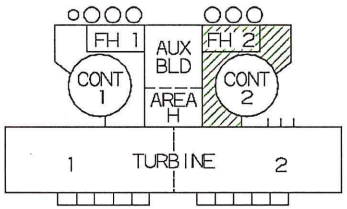




Figure 17
Spent Fuel Pool Primary Connection
Unit 2
Elevation 140'

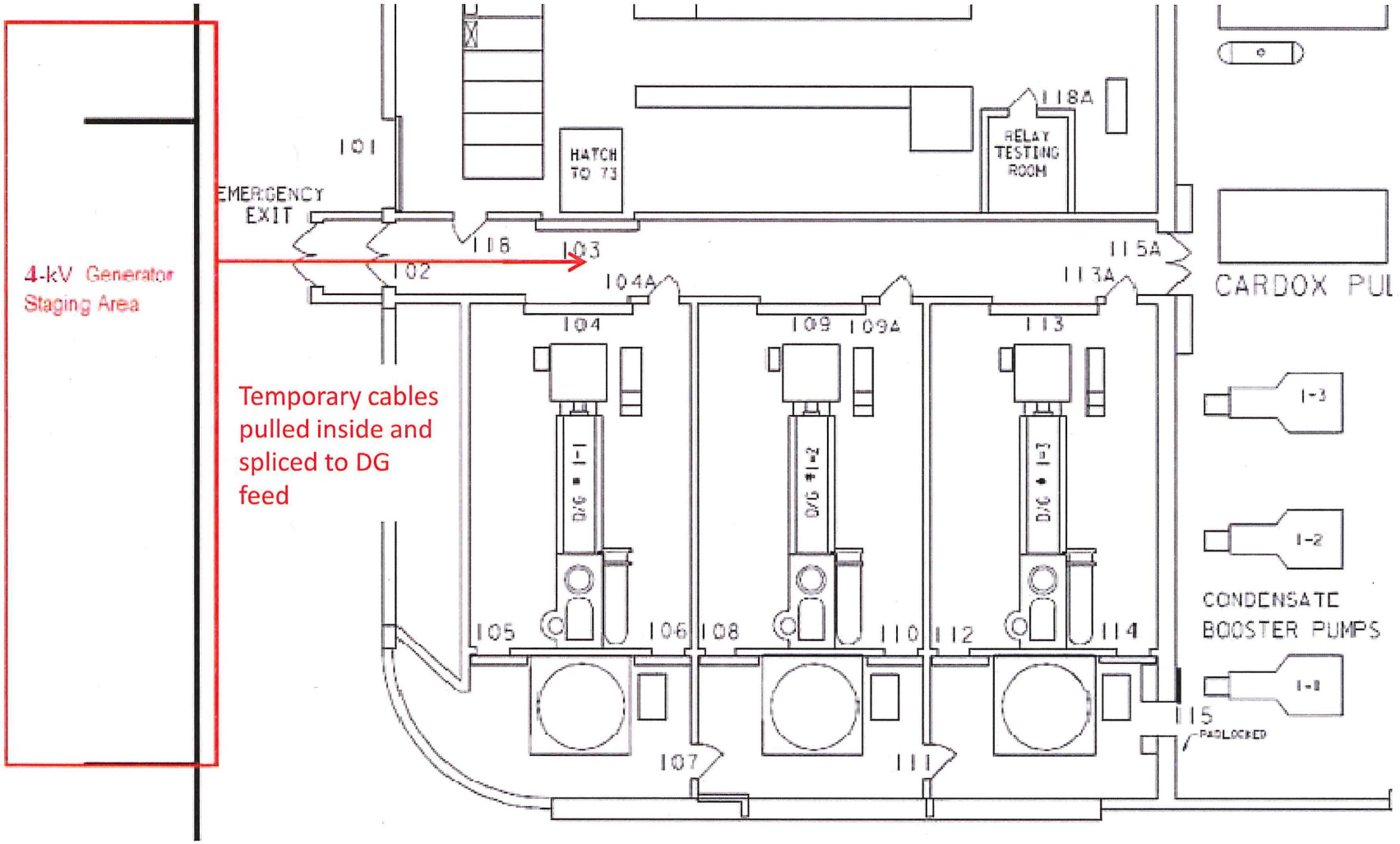



Figure 21
4-kV Generator and Cable Routing
Unit 1 - Elevation 85'

