Pacific Gas and Electric Company®

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February 27, 2013

PG&E Letter DCL-13-007

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 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)

References:

1. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," 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, August 29, 2012

3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, August, 2012

Dear Commissioners and Staff:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued an order (Reference 1) to Pacific Gas and Electric Company (PG&E). Reference 1 was immediately effective and directs 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 external event. Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1, Section IV.C.1.a, requires submission of an overall integrated plan by February 28, 2013. The NRC Interim Staff Guidance (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.

PG&E Letter DCL-12-105, dated October 25, 2012, provided PG&E's initial status report regarding mitigation strategies, as required by Reference 1.

Enclosure 1 of this letter provides PG&E's Overall Integrated Plan for the Diablo Canyon Power Plant, which includes mitigation strategies pursuant to Reference 3. The enclosed integrated plan is based on conceptual design information. Final design details and associated procedure guidance, as well as any revisions to the information contained in the enclosure, will be provided in the 6-month integrated plan updates required by Reference 1.

PG&E is making a regulatory commitment (as defined by NEI 99-04) in the Enclosure 2 of this letter. This letter includes no revisions to existing regulatory commitments.

If you have any questions, or require additional information, please contact Mr. Terence L. Grebel at (805) 545-4160.

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

Executed on February 27, 2013.

Sincerely,

Barry S. Allen

Barry S. Allen
Site Vice President

dmfn/SAPN 50466122
Enclosures
cc: Diablo Distribution
cc:/enc: Eric E. Bowman, NRC, NRR/DPR/PGCB
Elmo E. Collins, NRC Region IV
Thomas R. Hipschman, NRC, Senior Resident Inspector
Jessica A. Kratchman, NRC, NRR/JLD/PMB
Eric J. Leeds, NRC Director, Office of Nuclear Reactor Regulation
Eileen M. Mckenna, NRC, NRO/DSRA/BPTS
James T. Polickoski, NRR Project Manager

Overall Integrated Plan
Pacific Gas and Electric Company

General Integrated Plan Elements
Diablo Canyon Power Plant

Determine Applicable Extreme External Hazard **Ref: NEI 12-06, Section 4.0 - 9.0 JLD-ISG-2012-01, Section 1.0**	*Input the hazards applicable to the site; seismic, external flood, high winds, snow, ice, cold, high temps.* *Describe how NEI 12-06 sections 5 – 9 were applied and the basis for why the plant screened out for certain hazards*

Diablo Canyon Power Plant (DCPP) has been evaluated in accordance with Nuclear Energy Institute (NEI) 12-06, Revision 0, "Diverse and Flexible Mitigation Coping Strategies (FLEX) Implementation Guide". The following applicable hazards have been identified:

- Seismic events
- External flooding
- Extreme heat

Pacific Gas and Electric Company (PG&E) has determined the functional threats from each of these hazards and identified FLEX equipment that may be affected. The FLEX storage locations will provide the protection required from these hazards. PG&E is also developing procedures and processes to further address plant strategies for responding to these various hazards.

Seismic:

DCPP Updated Final Safety Analysis Report (UFSAR) (Reference 1), Section 3.7.1 includes the seismic criteria for three design basis earthquake spectra (design earthquake, double design earthquake, and the postulated 7.5M Hosgri) and refers to Reference 1, Section 2.5.2.

Reference 1, Section 2.5.2 provides a discussion of the earthquakes postulated for the DCPP site and the effects of these earthquakes in terms of maximum free-field ground motion accelerations and corresponding response spectra at the DCPP site. Reference 1, Section 2.5.2 also provides response acceleration spectra curves for horizontal free-field ground motion at the DCPP site from these earthquakes. Reference 1, Sections 3.7.1.2 and 3.7.1.3 provide additional information on the seismic characteristics of the DCPP site.

Based on the information discussed in Reference 1, Section 2.5.4.8 on liquefaction potential, the FLEX staging routes and deployment paths are not subject to liquefaction

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hazards.

In summary, the seismic hazard applies to DCPP. As a result, the FLEX equipment will be evaluated to ensure that the equipment remains accessible and available after a beyond-design-basis (BDB) seismic event and that the FLEX equipment will not become a target or source of a seismic interaction from other systems, structures or components. The FLEX strategies developed for DCPP will include documentation ensuring that FLEX equipment, any storage locations, and deployment routes meet applicable seismic criteria.

External Flooding:

The DCPP design basis addresses all of the external hazards that must be considered in accordance with NEI 12-06, which includes external flooding. Reference 1, Section 2.4 indicates the maximum flood level for the DCPP site is so small that it cannot affect the plant and results in the majority of the site not being susceptible to external flooding. The one area of the DCPP site that may be exposed to external flooding from storm or tsunami is the intake structure and specifically the auxiliary saltwater (ASW) pump vaults. The potential for this area to be affected has been mitigated with watertight vaults and ventilation snorkels.

The installed plant equipment and connection points credited for mitigation of the BDB scenario are located in existing plant structures that have been evaluated for external flooding and found to not be susceptible. FLEX-credited portable equipment will be maintained in storage locations and deployed in areas of the DCPP site considered dry and not susceptible to flooding.

PG&E is developing procedures and strategies for delivery of offsite FLEX equipment during Phase 3, which considers regional impacts from flooding.

In summary, DCPP is generally considered a dry site and flooding is not a hazard for FLEX equipment.

High Wind:

As discussed in NEI 12-06, Section 7.2, hurricanes are extremely uncommon on the west coast of the United States (U.S.) and are not considered to affect the DCPP site. When considering the applicability of tornadoes to specific sites, data from the Nuclear Regulatory Commission's (NRC's) latest tornado hazard study, NUREG/CR-4461, is used. Tornadoes with the capacity to do significant damage are generally considered to be those with winds above 130 mph. NEI 12-06, Section 7.3.1 includes Figure 7-2,

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which provides a map of the U.S. in 2° latitude/longitude blocks that shows the tornado wind speed expected to occur at a rate of 1-in-1 million chances per year. This clearly bounding assumption allows selection of plants with expected tornado wind speeds greater than 130 mph. All other plants are not required to address tornado hazards impacting FLEX deployment. In accordance with NEI 12-06, Figure 7-2, DCPP is not susceptible to tornadoes that generate wind speeds of 130 mph or more.

In summary, based on NEI 12-06, Figures 7-1 and 7-2, the DCPP site would not experience winds at or exceeding 130 mph from severe weather. Therefore, the hazard screened out.

Extreme Cold, Snow, and Ice:

In accordance with NEI 12-06, all sites should consider the temperature ranges and weather conditions for their site in storing and deploying their FLEX equipment. The equipment procured should be suitable for use in the anticipated range of temperature conditions for the site, consistent with normal design practices.

In general, the southern parts of the U.S. do not experience snow, ice, and extreme cold. However, it is possible at most sites, except sites in Southern California, Arizona, the Gulf Coast, and Florida, to experience such conditions. Consequently, all other sites are expected to address FLEX deployment for these conditions.

NEI 12-06. Section 8.2.1, Figure 8-1 provides a visual representation of the maximum 3-day snowfall records across the U.S. NEI 12-06, Figure 8-1 shows that DCPP is not susceptible to a large amount of snow that could be a significant problem for deployment of the FLEX equipment. NEI 12-06 also assumes that this same basic trend applies to extreme low temperatures. NEI 12-06, Section 8.2.1, Figure 8-2 provides a visual representation of the potential for ice storms across the U.S. In accordance with that data, DCPP is in level 2, which is defined as "existence of small amounts of ice."

In support of the above guidance, Reference 1, Section 1.2.1.3 indicates that the extreme low temperature along the central coast may be as low as 24°F in the winter. The average annual temperature of the DCPP site area is about 55°F. This is discussed further in Reference 1, Section 2.3.2.2.2, which indicates the lowest hourly temperature recorded at the DCPP site through the year 2000 was 33°F in December 1990.

In summary, based on the available local data and NEI 12-06, Figures 8-1 and 8-2, the DCPP site does not experience significant amounts of snow or ice, and does not

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experience extreme cold temperatures. Therefore, the hazard screened out.

Extreme Heat:

In accordance with NEI 12-06, all sites must address high temperatures. Virtually every state in the lower 48 contiguous U.S. has experienced temperatures in excess of 110°F. Many states have experienced temperatures in excess of 120°F. Sites that should address high temperatures should consider the impacts of these conditions on the FLEX equipment and its deployment.

Reference 1, Section 1.2.1.3 indicates that the extreme high temperature along the central coast may be as high as 104°F in the summer. The average annual temperature of the DCPP site area is about 55°F. This is discussed further in Reference 1, Section 2.3.2.2.2, which indicates the highest hourly temperature recorded at the DCPP site through the year 2000 was 97°F in October 1987.

In summary, based on the available local data and industry estimates, the DCPP site is designed to address locally expected temperatures. However, in accordance with NEI 12-06, all sites will address extreme high temperatures. Therefore, PG&E will consider the site maximum expected temperatures in its specifications, storage, and deployment requirements for FLEX equipment, including ensuring adequate ventilation or supplementary cooling, if required.

Key Site assumptions to implement NEI 12-06 strategies. **Ref: NEI 12-06, Section 3.2.1**	*Provide key assumptions associated with implementation of FLEX Strategies:* • *Flood and seismic re-evaluations are assumed to not impact this plan at this time.* • *Exceptions for the site security plan may be required.* • *Deployment resources are assumed to begin arriving at hour 6 and fully staffed by 24 hours.* • *Certain Technical Specifications cannot be complied with during FLEX implementation.*

Assumptions are consistent with those detailed in NEI 12-06, Section 3.2.1. Analysis has been performed consistent with the recommendations contained within the executive summary of the pressurized water reactor owners group (PWROG) Core Cooling Position Paper and assumptions from that document are incorporated in the plant specific analytical bases.

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NEI 12-06 Key Assumptions:

Initial Plant Conditions:

The initial plant conditions are assumed to be the following:

(1) Prior to the event, the reactor has been operating at 100 percent rated thermal power for at least 100 days or has just been shut down from such a power history as required by plant procedures in advance of the impending event.

(2) At the time of the postulated event, the reactor and supporting systems are within normal operating ranges for pressure, temperature, and water level for the appropriate plant condition. All plant equipment is either normally operating or available from the standby state as described in the plant design and licensing basis.

Initial Conditions:

The following initial conditions are to be applied:

(1) No specific initiating event is used. The initial condition is assumed to be a loss of offsite power (LOOP) at a plant site resulting from an external event that affects the offsite power system either throughout the grid or at the plant with no prospect for recovery of offsite power for an extended period. The LOOP is assumed to affect all units at a plant site.

(2) All installed sources of emergency onsite alternating current (ac) power and station blackout (SBO) alternate ac power sources are assumed to be not available and not imminently recoverable.

(3) Cooling and makeup water inventories contained in systems or structures with designs that are robust with respect to seismic events, floods, and high winds, and associated missiles are available.

(4) Normal access to the ultimate heat sink (UHS) is lost, but the water inventory in the UHS remains available and robust piping connecting the UHS to plant systems remains intact. The motive force for UHS flow, i.e., pumps, is assumed to be lost with no prospect for recovery.

(5) Fuel for FLEX equipment stored in structures with designs that are robust with respect to seismic events, floods and high winds and associated missiles,

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remains available.

(6) Permanent plant equipment that is contained in structures with designs that are robust with respect to seismic events, floods, and high winds, and associated missiles, are available.

(7) Other equipment, such as portable ac power sources, portable back up direct current (dc) power supplies, spare batteries, and equipment for 10 CFR 50.54(hh)(2), may be used provided it is reasonably protected from the applicable external hazards in accordance with NEI 12-06, Sections 5 through 9 and Section 11.3 and has predetermined hookup strategies with appropriate procedures/guidance and the equipment is stored in a relative close vicinity of the site.

(8) Installed electrical distribution system, including inverters and battery chargers, remain available provided they are protected consistent with current station design.

(9) No additional events or failures are assumed to occur immediately prior to or during the event, including security events.

(10) Reliance on the fire protection system ring header as a water source is acceptable only if the header meets the criteria to be considered robust with respect to seismic events, floods, and high winds, and associated missiles.

Reactor Transient:

The following additional boundary conditions are applied for the reactor transient:

(1) Following the loss of all ac power, the reactor automatically trips and all rods are inserted.

(2) The main steam system valves (such as main steam isolation valves, turbine stops, atmospheric dumps, etc.), necessary to maintain decay heat removal functions operate as designed.

(3) Safety/relief valves or pressure-operated relief valves initially operate in a normal manner if conditions in the reactor coolant system (RCS) so require. Normal valve reseating is also assumed.

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(4) No independent failures, other than those causing the extended loss of ac power (ELAP)/loss of UHS event, are assumed to occur in the course of the transient.

Reactor Coolant Inventory Loss:

Sources of expected pressurized water reactor (PWR) coolant inventory loss include:

(1) normal system leakage

(2) losses from letdown unless automatically isolated or until isolation is procedurally directed

(3) losses due to reactor coolant pump (RCP) seal leakage (rate is dependent on the RCP seal design)

Spent Fuel Pool (SFP) Conditions:

The initial SFP conditions are:

(1) All boundaries of the SFP are intact, including the liner, gates, transfer canals, etc.

(2) Although sloshing may occur during a seismic event, the initial loss of SFP inventory does not preclude access to the refueling deck around the SFP.

(3) SFP cooling system is intact, including attached piping.

(4) SFP heat load assumes the maximum design basis heat load for the site.

Containment Isolation Valves:

It is assumed that the containment isolation actions delineated in current SBO coping capabilities is sufficient.

The following assumptions are specific to the DCPP site:

(1) DCPP will be able to declare an ELAP event within 60 minutes in order to enable actions that place the plant outside of its current design and licensing basis.

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(2) Flood and seismic re-evaluations pursuant to the 10 CFR 50.54(f) letter of March 12, 2012 are not completed and therefore not assumed in this submittal. As the re-evaluations are completed, seismic and flooding issues identified that could potentially affect FLEX strategies will be entered into the corrective action program.

(3) This plan defines strategies capable of mitigating a simultaneous loss of all ac power and loss of normal access to the UHS resulting from a BDB event by providing adequate capability to maintain or restore core cooling, containment, and SFP cooling capabilities at all units on a site. Though specific strategies are being developed, due to the inability to anticipate all possible scenarios, the strategies are also diverse and flexible to encompass a wide range of possible conditions. These pre-planned strategies developed to protect the public health and safety will be incorporated into the unit emergency operating procedures (EOPs) in accordance with established EOP change processes, and their impact to the design basis capabilities of the unit evaluated under 10 CFR 50.59. The plant technical specifications (TS) contain the limiting conditions for normal unit operations to ensure that design safety features are available to respond to a design-basis accident and direct the required actions to be taken when the limiting conditions are not met. The result of the BDB event may place the plant in a condition where it cannot comply with certain TS and/or with its Security Plan, and, as such, may warrant invocation of 10 CFR 50.54(x) and/or 10 CFR 73.55(p). (Reference: Task Interface Agreement [TIA] 2004-04, "Acceptability of Proceduralized Departures from Technical Specifications [TSs] Requirements at the Surry Power Station," [TAC Nos. MC4331 and MC4332]," dated September 12, 2006. [Accession No. ML060590273]).

(4) The event impedes site access as follows:

(a) Post event time: 6 hours – No site access. This duration reflects the time necessary to clear roadway obstructions, use different travel routes, mobilize alternate transportation capabilities (e.g., private resource providers or public sector support), etc.

(b) Post event time: 6 to 24 hours – Limited site access. Individuals may access the site by walking, personal vehicle, or via alternate transportation capabilities (e.g., private resource providers or public sector support).

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(c) Post event time: 24+ hours – Improved site access. Site access is restored to a near-normal status and/or augmented transportation resources are available to deliver equipment, supplies, and large numbers of personnel. (5) To support time-sensitive FLEX actions, staffing is assumed to be consistent with NEI 12-06, Section 11.7. Required staffing levels will be verified by walkthroughs, tabletops, and simulations of the identified FLEX strategies as a part of the Phase 2 staffing studies conducted in accordance with NEI 12-01 (PG&E Letter DCL-12-048, 60-Day Response to NRC Letter, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident" (Reference 2). Refer to open item (OI) -1.	
Extent to which the guidance, JLD-ISG-2012-01 and NEI 12-06, are being followed. Identify any deviations to JLD-ISG-2012-01 and NEI 12-06. **Ref: JLD-ISG-2012-01 NEI 12-06 13.1**	*Include a description of any alternatives to the guidance, and provide a milestone schedule of planned action.*
PG&E will fully comply with the guidance in JLD-ISG-2012-01 and NEI 12-06 in implementing FLEX strategies for the DCPP site as documented in the FLEX Integrated Plan and subsequent regulatory correspondence.	

<table>
<tr><th colspan="2">General Integrated Plan Elements
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<tr><td>Provide a sequence of events and identify any time constraint required for success including the technical basis for the time constraint.

Ref: NEI 12-06, Section 3.2.1.7
JLD-ISG-2012-01, Section 2.1</td><td>Strategies that have a time constraint to be successful should be identified with a technical basis and a justification provided that the time can reasonably be met (for example, a walk-through of deployment).

Describe in detail in this section the technical basis for the time constraint identified on the sequence of events timeline Attachment 1A.

For technical basis support information, see NSSS Significance Reference Analysis Reconciliation Table (Attachment 1B).</td></tr>
<tr><td colspan="2">Refer to Attachment 1A, “Sequence of Events Timeline.”

Refer to Attachment 1B, “NSSS Significant Reference Analysis Deviation Table” for technical basis support information.</td></tr>
<tr><td colspan="2">Discussion of time constraints identified in Attachment 1A:

The sequence of events and any associated time constraints are identified for DCPP Modes 1 through 4 strategies for FLEX Phase 1 through Phase 3. NEI 12-06 indicates that these actions are bounding when compared to the Modes 5 and 6 and full core offload scenarios as they require the most personnel, actions, and time constraints. See sequence of events timeline (Attachment 1A) for a summary of this information. The time constraints listed in Attachment 1A are derived from analysis requirements. The times stated are taken to be the time constraint by which the action must be completed. The elapsed time to perform activities listed in Attachment 1A are estimates based on simulator runs and input from licensed operators. The actual coping strategy deployment times will be based on site damage assessments and availability of personnel. The coping strategy deployments are anticipated to be completed earlier than required by the analysis as shown in Attachment 1A. Required staffing levels will be verified by walkthroughs, tabletops, and simulations of the identified FLEX strategies as a part of the Phase 2 staffing studies conducted in accordance with NEI 12-01 (Reference 2).

Actions 1 through 10 are SBO procedure and emergency plan actions required by the current licensing basis and are not new ELAP time constraints.</td></tr>
</table>

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(11) Entry into ELAP – 1 hour

ELAP entry conditions will be verified by operations personnel. One hour is a reasonable assumption for operators to perform initial evaluation of the emergency diesel generators (EDGs) and offsite power.

(12) Control room portable lighting – no new ELAP time constraint

(13) Doors to control room and battery charger/inverter rooms are blocked open – 1 hour

Doors blocked open in the control room and battery charger/inverter rooms to limit temperature build-up and habitability concerns.

(14) Assistance requested from regional response center (RRC) – 1.25 hours

RRC requested to deliver the DCPP-designated set of equipment. This ensures prompt transport of equipment to the site from the RRC.

(15) Vital dc battery load shedding is completed – 1.5 hours

Two batteries are removed from service and load is reduced on the remaining battery by opening individual load breakers to extend the life of the battery to ensure that vital instruments and controls are maintained during Phase 1 coping. When the first battery approaches depletion a second battery is placed in service and the first battery is secured. The second battery also provides power for vital instruments and controls. Operating two batteries in succession provides power for at least 24 hours (Reference 4). A third battery is available, along with portable instruments to provide vital instruments and control after the first two batteries are exhausted.

(16) Initial site damage assessment – 3 hours

Water supplies are assessed and necessary actions taken.

(17) Plant access assessment – 6 hours

Plant site and access assessed. Debris removal initiated using onsite equipment to facilitate using offsite resources and onsite response.

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(18) Perform plant cooldown and depressurization – 12 hours

Cooldown will begin within 8 hours of shutdown and will be completed by the stated time constraint.

(19) Deploy hoses to SFP and open doors to fuel handling building (FHB) to ventilate SFP – 13 hours

Doors are opened in the FHB for ventilation to facilitate deployment of equipment used in the SFP makeup strategies. Should bulk boiling of the SFP occur prior to deployment of SFP makeup equipment, personal protective equipment is available that will allow deployment of equipment to a high temperature and humidity environment.

(20) Align the second vital battery and secure initial vital battery – 15 hours

Based on the DCPP load shedding and battery sequencing strategy, the initial vital battery in each Unit will continue to provide adequate power for required loads for at least 15 hours. The second battery will then be placed in service and the initial battery secured. The second battery will continue to provide adequate power for a minimum of an additional 9 hours (Reference 4).

(21) Align emergency RCS (ERCS) pump suction to the boric acid storage tank (BAST) and place in service – 16 hours

Adequate shutdown margin must be established 24 hours into the event. Based on 10-gpm flow from the BASTs, it will take approximately 8 hours to meet the boration requirement. Therefore, the action to align the pump must take place before 16 hours.