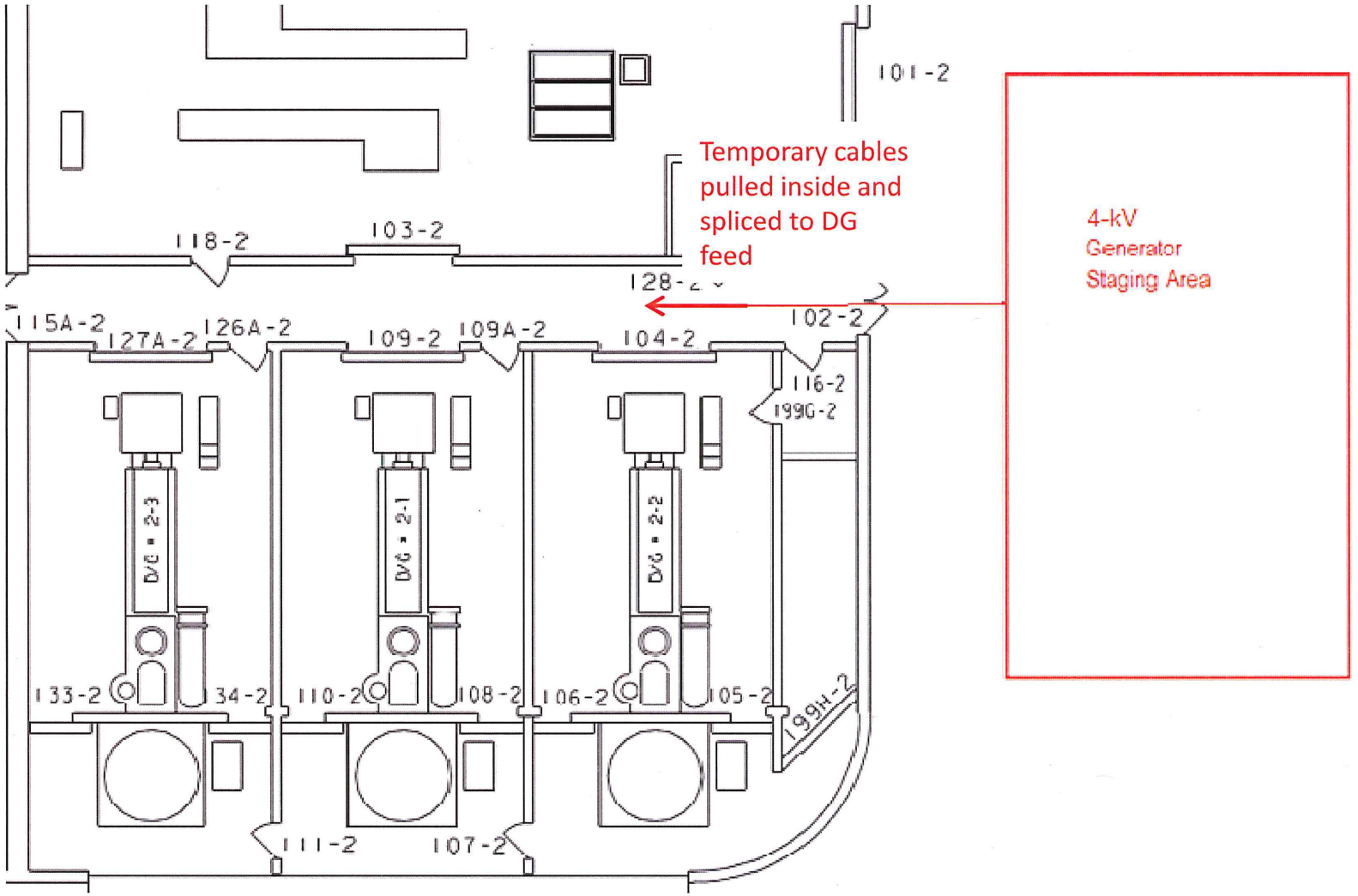



Figure 22
4-kV Generator and Cable Routing
Unit 2 - Elevation 85'