(22) Transfer turbine-driven auxiliary feedwater (TDAFW) pump suction to 0-1 fire water storage tank (FWST) – 20 hours

Suction is transferred from the condensate storage tank (CST) to the 0-1 FWST by performing a manual valve alignment.

(23) FLEX deployment damage assessment – 24 hours

FLEX deployment route and connection point availability assessed for Phase 2.

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(24) 480-V generator in service to repower battery chargers – 24 hours

480-V diesel generator repowers a vital dc battery charger on each Unit. Installed vital dc batteries will provide power to required plant instrumentation.

(25) Establish battery room ventilation – 24 hours

Operating two batteries in succession provides power for at least 24 hours (Reference 4). Battery room cooling/ventilation must be started when battery charging.

(26) Emergency auxiliary feedwater (EAFW) and raw water reservoir (RWR) equipment in service – 30 hours

The TDAFW pump has adequate water from seismically-qualified sources to provide makeup to the steam generators (SGs) prior to this time.

(27) Align ERCS pump suction to the refueling water storage tank (RWST) – 39 hours

The ERCS suction will be transferred to the RWST before the BAST is depleted.

(28) Emergency SFP (ESFP) pump in service – 67 hours

The ESFP pumps will draw suction from the RWR supply header and provide makeup to the SFP prior to its water level reaching approximately 10 feet (ft) above the top of the fuel. Radiation shielding may no longer be adequate when the SFP water level is less than 10 ft above the top of the fuel. See Note.

(29) through (32) RRC equipment – >72 hours

These items will be received from the RRC. The Phase 2 coping strategies have been developed to continue until these Phase 3 items are delivered. The RRC will be notified at hour 1.25 of the ELAP, and deployment of Phase 3 equipment will initiate at that time. The specific equipment will be identified in the DCPP playbook.

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(33) Portable emergency auxiliary saltwater (EASW) pump in service – 105 hours

The portable EASW pumps are onsite; however, the pumps are not required to be deployed until a time greater than 72 hours. These pumps take suction from the UHS (Pacific Ocean) to supply cooling water for Phase 3 coping strategies.

Note: As described in FLEX frequently asked question (FAQ) 2013-05, the timing in this sequence of events assumes that the event starts in Mode 1 at 100 percent power, which is consistent with JLD-ISG-2012-01. If the fuel has been offloaded to the SFP, then the only required FLEX strategy is maintain SFP cooling resulting in a greater availability of personnel to apply to this strategy. Assuming a full core offload 100 hours after shutdown design basis heat load, bulk boiling of the SFP occurs in approximately 6 hours (References 5 and 6). The water level reaches 10 ft above the top of the fuel within approximately 30 hours from the initiation of the event and reaches the top of the fuel within approximately 47 hours from the initiation of the event.

Identify how strategies will be deployed in all modes. **Ref: NEI 12-06, Section 13.1.6**	*Describe how the strategies will be deployed in all modes.*

PG&E has differentiated between the route from a storage location to its staging location, which is the "staging route," and the path from a staging location to the source and/or supply plant connections, which is the "deployment path." The staging routes will be followed to transport the FLEX equipment to the required staging locations. The deployment paths will be followed to connect the FLEX equipment to the associated plant structures, systems, and components to allow the strategies to be implemented. The routes and paths applicable to the plant mode in which the plant is operating will be maintained available in accordance with plant procedures.

<table>
<tr><th colspan="2">General Integrated Plan Elements
Diablo Canyon Power Plant</th></tr>
<tr><td>Provide a milestone schedule. This schedule should include:
• Modifications timeline
  o Phase 1 Modifications
  o Phase 2 Modifications
  o Phase 3 Modifications
• Procedure guidance development complete
  o Strategies
  o Maintenance
• Storage plan (reasonable protection)
• Staffing analysis completion
• FLEX equipment acquisition timeline
• Training completion for the strategies
• Regional Response Centers operational
Ref: NEI 12-06, Section 13.1</td><td>The dates specifically required by the order are obligated or committed dates. Other dates are planned dates subject to change. Updates will be provided in the periodic (6-month) status reports.</td></tr>
<tr><td colspan="2">Refer to Attachment 2, “Milestone Schedule.”

The dates specifically required by the order are obligated or committed dates. Other dates are planned dates subject to change. Updates will be provided in the periodic (6-month) status reports.</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>Identify how the programmatic controls will be met.

Ref: NEI 12-06, Section 11
JLD-ISG-2012-01, Section 6.0</td><td>Provide a description of the programmatic controls equipment protection, storage and deployment and equipment quality. See section 11 in NEI 12-06. Storage of equipment, 11.3, will be documented in later sections of this template and need not be included in this section.

See section 6.0 of JLD-ISG-2012-01.</td></tr>
<tr><td colspan="2">Equipment associated with these strategies will be procured as commercial equipment with design, storage, maintenance, testing, and configuration control in accordance with NEI 12-06, Section 11.

Table 1 provides a list of the PWR portable equipment for Phase 2. Table 2 provides a list of PWR portable equipment for Phase 3. Table 3 provides a list of Phase 3 response equipment/commodities.

Attachment 3 provides a list of conceptual figures showing storage locations, staging routes, staging locations, deployment paths, and plant connection points.

The unavailability of equipment and applicable connections that directly perform a FLEX mitigation strategy will be managed using plant equipment control guidelines developed in accordance with NEI 12-06, Section 11.5.</td></tr>
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Programs and controls will be established to ensure personnel proficiency in the mitigation of BDB external events is developed and maintained in accordance with NEI 12-06, Section 11.6. The FLEX strategies' bases will be documented and maintained in controlled plant documents. Existing plant configuration control procedures will be modified to ensure that changes to the plant design, physical plant layout, roads, buildings, and miscellaneous structures will not adversely impact the approved FLEX strategies in accordance with NEI 12-06, Section 11.8.	
Describe training plan	*List training plans for affected organizations or describe the plan for training development.*
Training plans will be developed for plant groups such as the emergency response organization, fire, security, emergency planning, operations, engineering, and maintenance. The training plan 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 will be trained prior to implementation of FLEX.	
Describe Regional Response Center plan	*Discussion in this section may include the following information and will be further developed as the Regional Response Center development is completed.* • *Site-specific RRC plan* • *Identification of the primary and secondary RRC sites* • *Identification of any alternate equipment sites (i.e. another nearby site with compatible equipment that can be deployed)* • *Describe how delivery to the site is acceptable* • *Describe how all requirements in NEI 12-06 are identified*
The industry will establish two RRCs to support utilities during BDB external events. Each RRC will hold five sets of equipment. Four of the sets will be able to be fully deployed when requested. The fifth set will have equipment in a maintenance cycle. Equipment will be moved from an RRC to a local assembly area, established by the strategic alliance for FLEX emergency response (SAFER) team and DCPP. Communications will be established between DCPP and the SAFER team and required equipment moved to the site as needed. First arriving equipment, as established during development of DCPP's playbook, will be delivered to the site within 24 hours from the initial request. PG&E will establish a contract with the RRC vendor that will meet the requirements of NEI 12-06, Section 12.	
Notes:	

Maintain Core Cooling and Heat Removal
PWR Installed Equipment Phase 1

Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications, utilizing methods described in NEI 12-06, Table 3-2:

- **AFW/EFW**
- **Depressurize SG for makeup with portable injection source**
- **Sustained source of water**

Ref: JLD-ISG-2012-01, Sections 2 and 3

Core Cooling with SGs Available

The Phase 1 strategy is to remove decay heat from the RCS using the SGs. The TDAFW pump is assumed to automatically start. Feedwater flow and 10 percent steam dump valves will be manually controlled. Additionally, the TDAFW can be locally started if required (Reference 1, Section 7.4.1.2.2). Initial alignment of the TDAFW pump suction is from the seismically-qualified CST for that Unit. If necessary, the TDAFW pump suction can then be manually transferred to the seismically-qualified backup supply, the FWST. PG&E's analysis demonstrates that there is sufficient seismically-protected inventory to provide AFW for at least 30 hours after the initiating event (Reference 7).

Core Cooling with SGs Not Available

The Phase 1 strategy for heat removal will be through boiling the water in the reactor vessel with an available vent path. The lowest allowed level in the RCS, when SGs are not available to provide core cooling, is not more than 1 ft below the vessel flange during the removal of the reactor vessel head.

The strategy for Phase 1 will rely on gravity feed to the RCS from the RWST, if necessary, using current plant procedures (Reference 8).

Details:	
Provide a brief description of procedures / strategies / guidelines	SBO EOP ECA-0.0 (References 9 and 10) currently addresses implementation of this strategy. The strategies in References 9 and 10 will be tied to the appropriate FLEX Support Guideline for this strategy.
Identify modifications	N/A

[1] Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

Maintain Core Cooling and Heat Removal PWR Installed Equipment Phase 1	
Key reactor parameters	(1) SG wide range level or narrow range level with AFW flow indication (2) SG pressure (3) CST level For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. Note: It is also assumed that all instruments listed for the Maintain RCS Inventory Control function will be available. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Notes: Core cooling strategies are provided for conditions where SGs are available or where SGs are not available but a sufficient RCS vent has been established to support core cooling. This assumption is in accordance with NEI 12-06, FAQ 2012-19. Other configurations are not considered as these occur for short durations that are exempted by NEI-12-06, Table D.	

Maintain Core Cooling and Heat Removal
PWR Portable Equipment Phase 2

Core Cooling with SGs Available

The Phase 2 strategy for each Unit will be to continue the use of the SGs using a combination of a common diesel-driven RWR pump and an EAFW pump to continue to supply cooling water.

The RWR pump will be staged at the RWR. The RWR pump will supply water through flexible hoses to a portable FLEX suction header located at the 115-ft elevation bench area. The RWR has two sections, each capable of containing 2.5 million gallons of water. One section of the RWR with a nominal 90 percent full volume (approximately 2.25 million gallons) of seismically-evaluated water is capable of supplying both Units' coping strategies for approximately 75 hours at the expected strategy flow rates (Reference 11). The RWR pump and associated flexible hose will be stored in a FLEX storage facility.

Only one section of the RWR is credited as the installed piping to the plant is not seismically qualified and may not be intact post-earthquake. However, as part of the site damage assessment, the RWR will be evaluated early in the event and action taken as necessary to isolate the non-seismic piping. Completion of that action within 3 hours would ensure the availability of an additional 1 million gallons in the second section of the RWR (Reference 11).

The two EAFW pumps, one for each Unit, will also be staged at the 115-ft elevation bench area. The EAFW pumps will draw water from the portable FLEX suction header and inject water into the associated Unit's SGs through flexible hoses connected to permanent plant systems. The two EAFW pumps and associated flexible hose will be stored in a FLEX storage facility.

Backup RWR and EAFW pumps and associated flexible hoses will be stored in a FLEX storage facility.

Core Cooling with SGs Not Available

The Phase 2 strategy is to inject borated water from either Unit's RWST to the reactor using the EAFW pumps through flexible hoses connected to permanent plant systems.

In addition, supplemental non-seismic onsite water sources could be used, if available, including the condenser hotwells, primary water storage tank, and sea water.

Maintain Core Cooling and Heat Removal PWR Portable Equipment Phase 2	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	As shown on Figures 3 (Unit 1) and 4 (Unit 2), the primary connection point when SGs are available is on the AFW system crosstie between the discharge lines from the motor-driven auxiliary feedwater (MDAFW) pumps. A flanged connection with a standardized hose connection will be installed to allow connection of the supply hose from the EAFW pumps. The alternate connection to the AFW system does not require a permanent modification. As shown in Figure 6D (Unit 1) and Figure 7D (Unit 2), the primary connection point when SGs are not available is located in the boron injection tank (BIT) room on the safety injection line. A flanged connection with a standardized hose connection will be installed to allow connection of the supply hose from the EAFW pumps. The alternate connection to the RCS does not require a permanent modification.
Key reactor parameters	(1) SG wide range level or narrow range level with AFW flow indication (2) SG pressure For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. Note: It is also assumed that all instruments listed for the Maintain RCS Inventory Control function will be available.

Maintain Core Cooling and Heat Removal PWR Portable Equipment Phase 2	
	PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Notes: Core cooling strategies are provided for conditions where SGs are available or where SGs are not available but a sufficient RCS vent has been established to support core cooling. This assumption is in accordance with NEI 12-06, FAQ 2012-19. Other configurations are not considered as these occur for short durations that are exempted by NEI-12-06, Table D.	
Storage / Protection of Equipment: Describe storage / protection plan or schedule to determine storage requirements	
Seismic	Two FLEX storage locations will be provided for the storage of the related FLEX equipment. The FLEX equipment will be protected in accordance with NEI 12-06, Section 5.3.1.
Flooding	FLEX equipment required to implement this strategy will be maintained in storage locations that are in areas of the site considered dry and not susceptible to flooding from any source.
Severe Storms with High Winds	As discussed in the hazards analysis section of this integrated plan, severe storms with high winds are not applicable to DCPP in accordance with NEI 12-06.
Snow, Ice, and Extreme Cold	As discussed in the hazards analysis section of this integrated plan, snow, ice, and extreme cold are not applicable to DCPP in accordance with NEI 12-06.
High Temperatures	Based on the available local data (Reference 1, Section 1.2.1.3) and industry estimates included in NEI 12-06, the DCPP site is not exposed to temperatures over 104°F. However, for the design of storage locations for the FLEX equipment, PG&E will consider the site maximum expected temperatures. All of the storage locations will be evaluated for temperature effects and adequate ventilation will be provided as required to ensure no adverse effect on the FLEX equipment.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
Equipment Storage – Area 10 BDB Storage Facility (Figure 1): Two EAFW pumps and associated flexible hoses will be stored in this facility. These pumps and hoses will be transported to their staging locations and deployed.	**Equipment Storage – Area 10 BDB Storage Facility:** This storage facility will be located in Area 10 as shown on Figure 1. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage – Area 10 BDB Storage Facility:** N/A
Equipment Storage – Lot 11 BDB Storage Facility (Figure 2): The backup EAFW pump, two RWR pumps, and associated flexible hoses will be stored in this facility. These pumps and hoses will be transported to their staging locations and deployed.	**Equipment Storage – Lot 11 BDB Storage Facility:** This storage facility will be located east of the 500-kV switchyard as shown on Figure 2. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage - Lot 11 BDB Storage Facility:** N/A
Deployment: As shown on Figure 5A, a portable diesel-driven RWR pump will be staged at the RWR. As shown on Figures 5A and 5B, the RWR pump will supply water through a flexible hose to a portable FLEX suction header located at the 115-ft elevation bench area near the staging location of the EAFW pumps. The RWR pump will be capable of supplying water for all DCPP coping strategies simultaneously.	**Deployment:** Modification to the protected area security perimeter barrier to support supplying water to the 115-ft elevation staging area.	**Deployment:** N/A

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
As shown on Figures 6A (Unit 1) and 7A (Unit 2), for reactor core cooling and heat removal (SGs available), two EAFW pumps will be staged at the 115-ft elevation bench area. Each EAFW pump will draw water from the portable FLEX suction header and inject water into its associated Unit's SGs through flexible hoses connected to either of the connection points discussed below. For reactor core cooling and heat removal (SGs not available), an EAFW pump will be staged at the 115-ft elevation bench area (Figures 6A [Unit 1] and 7A [Unit 2]). The EAFW pump will draw borated water from the RWST and inject water through either of the connection points discussed below.		

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
Connections: For reactor core cooling and heat removal (SGs available), both the primary and alternate connection points for this strategy can be used from the EAFW pumps staged at the 115-ft elevation bench area. *SGs available Primary:* As shown in Figures 6A and 6B (Unit 1) and Figures 7A and 7B (Unit 2), the deployment paths are provided to the primary connection point in each Unit. As shown on Figures 3 (Unit 1) and 4 (Unit 2), the primary connection point is located in the MDAFW pump rooms on the MDAFW pump cross tie downstream of the MDAFW pumps. This connection point can be utilized to provide flow to all SGs in the associated Unit. Using manual isolation valves on both sides of the flange connection on the crosstie, this connection can be made without interruption of the TDAFW pump flow. *SGs available Alternate:* As shown in Figure 8A (Unit 1) and 9A (Unit 2), the deployment paths are provided	**Connections:** System modifications are described above.	**Connections:** (1) All connection points for this strategy are within and can be accessed through Seismic Category I structures. (2) All connection points for this strategy will be designed to meet the seismic requirements of the associated system. (3) All of the connections, piping, and the equipment will be evaluated for adverse seismic interaction.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
to the alternate connection point in each Unit. As shown on Figures 3 (Unit 1) and 4 (Unit 2), the alternate connection point is a check valve on the MDAFW system discharge piping. The bonnet and internals on the valves will be removed and a flange installed in place of the bonnet prior to using these connection points. Using manual isolation valves downstream of each of the check valves, this connection can be made without interruption of the TDAFW pump flow. *SGs not available Primary:* As shown in Figures 6A through 6D (Unit 1) and Figures 7A, 6A, and 7B through 7D (Unit 2), the deployment paths are provided to the primary connection point in each Unit. As shown on Figure 6D (Unit 1) and Figure 7D (Unit 2), the primary connection point is located in the BIT room on the safety injection line. This connection point can be utilized to provide flow to the cold legs on all four loops. *SGs not available Alternate:* As shown in Figures 8A through 8C (Unit 1)		

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
and Figures 9A through 9D (Unit 2), the deployment paths are provided to the alternate connection point in each Unit. As shown in Figure 8C (Unit 1) and Figure 9D (Unit 2), the alternate connection point in each Unit is a valve on the safety injection pump discharge line. The bonnet and internals on the valve will be removed and a flange installed in place of the bonnet prior to using this connection point.		

Maintain Core Cooling and Heat Removal
PWR Portable Equipment Phase 3

The Phase 3 strategy is to maintain core cooling by using the residual heat removal (RHR) system. Two portable diesel-driven EASW pumps, one for each Unit, and rigid piping segments will be used to restore the UHS function. The EASW pumps and rigid piping segments will be staged at the location shown in Figure 1. The piping segments will be connected to the ASW piping in the ASW vacuum breaker vault by removing a spool piece in the ASW piping. Two EASW pumps and rigid piping segments will be stored in a FLEX storage facility. The flow from the EASW pump will provide cooling water to the CCW heat exchangers. Removal of the spool piece and installation of riser pipe and flange requires a crane or other heavy lifting equipment. Several of these cranes and forklifts are located onsite. One 4-kV generator for each Unit will be used to repower one train of cooling for that Unit. This includes an RHR pump and a CCW pump.

Two backup EASW pumps and rigid piping segments will be stored in a FLEX storage facility. A backup set of other Phase 2 equipment will be provided by the RRC.

RHR suction valves, accumulator isolation valves, and other valves inside containment are required to be manipulated. PG&E is currently evaluating the best method to manipulate these valves while preventing injection of nitrogen (refer to OI-4). With one train of cooling restored or functional, the plant can restore a shutdown cooling loop and achieve cold shutdown.

Phase 3 of FLEX allows for delivery of the necessary resources to sustain core cooling and heat removal until recovery actions can be implemented. PG&E will work with the RRC to determine the appropriate equipment and portable systems needed for Phase 3 core cooling and heat removal.

Core Cooling with SGs Available

PG&E is also evaluating the use of portable water processing units to be supplied by the RRC (refer to OI-2). The water processing units would be capable of providing treated water to both Units for indefinite makeup to the SGs. Supply to the portable water processing units will come from either the Pacific Ocean or other onsite sources.

Core Cooling with SGs Not Available

PG&E is evaluating the use of mobile boration units to be supplied by the RRC (refer to OI-3). The mobile boration units would be capable of providing borated water to all Units requiring makeup to the RCS. Supply to the mobile boration units would be through portable water processing units mentioned above, which would take suction from either the Pacific Ocean or other onsite sources.

Maintain Core Cooling and Heat Removal PWR Portable Equipment Phase 3	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	N/A
Key reactor parameters	(1) SG wide range level or narrow range level with AFW flow indication (2) SG pressure For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. Note: It is also assumed that all instruments listed for the Maintain RCS Inventory Control function will be available. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Notes: Core cooling strategies are provided for conditions where SGs are available or where SGs are not available but a sufficient RCS vent has been established to support core cooling. This assumption is in accordance with NEI 12-06, FAQ 2012-19. Other configurations are not considered as these occur for short durations that are exempted by NEI-12-06, Table D.	

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Equipment Storage – Area 10 BDB Storage Facility (Figure 1): Two EASW pumps and rigid piping segments will be stored in this facility. These pumps and piping segments will be transported to their staging locations and deployed.	**Equipment Storage – Area 10 BDB Storage Facility (Figure 1):** This storage facility will be located in Area 10 as shown on Figure 1. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage – Area 10 BDB Storage Facility (Figure 1):** N/A
Equipment Storage – Lot 11 BDB Storage Facility (Figure 2): Two backup EASW pumps and rigid piping segments will be stored in this facility. These pumps and piping segments will be transported to their staging locations and deployed.	**Equipment Storage – Lot 11 BDB Storage Facility (Figure 2):** This storage facility will be located east of the 500-kV switchyard as shown on Figure 2. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage – Lot 11 BDB Storage Facility (Figure 2):** N/A
Deployment One portable diesel-driven EASW pump and rigid piping segments will be used to restore the UHS function for each Unit. The EASW pumps and rigid piping segments will be deployed and staged at the location shown in Figure 1.	**Deployment** No permanent plant connections are required.	**Deployment** N/A

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Connections The rigid piping segments will be connected to the ASW piping in the ASW vacuum breaker vault by removing a spool piece in the ASW piping. The flow from the EASW pump will provide cooling water to the CCW heat exchanger. Removal of the spool piece and installation of riser pipe and flange requires a crane or other heavy lifting equipment. Several of these cranes and forklifts are located onsite. One 4-kV generator, for each Unit, will be used to repower one train of cooling for that Unit. This includes an RHR pump and a CCW pump. In support of repowering the cooling train, one containment fan cooler unit (CFCU) will be repowered to allow containment entry for valve manipulations. With one train of cooling restored or functional, plant personnel can restore a shutdown cooling loop and achieve cold shutdown. PG&E is also evaluating the use of portable water processing units to be supplied by the RRC (refer to OI-2). The water processing units would be capable of providing treated	**Connections** No permanent plant connections are required.	**Connections** All mechanical connection points for this strategy are within and can be accessed through Seismic Category I structures. All electrical connection points in the plant will be in buildings that have been evaluated for the Hosgri earthquake.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
water to both Units for indefinite makeup for the SGs. Supply to the portable water processing units will come from either the Pacific Ocean or other onsite sources.		
Notes:		

Maintain RCS Inventory Control PWR Installed Equipment Phase 1	
Determine Baseline coping capability with installed coping[2] modifications not including FLEX modifications, utilizing methods described in Table 3-2 of NEI 12-06: • **Low Leak RCP Seals or RCS makeup required** • **All Plants Provide Means to Provide Borated RCS Makeup**	
This section discusses RCS inventory control and subcriticality issues for conditions where SGs are available. RCS inventory control and subcriticality issues for conditions where SGs are not available are addressed in the Maintain Core Cooling and Heat Removal section of this submittal. Following the declaration of an ELAP, a plant cooldown will be performed within 8 hours after the ELAP. Boration of the RCS is required within 24 hours after reactor shutdown to ensure subcriticality (Reference 12). Natural circulation is maintained by ensuring adequate RCS inventory. PG&E will install low-leakage RCP seals prior to full implementation of FLEX to reduce the potential seal leakage. RCS inventory is not a significant concern for the ELAP scenario due to the installation of low-leakage RCP seals. A high pressure FLEX pump would be required approximately 49 hours after the ELAP to ensure that single phase natural circulation is maintained. However, boration of the RCS is required within 24 hours after reactor shutdown to ensure subcriticality (Reference 12). DCPP has existing safety-related, wide-range accumulator level indicators. PG&E is evaluating the use of the accumulators to inject into the RCS while preventing the injection of nitrogen (refer to OI-8). The wide-range level indicators could allow for initial use of the accumulators' volume and boron concentration to ensure the reactor condition remains subcritical while assuring that nitrogen is not injected into the RCS. This strategy is being evaluated to potentially allow additional time for deployment of the FLEX pump to provide inventory and/or boration to the RCS.	
Details:	
Provide a brief description of procedures / strategies / guidelines	References 8, 9 and 10 address all procedural guidance required for maintaining RCS inventory during Phase 1. Procedures and guidance to support implementation of a boration strategy, including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating

[2] Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

Maintain RCS Inventory Control PWR Installed Equipment Phase 1	
	procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	Prior to startup from Unit 1 refueling outage 19, PG&E will install low-leakage RCP seals in Unit 1 to reduce RCS leakage. Prior to startup from Unit 2 refueling outage 19, PG&E will install low-leakage RCP seals in Unit 2 to reduce RCS leakage.
Key reactor parameters	(1) Core exit thermocouple (CET) temperature (2) RCS hot leg temperature (T_{hot}) if CETs not available (3) RCS cold leg temperature (T_{cold}) (4) RCS wide range temperature (5) Wide range accumulator level indication (RCS passive injection level) (6) Pressurizer level (7) Reactor vessel level indicating system (RVLIS) (backup to pressurizer level) (8) Neutron flux For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Notes:	

Maintain RCS Inventory Control
PWR Portable Equipment Phase 2

This section discusses RCS inventory control and subcriticality issues for conditions where SGs are available. RCS inventory control and subcriticality issues for conditions where SGs are not available are addressed in the Maintain Core Cooling and Heat Removal section of this submittal.

The Phase 2 strategy provides RCS makeup from an ERCS pump, one for each Unit, staged in the vicinity of the associated Unit's BAST on the 115-ft elevation of the auxiliary building. Both ERCS pumps will be powered by a 480-V generator located at the 115-ft elevation bench area. For boration, an ERCS pump would be required to be deployed and capable of injecting borated water into the RCS at approximately 16 hours after the ELAP to conservatively ensure that subcriticality is maintained in the core when borated water is supplied from the BAST (Reference 12). An ERCS pump will draw water from the BAST and inject water into the RCS cold leg through high pressure hoses at either of the connection points discussed in this section. The two ERCS pumps and associated high pressure hoses will be stored in a FLEX storage facility. The depletion time of the BAST has been determined as 23 hours. At 39 hours, suction of the ERCS pump will need to be switched to the RWST to ensure the RCS inventory and subcriticality is adequately maintained (Reference 20).

A backup ERCS pump and associated hoses and a backup 480-V generator will be stored in a FLEX storage facility.

Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	Two terminated lines at the bottom of the BASTs will be modified to have a permanent 2 in. hose connection (one per Unit).
Key reactor parameters	(1) CET temperature (2) T_{hot} if CETs not available (3) T_{cold} (4) RCS wide-range pressure (5) Wide range accumulator level indication (RCS passive indication level) (6) Pressurizer level

Maintain RCS Inventory Control PWR Portable Equipment Phase 2	
	(7) RVLIS (backup to pressurizer level) (8) Neutron flux For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Storage / Protection of Equipment: Describe storage / protection plan or schedule to determine storage requirements	
Seismic	Two FLEX storage locations will be provided for the storage of the related FLEX equipment. The FLEX equipment will be protected in accordance with NEI 12-06, Section 5.3.1.
Flooding	Portable equipment required to implement FLEX strategies will be maintained in storage locations that are in areas of the site considered dry and not susceptible to flooding from any source.
Severe Storms with High Winds	As discussed in the hazards analysis section of this integrated plan, severe storms with high winds are not applicable to DCPP in accordance with NEI 12-06.
Snow, Ice, and Extreme Cold	As discussed in the hazards analysis section of this integrated plan, snow, ice, and extreme cold are not applicable to DCPP in accordance with NEI 12-06.
High Temperatures	Based on the available local data (Reference 1, Section 1.2.1.3) and industry estimates included in NEI 12-06, the DCPP site is not exposed to temperatures over 104˚F. However, for the design of storage locations for the FLEX equipment, PG&E will consider the site maximum expected temperatures. All of the storage locations will be evaluated for temperature effects and adequate ventilation will be provided as required to assure no adverse affected on the FLEX equipment.

Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
Equipment Storage – Area 10 BDB Storage Facility (Figure 1): Two ERCS pumps and associated high-pressure hoses and a 480-V generator will be stored in this facility. The pumps, hoses, and generator will be transported to its staging location and deployed.	**Equipment Storage - Area 10 BDB Storage Facility:** This storage facility will be located in Area 10 as shown on Figure 1. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage - Area 10 BDB Storage Facility:** N/A
Equipment Storage – Lot 11 BDB Storage Facility (Figure 2): A backup ERCS pump and associated high-pressure hoses and a 480-V generator will be stored in this facility. The pump, hoses, and generator will be transported to its staging location and deployed.	**Equipment Storage – Lot 11 BDB Storage Facility** This storage facility will be located east of the 500-kV switchyard as shown on Figure 2. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage – Lot 11 BDB Storage Facility:** N/A
Deployment: As shown on Figure 6A, a 480-V generator will be staged at the 115-ft elevation bench area. For each Unit, the associated ERCS pumps, located in the vicinity of the BAST, will draw water from BAST and inject water into the RCS cold leg through high-pressure hoses connected to either of the connection points noted in this section.	**Deployment:** N/A	**Deployment:** N/A

Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
Connections: As shown in Figures 10 and 11, alternate connection points also exist at two terminated lines at the bottom of the BASTs (one per Unit). Both the primary and alternate injection points for this strategy can be used from the ERCS pumps staged at the 115-ft elevation bench area. *Primary:* As shown in Figure 12, the primary connection point is valve SI-1-30 on Unit 1 and, as shown in Figure 13, the primary connection point is valve SI-2-30 on Unit 2. These valves are cold leg safety injection test vents located in the 100-ft elevation auxiliary building containment penetration area for each Unit. These vent valves are currently equipped with quick connect fittings. Adapters will be stored that allow the use of industry standard hoses and fittings so no permanent modifications are required. Figures 6A and 6B (Unit 1) and Figures 6A,	**Connections:** The terminated lines at the bottom of the BASTs will be modified to have a permanent 2 in. hose connection.	**Connections:** N/A

Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
7A, and 7B (Unit 2) show the deployment paths to the primary connection in each Unit. *Alternate:* As shown on Figure 14, the alternate connection point is valve SI-1-8908 on Unit 1. As shown on Figure 15, the alternate connection point is valve SI-2-8908 on Unit 2. These valves are cold leg charging injection test vents located in the 100-ft elevation auxiliary building containment penetration area for each Unit. These vent valves are currently equipped with quick connect fittings. Figures 8A and 8B (Unit 1) and Figures 8A, 9A, and 9B (Unit 2) show the deployment paths to the alternate connection in each Unit.		

Maintain RCS Inventory Control PWR Portable Equipment Phase 3	
This section discusses RCS inventory control and subcriticality issues for conditions where SGs are available. RCS inventory control and subcriticality issues for conditions where SGs are not available are addressed in the Reactor Core Cooling and Heat Removal section of this submittal. PG&E is evaluating the use of mobile boration units to be supplied by the RRC (refer to OI-3). The mobile boration unit would be capable of providing borated water to both Units. Supply to the mobile boration units would be through portable water processing trailer mentioned in the Reactor Core Cooling and Heat Removal section, which would take suction from either the Pacific Ocean or other onsite sources. A backup set of Phase 2 equipment for this coping strategy will be provided by the RRC.	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available. Finally, PG&E will include in procedures the notification of the RRC to arrange for delivery and deployment of offsite equipment and sufficient supplies of commodities.
Identify modifications	N/A
Key reactor parameters	(1) CET temperature (2) T_{hot} if CETs not available (3) T_{cold} (4) RCS wide-range temperature (5) Wide-range accumulator level indication (RCS passive injection level) (6) Pressurizer level (7) RVLIS (backup to pressurizer level) (8) Neutron flux For all instruments listed above, the normal power source and long-term power source are the 125-Vdc

Maintain RCS Inventory Control PWR Portable Equipment Phase 3	
	vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).

Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
N/A	N/A	N/A
Notes:		

Maintain Containment **PWR Installed Equipment Phase 1**	
Determine baseline coping capability with installed coping[3] modifications not including FLEX modifications, utilizing methods described in NEI 12-06, Table 3-2: • **Containment spray** • **Hydrogen igniters (ice condenser containments only)**	
PG&E will perform a containment evaluation based on the boundary conditions described in NEI 12-06, Section 2. Based on the results of this analysis, required actions to ensure maintenance of containment integrity and required instrument function will be developed (refer to OI-5).	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support implementation of this strategy including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	N/A
Key containment parameters	(1) Containment pressure (2) Containment temperature For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Notes:	

[3] Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

Maintain Containment PWR Portable Equipment Phase 2	
No additional strategy for Phase 2 is required. Refer to strategy in the Phase 1 description.	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support implementation of this strategy including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	N/A
Key containment parameters	(1) Containment pressure (2) Containment temperature For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Storage / Protection of Equipment: Describe storage / protection plan or schedule to determine storage requirements	
Seismic	N/A
Flooding	N/A
Severe Storms with High Winds	N/A
Snow, Ice, and Extreme Cold	N/A
High Temperatures	N/A

Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
N/A	N/A	N/A
Notes:		

Maintain Containment PWR Portable Equipment Phase 3	
As discussed in Phase 3 of the safety function support strategies, the RRC will provide a portable diesel-driven 4-kV generator for each Unit, with the capability to supply 2 MW. Each 4-kV generator will be used to repower one train of RHR and CCW in a Unit and will also repower one CFCU for containment cooling.	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	N/A
Key containment parameters	(1) Containment pressure (2) Containment temperature For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).

Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
N/A	N/A	N/A
Notes:		

Maintain Spent Fuel Pool Cooling PWR Installed Equipment Phase 1	
Determine baseline coping capability with installed coping[4] modifications not including FLEX modifications, utilizing methods described in NEI 12-06, Table 3-2: • **Makeup with Portable Injection Source**	
In accordance with NRC Order EA 12-051, PG&E will be installing reliable wide-range SFP instrumentation to monitor the SFP level. Access to the SFP area as part of the Phase 2 response could be challenged due to environmental conditions near the pool. If the air environment in the SFP area requires the building to be ventilated, doors will be opened and any other actions required inside the FHB should be completed before boiling occurs. <u>Operating, pre-fuel transfer or post-fuel transfer</u> For the post refueling decay heat load and considering the results of the sloshing evaluation, boiling in the SFP will occur at approximately 13 hours. Boil off decreases the water level to 10 ft above the fuel in approximately 67 hours (References 5 and 6). <u>Fuel in Transfer or Full Core Offload</u> For the maximum design heat load and considering the results of the sloshing evaluation, boiling in the SFP will occur at approximately 6 hours. The time when boil off decreases the water level to 10 ft above the fuel is approximately 30 hours (References 5 and 6). Ten feet of water above the top of the fuel provides adequate radiation shielding for a person standing on the SFP operating deck.	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support implementation of this strategy including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.

[4] Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

Maintain Spent Fuel Pool Cooling PWR Installed Equipment Phase 1	
Identify modifications	N/A
Key SFP parameter	In accordance with NEI 12-06, Table D-3, the key parameter is SFP level. NRC Order EA 12-051 requires licensees to provide reliable SFP water level instrumentation. The industry has developed a standard approach to respond to this order, as discussed in NEI 12-02 and endorsed by JLD-ISG-2012-03, and summarized as follows: Level 1 – level that is adequate to support operation of the normal fuel pool cooling system: Level 1, as defined by NEI 12-02, at DCPP is at the 133-ft elevation. The SFP is designed to prevent inadvertent draining of the pool below the 133-ft elevation as well as to ensure minimum required water coverage exists over the tops of the fuel (NUREG-0800, Section 9.1.3.III.1.e). Level 2 – level that is adequate to provide substantial radiation shielding for a person standing on the spent fuel pool operating deck: Level 2, as defined by NEI 12-02, corresponds to approximately 10 ft above the top of the fuel in the SFP rack. Level 3 – level where the fuel remains covered and actions to implement make-up water addition should no longer be deferred: Level 3, as defined by NEI 12-02, corresponds to the highest point of any fuel assembly seated in the SFP racks. The installed power supply panel will have sufficient battery backup to power the SFP level instrumentation for 72 hours following an ELAP. An external connector and transfer switch will be available to connect an external power source.
Notes:	

Maintain Spent Fuel Pool Cooling
PWR Portable Equipment Phase 2

To maintain SFP cooling and inventory in each Unit, a portable emergency SFP (ESFP) pump will be capable of providing sufficient makeup assuming the design basis heat load. The assumed heat load is with the SFP full, including a recent full core offload.

A portable diesel-driven RWR pump staged at the RWR will supply water through flexible hoses to a portable FLEX suction header located at 115-ft elevation bench area. The RWR pump will be capable of supplying water for all DCPP coping strategies simultaneously. The RWR pump and associated flexible hoses will be stored in a FLEX storage facility.

The two ESFP pumps will be staged at the 115-ft elevation bench area. Each of the ESFP pumps will draw water from the portable FLEX suction header and inject water directly into the top of the associated SFP through flexible hoses. The end of the hoses will be restrained at the edge of the pool to ensure that they remain capable of makeup to the pool. The two ESFP pumps and associated flexible hoses will be stored in a FLEX storage facility.

Backup RWR and ESFP pumps and associated flexible hoses will be stored in a FLEX storage facility.

Two portable spray monitor nozzles for each Unit will be available to provide spray capability. These spray monitor nozzles will be stored in a FLEX storage facility, and will be attached to the same hoses provided to the pool and supplied by the same pumps discussed above. A redundant set of portable spray monitor nozzles will be stored in a FLEX storage facility.

Due to potential accessibility concerns, the ESFP hoses and portable spray monitor nozzles will be deployed prior to bulk boiling of the SFP.

Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	N/A
Key SFP parameter	Same as Phase 1

Maintain Spent Fuel Pool Cooling PWR Portable Equipment Phase 2	
Storage / Protection of Equipment: Describe storage / protection plan or schedule to determine storage requirements	
Seismic	Two FLEX storage locations will be provided for the storage of the related FLEX equipment. The FLEX equipment will be protected in accordance with NEI 12-06, Section 5.3.1.
Flooding	Portable equipment required to implement FLEX strategies will be maintained in storage locations that are in areas of the site considered dry and not susceptible to flooding from any source.
Severe Storms with High Winds	As discussed in the hazards analysis section of this integrated plan, severe storms with high winds are not applicable to DCPP in accordance with NEI 12-06.
Snow, Ice, and Extreme Cold	As discussed in the hazards analysis section of this integrated plan, snow, ice, and extreme cold are not applicable to DCPP in accordance with NEI 12-06.
High Temperatures	Based on the available local data (Reference 1, Section 1.2.1.3) and industry estimates included in NEI 12-06, the DCPP site is not exposed to temperatures over 104°F. However, for the design of storage locations for the FLEX equipment, PG&E will consider the site maximum expected temperatures. All of the storage locations will be evaluated for temperature effects and adequate ventilation will be provided as required to assure no adverse affected on the FLEX equipment.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
Equipment Storage – Area 10 BDB Storage Facility (Figure 1): Two ESFP pumps and associated hoses will be stored in this facility. These pumps and hoses will be transported to their staging locations and deployed. Four spray monitor nozzles will also be stored in this facility.	**Equipment Storage - Area 10 BDB Storage Facility** This storage facility will be located in Area 10 as shown on Figure 1. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage - Area 10 BDB Storage Facility:** N/A
Equipment Storage – Lot 11 BDB Storage Facility (Figure 2): The backup ESFP pump, two RWR pumps, and associated hoses will be stored in this facility. These pumps and hoses will be transported to their staging locations and deployed. Four spray monitor nozzles will also be stored in this facility.	**Equipment Storage – Lot 11 BDB Storage Facility:** This storage facility will be located east of the 500-kV switchyard as shown on Figure 2. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage - Lot 11 BDB Storage Facility:** N/A
Deployment: As shown on Figure 5A, a portable diesel-driven RWR pump will be staged at the RWR. As shown on Figures 5A and 5B, the RWR pump will supply water through flexible hoses to a portable FLEX suction header located at the 115-ft elevation bench area. The RWR pump will be capable of supplying water for all DCPP coping strategies simultaneously.	**Deployment:** Modification to the protected area security perimeter barrier to support supplying water to the 115-ft elevation staging area.	**Deployment:** N/A

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
As shown on Figures 6A and 16 (Unit 1) and Figures 7A and 17 (Unit 2), the two ESFP pumps will be staged at the 115-ft elevation bench area and will draw water from the portable FLEX suction header and inject water using the connection points described below.		
Connections: *Primary Makeup :* As shown on Figures 6A and 16 (Unit 1) and Figures 7A and 17 (Unit 2), the primary method will be to deploy a flexible hose directly into the SFP. The hose will be fastened to a handrail to restrain hose movement when the makeup flow is established. *Alternate Makeup:* As shown in Figures 8A, 8B, and 18 (Unit 1) and Figures 9A, 9B, and 19 (Unit 2), the alternate method will be to deploy a flexible hose to a connection at a valve in the SFP equipment room for each Unit. The bonnet and internals on the isolation valve will be removed and a flange with a hose connection will be installed in place of the bonnet. A	**Connections:**	**Connections:**

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
modified valve bonnet with a hose connection will be provided as part of the FLEX equipment. *Spray Makeup:* Spray capability via portable spray monitor nozzles from the deck floor will be available using the same hose layout as the primary method. Each spray monitor nozzle will be connected to the flexible hose and will be restrained to ensure continued coverage of the pools.		
Notes:		

Maintain Spent Fuel Pool Cooling PWR Portable Equipment Phase 3	
As discussed in the Maintain Core Cooling and Heat Removal Phase 3 section, it is expected that one 4-kV generator, for each Unit, will be used to repower one train of RHR and CCW for that Unit. Additionally, an EASW pump will be used to restore the UHS function. The Maintain Spent Fuel Pool Cooling Phase 3 strategy is also to repower an SFP cooling pump. This will provide indefinite heat removal. Backup EASW pumps will be stored onsite. A backup set of other Phase 2 equipment will be provided by the RRC.	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support implementation of this strategy including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	N/A
Key SFP parameter	Same as Phase 1.

Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
N/A	N/A	N/A
Notes:		

Safety Functions Support
PWR Installed Equipment Phase 1

Determine baseline coping capability with installed coping modifications not including FLEX modifications.

Electrical, Ventilation, and Lighting

Electrical:

The DCPP Class 1E dc battery system provides dc electrical power to Class 1E dc loads and vital instrumentation. Redundant Class 1E loads are supplied from three physically-separated and electrically-independent 125-volts (V) dc switchgear buses for each Unit. Each bus supplies power to a dedicated 125-Vdc distribution panel. Each of the three Class 1E 125-Vdc switchgear buses is supplied power from a dedicated 125-Vdc battery and a dedicated battery charger. In addition, one backup battery charger is shared between two vital 125-Vdc buses.

PG&E has developed a battery load shedding and sequencing strategy that will ensure power to essential emergency and vital dc and instrument ac loads (Reference 4). The combination of two of the vital batteries sequenced in each Unit will provide power to those loads for at least 24 hours. The strategy removes two of the three batteries from service early in the event and limits the loads on the remaining in service vital battery to necessary emergency dc and vital emergency 120-V loads. At approximately 15 hours the first battery approaches depletion and a second battery is placed in service for an additional 9 hours. Upon depletion of the second battery, the third battery, along with the deployment of portable electronic devices can be placed in service to provide for the essential controls and indications beyond 24 hours.

Ventilation:

The ventilation strategy includes propping open the control room doors within the first hour.

Lighting:

Various areas of the plant including the control room are equipped with emergency backup lighting, which is verified to be capable of illumination for at least 8 hours. (References 13 and 14)

Safety Functions Support PWR Installed Equipment Phase 1	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	N/A
Key parameters	(1) dc-bus voltage For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Notes:	

Safety Functions Support PWR Portable Equipment Phase 2
Electrical: Phase 2 maintains dc power for critical dc loads and selected instrument ac loads. A diesel-driven 480-V generator will power a battery charger in each Unit and selected critical communication equipment as needed. The generator and associated electrical connection cables will be stored in a FLEX storage facility. The 480-V generator and associated electrical connection cables will be staged at the 85-ft elevation near or in the turbine building machine shop (Figure 20A). A backup generator and associated electrical connection cables will also be stored in a FLEX storage facility. **Ventilation/Lighting:** Three 120/240-V portable diesel-driven generators and associated electrical connection cables will be stored in a FLEX storage area. The generators will be available to power miscellaneous loads (portable lighting, ventilation, etc.) as needed. Portable battery operated lights will be available for deployment in various areas (control room, technical support center/operational support center, SFP, etc.) as necessary. Although not credited for FLEX, miscellaneous portable ventilation fans and ac powered portable lights that can be powered by these generators are available at the site to support area ventilation, if needed. A backup set of generators and associated electrical connection cables will be stored in a FLEX storage facility. **Instrumentation:** As an alternate strategy for instrumentation, DCPP will have procedures that provide direction to use portable instruments for monitoring selected critical plant parameters to ensure that the conditions in the plant are understood. These portable instruments will be powered by replaceable batteries and can operate indefinitely with periodic battery replacement.

Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and

Safety Functions Support PWR Portable Equipment Phase 2	
	DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	For the primary connection, the 480-V generator will be connected to a dedicated quick connection point in the vital 480-V switchgear areas. A manual transfer switch installed in the same area will be used to disconnect the normal plant power circuit from the battery charger and align the generator to the charger.
Key parameters	(1) dc-bus voltage For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).
Storage / Protection of Equipment : Describe storage / protection plan or schedule to determine storage requirements	
Seismic	Two FLEX storage locations will be provided for the storage of the related FLEX equipment. The FLEX equipment will be protected in accordance with NEI 12-06, Section 5.3.1.
Flooding	FLEX equipment required to implement this strategy will be maintained in storage locations that are in areas of the site considered dry and not susceptible to flooding from any source.
Severe Storms with High Winds	As discussed in the hazards analysis section of this integrated plan, severe storms with high winds are not applicable to DCPP in accordance with NEI 12-06.
Snow, Ice, and Extreme Cold	As discussed in the hazards analysis section of this integrated plan, snow, ice, and extreme cold are not applicable to DCPP in accordance with NEI 12-06.
High Temperatures	Based on the available local data (Reference 1, Section 1.2.1.3) and industry estimates included in NEI 12-06, the DCPP site is not exposed to

Safety Functions Support PWR Portable Equipment Phase 2	
	temperatures over 104°F. However, for the design of storage locations for the FLEX equipment, PG&E will consider the site maximum expected temperatures. All of the storage locations will be evaluated for temperature effects and adequate ventilation will be provided as required to assure no adverse affected on the FLEX equipment.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Equipment Storage – Area 10 BDB Storage Facility (Figure 1): A 480-V portable generator, load center, and associated electrical connection cables will be stored in this facility. As shown on Figure 1, the generator, load center, and cables will be transported to the staging location either inside or outside the 85-ft elevation turbine building machine shop and deployed. Three 120/240-V generators, associated electrical connection cables, distribution panels, portable lighting, and ventilation fans will be stored in this facility. These components will be transported to the same staging location and deployed.	**Equipment Storage - Area 10 BDB Storage Facility:** This storage facility will be located in Area 10 as shown on Figure 1. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage - Area 10 BDB Storage Facility:** N/A
Equipment Storage – Lot 11 BDB Storage Facility (Figure 2): A 480-V portable generator, load center, associated electrical connection cables, and portable lights will be stored in this facility. Three 120/240-V generators, associated electrical connection cables, and distribution panels will be stored in this facility.	**Equipment Storage – Lot 11 BDB Storage Facility:** The storage facility will be located east of the 500-kV switchyard as shown on Figure 2. The equipment at this facility will be protected in accordance with NEI 12-06, Section 5.3.1.	**Equipment Storage - Lot 11 BDB Storage Facility:** N/A

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Deployment As shown on Figure 20A, the 480-V generator, load center, and cables will be staged at the 85-ft elevation on the west side of the turbine building in the vicinity of the turbine building machine shop and deployed. Three 120/240-V generators, associated electrical connection cables, distribution panels will be staged at the 85-ft elevation on the west side of the turbine building in the vicinity of the turbine building machine shop and deployed as necessary.	**Deployment** N/A	**Deployment** N/A
Connections *Primary Method:* The electrical connection cables will be run to the vital 480-V switchgear area in each Unit where they will be connected to a dedicated quick connection point (Figures 20A through 20C). A manual transfer switch installed in the same area of both Units will be used to disconnect the normal plant power from the battery charger and align the generator to the charger. In addition, an output from the 480-V generator load center will be configured to provide	**Connections:** *Primary Method:* A permanent connection point for the 480-V generator power will be installed along with a manual transfer switch, in each Unit. A permanent connection point for the 480-V generator power will be installed on the telecommunications (TCOM) power system.	**Connections:** *Primary Method:* All connection points for this strategy are within and can be accessed through Seismic Category I structures. All connection points for this strategy will be designed to meet the seismic requirements of the associated system. All of the connections will be

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
power to selected TCOM equipment (Figures 20B through 20D).		evaluated for adverse seismic interaction.
Alternate Method: The electrical connection cables will be run to the battery charger area in each Unit (Figures 20A through 20D). The alternate method will disconnect the normal source of 480-V power at the battery charger input terminations in each Unit. The FLEX cable ends will be lugged as required connecting directly to the battery charger input terminations. In addition, an output from the 480-V generator load center will be configured to provide power to TCOM equipment with cables routed to the TCOM room. The cables will be landed on designated terminals included in the design of the TCOM power system.	*Alternate Method:* No permanent plant modifications are required.	*Alternate Method:* All connection points for this strategy are within and can be accessed through Seismic Category I structures.
Notes:		

Safety Functions Support PWR Portable Equipment Phase 3	
As discussed in other FLEX Phase 3 strategies above, the RRC will provide a portable diesel-driven 4-kV generator for each Unit, with the capability to supply 2 MW. Each 4-kV generator will be used to repower one train of cooling in a Unit, which includes one CCW pump, one RHR pump, and any required 480-V loads for that Unit. Each generator will also repower one CFCU for containment cooling and one SFP pump for SFP cooling. The Unit 1 generator will be staged outside the north end of the turbine building. The Unit 2 generator will be staged outside the south end of the turbine building. A set of associated electrical connection cables required for deploying both generators will be stored in both the FLEX storage facilities. Backup EASW pumps will be stored onsite. A backup set of other Phase 2 equipment will be provided by the RRC.	
Details:	
Provide a brief description of procedures / strategies / guidelines	Procedures and guidance to support deployment and implementation including interfaces to EOPs, special event procedures, abnormal event procedures, and system operating procedures, will be developed in accordance with NEI 12-06, Section 11.4. Further, the PWROG has developed generic guidance and DCPP's strategy aligns with the generic guidance and will consider the NSSS-specific guidance once available.
Identify modifications	N/A
Key parameters	(1) dc-bus voltage For all instruments listed above, the normal power source and long-term power source are the 125-Vdc vital batteries. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3 (refer to OI-6).

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
Equipment Storage N/A	**Equipment Storage:** N/A	**Equipment Storage**: N/A
Deployment The 4-kV generator and associated electrical connection cables for Unit 1 will be staged outside the north end of the turbine building (Figure 21). The 4-kV generator and associated electrical connection cables for the Unit 2 will be staged outside the south end of the turbine building (Figure 22).	**Deployment:** No permanent plant modifications.	**Deployment** The cable routing and connection areas are located in seismically-qualified structures. Therefore they will be protected from all external events.
Connections: *Primary Connections*: The 4-kV generator electrical connection cables will be routed to the 85-ft elevation hallways located near the EDGs (Figures 21 [Unit 1]) and 22 [Unit 2]). Each EDG has a seismic Class 1E circuit installed between the EDG and the corresponding Class 1E 4-kV bus. Once the cables are routed, the selected circuit will be disconnected and the generator connected.	**Connections:** *Primary Connections*: No permanent plant modifications.	**Connections:** *Primary Connections:* The connections are located in seismically-qualified structures. Therefore they will be protected from all external events.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of Connections**
Alternate Connections: The 4-kV generator electrical connection cables will be routed to the 85-ft elevation hallways located near the EDGs. The alternate connection will be to the Class 1E circuit installed between a different EDG and the corresponding Class 1E 4-kV bus. Once the cables are routed, the selected circuit will be disconnected and the generator connected.	*Alternate Connections:* No permanent plant modifications.	*Alternate Connections:* The connections are located in seismically-qualified structures. Therefore they will be protected from all external events.
Notes:		

Table 1

PWR Portable Equipment Phase 2

Use and (potential / flexibility) diverse uses						Performance Criteria	Maintenance
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / Preventive Maintenance requirements
Three EAFW diesel-driven pumps	X					450 gpm at 375 psig Reference 15	To be determined as part of the design change process for the strategy.
Three ERCS electric pumps	X					10 gpm at 1500 psig Reference 12	To be determined as part of the design change process for the strategy.
Four EASW diesel-driven pumps[(a)]	X	X	X			3000 gpm at 140-ft head Reference 16	To be determined as part of the design change process for the strategy.
Two RWR diesel-driven pumps	X		X			1500 gpm at 160 psid Reference 15	To be determined as part of the design change process for the strategy.
Three ESFP diesel-driven pumps			X			250 gpm at 150 psig Reference 15	To be determined as part of the design change process for the strategy.
Various sized suction and discharge hoses	X		X				To be determined as part of the design change process for the strategy.
Various sized hose connection fittings	X		X				To be determined as part of the design change process for the strategy.

Table 1

PWR Portable Equipment Phase 2

Use and (potential / flexibility) diverse uses						Performance Criteria	Maintenance
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / Preventive Maintenance requirements
Six 120/240-V portable diesel-driven generators					X	10kW	To be determined as part of the design change process for the strategy.
Five portable diesel-driven generators with lighting masts					X	TBD[(b)]	To be determined as part of the design change process for the strategy.
Electrical cords and distribution panel for 480-V system to battery chargers and TCOM loads				X			To be determined as part of the design change process for the strategy.
Electrical cords and distribution panels for 120V/240-V system					X		To be determined as part of the design change process for the strategy.

Table 1

PWR Portable Equipment Phase 2

Use and (potential / flexibility) diverse uses						Performance Criteria	Maintenance
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / Preventive Maintenance requirements
Two 480-V diesel-driven generators for battery charger				X		TBD[b]	To be determined as part of the design change process for the strategy.
Two 480-V diesel-driven generators for ERCS pump	X					TBD[b]	To be determined as part of the design change process for the strategy.
480-V electrical cords and distribution panel for ERCS pump							To be determined as part of the design change process for the strategy.

(a) Backup EASW pumps will be stored onsite. A backup set of other Phase 2 equipment will be provided by the RRC.
(b) To be determined following detailed design completion (refer to OI-7).

Table 2 PWR Portable Equipment Phase 3							
Use and (potential / flexibility) diverse uses						Performance Criteria	Notes
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		
Two 4-kV generators	X	X	X	X		2 MW	Portable 4-kV generator will power one installed shutdown cooling train.
Electrical cables for 4-kV generators	X	X	X	X	X		Cables are provided with generators.
Mobile boration units	X		X				Use of this is under evaluation by PG&E
Mobile water purification units	X		X				Use of this is under evaluation by PG&E

Note: Above equipment to be provided by the RRC.

Table 3

Phase 3 Response Equipment/Commodities

Item	Notes
Radiation protection equipment • Survey instruments • Dosimetry • Offsite monitoring/sampling	
Commodities • Food • Potable water	
Fuel requirements	

Note: Above equipment to be provided by the RRC.

Attachment 1A

Sequence of Events Timeline

Action Item	Elapsed Time[a] (hours)	Action	New ELAP Time Constraint Y/N	Time Constraint (hours)	References	Remarks / Applicability
	N/A	Event starts	N/A	N/A		Plant at 100% power.
1	N/A	Verify reactor and turbine trip	N	N/A	9 and 10	
2	N/A	Isolate RCS	N	N/A	9 and 10	
3	N/A	Verify AFW status	N	N/A	9 and 10	
4	N/A	Start generators from control room / fail	N	N/A	9 and 10	
5	N/A	Manually start generators / fail	N	N/A	9 and 10	
6	N/A	Manually restore offsite power / fail	N	N/A	9 and 10	
7	N/A	Verify SGs isolated	N	N/A	9 and 10	
8	N/A	Verify cooldown and depressurization in progress	N	N/A	9 and 10	
9	N/A	Isolate containment	N	N/A	9 and 10	
10	N/A	Establish offsite and onsite communications	N	N/A	17	
11	1	Declare ELAP	Y	1		ELAP entry conditions can be verified by control room staff and it is validated that EDGs are not available. Entry into ELAP provides guidance to operators to perform ELAP actions. Action Items 1 through 9 ELAP entry conditions met.
12	N/A	Control room portable lighting	N	N/A	13 and 14	10 CFR 50, Appendix R emergency battery operated lights are available for 8 hours. Personal lighting is available in the control room.
13	1	Doors to control room and battery charger/inverter rooms are blocked open	Y	1	3	Analysis assumes doors blocked open at 1 hour.

Action Item	Elapsed Time[a] (hours)	Action	New ELAP Time Constraint Y/N	Time Constraint (hours)	References	Remarks / Applicability
14	1.25	Assistance requested from RRC	Y	1.25		This is for the initiation of Phase 3 resources.
15	1.5	Vital dc battery load stripping is completed	Y	1.5	4	Analysis assumes load shedding is complete at 1.5 hours. The combination of two of the vital batteries sequenced in each Unit will provide power to those loads for at least 24 hours. The strategy removes two of the three batteries from service early in the event and limits the loads on the remaining in service vital battery to necessary emergency dc and vital emergency 120-V instrumentation and controls.
16	1.5	Initial site damage assessment	Y	3		Assurance of water supplies.
17	3	Plant access assessment	Y	6		Supports personnel arriving from offsite.
18	3.5	Perform plant cooldown and depressurization	Y	12		Cooldown and depressurization is performed to support RCS coping strategies.
19	10	Deploy hoses to SFP and open doors to FHB to ventilate SFP	Y	13	5 and 6	Prior to pool boiling initiation. Personal protective equipment is available for high temperature and humidity environment.

Action Item	Elapsed Time[(a)] (hours)	Action	New ELAP Time Constraint Y/N	Time Constraint (hours)	References	Remarks / Applicability
20	0.5	Align second vital battery and secure initial battery	Y	15	4	The combination of two of the vital batteries sequenced in each Unit will provide power to those loads for at least 24 hours. The strategy removes two of the three batteries from service early in the event and limits the loads on the remaining in service vital battery to necessary emergency dc and vital emergency 120-V instrumentation and controls. At approximately 15 hours the first battery approaches depletion and a second battery is placed in service for an additional 9 hours. Upon depletion of the second battery, the third battery, along with the deployment of portable electronic devices can be placed in service to provide for the essential controls and indications beyond 24 hours.
21	14	Align RCS pump from BAST	Y	16	12	Time sensitive action initiated to provide boration to maintain subcriticality at target RCS temperature following cooldown as xenon decays.
22	20	Transfer TDAFW pump suction to 0-1 FWST	Y	20	7, 18, and 19	CST depleted in 20 hours.
23	12	FLEX deployment damage assessment complete	Y	24		Supports Phase 2 coping strategy deployment. This would be performed by onsite operators and other available personnel.

Action Item	Elapsed Time[a] (hours)	Action	New ELAP Time Constraint Y/N	Time Constraint (hours)	References	Remarks / Applicability
24	16	480-V generator repowers battery chargers	Y	24	4	The combination of two of the vital batteries sequenced in each Unit will provide power to those loads for at least 24 hours. The strategy removes two of the three batteries from service early in the event and limits the loads on the remaining in service vital battery to necessary emergency dc and vital emergency 120-V instrumentation and controls. At approximately 15 hours the first battery approaches depletion and a second battery is placed in service for an additional 9 hours. Upon depletion of the second battery, the third battery, along with the deployment of portable electronic devices can be placed in service to provide for the essential controls and indications beyond 24 hours.
25	20	Establish battery room ventilation	Y	24		Must be in service when battery is charging.
26	24	EAFW and RWR equipment in service	Y	30	7	CST and FWST water supplies depleted and RWR water supply now utilized.
27	39	Align ERCS pump suction to RWST	Y	39	20	Based on depletion time of BAST.
28	48	ESFP pump in service	Y	67	5 and 6	Based on the boil down time required to reach 10 ft above fuel assuming maximum post-refueling heat load.
29	>72	Align mobile boration unit[b]	Y	>72	12	Depletion of onsite boration. RCS makeup sourced from BAST then RWST. SFP sourced from RWST assuming refill of pool.

Action Item	Elapsed Time[a] (hours)	Action	New ELAP Time Constraint Y/N	Time Constraint (hours)	References	Remarks / Applicability
30	>72	Establish alternate fuel supply[b]	Y	>72		Depletion of main fuel oil storage tanks.
31	>72	Align large generators[b]	Y	105	7 and 11	Required for long term decay heat removal.
32	>72	Align mobile water purification system[b]	Y	105	7 and 11	CST, FWST, and RWR depleted. Required if unable to repower a train of cooling.
33	>72	Align EASW pump	Y	105	7 and 11	Required for long term decay heat removal.

[a] As part of the Phase 2 staffing studies, operator action times will be verified by walkthroughs, tabletops, and simulations for each time sensitive action. All actions will be completed prior to the time constraints (refer to OI-1).

[b] To be delivered from the RRC

Attachment 1B

NSSS Significant Reference Analysis Deviation Table

Item	Parameter of interest	WCAP value (WCAP-17601-P Revision 1 January 2013)	WCAP page	Plant applied value	Gap and discussion
	None	N/A	N/A	N/A	No deviations

PG&E has evaluated WCAP-17601-P considering DCPP site-specific parameters and determined the conclusions of that document are applicable to DCPP. PG&E has performed analysis consistent with the recommendations of the PWROG Core Cooling Position Paper, provided as an attachment to LTR-PCSA-12-78. There are no deviations in the DCPP FLEX conceptual design with respect to the PWROG guidance.

Attachment 2

DCPP Units 1 and 2 Implementation Milestone Schedule

Activity	**Date**
Modifications timeline	
Phase 1 Modifications	
a. Design	N/A
b. Equipment Procurement	N/A
c. Installation	N/A
Phase 2 Modifications	
a. Design	12/31/13
b. Equipment Procurement	12/31/14
c. Installation	Unit 1 - 10/30/15, Unit 2 - 05/31/16
Phase 3 Modifications	
a. Design	12/31/13
b. Equipment Procurement	12/31/14
c. Installation	Unit 1 - 10/30/15, Unit 2 - 05/31/16
Procedure guidance implementation	
a. Strategies	Unit 1 - 10/30/15, Unit 2 - 05/31/16
b. Maintenance	Unit 1 - 10/30/15, Unit 2 - 05/31/16
c. Testing	Unit 1 - 10/30/15, Unit 2 - 05/31/16
FLEX storage facilities	
a. Area 10	12/31/14
b. Lot 11	12/31/14
Staffing analysis	
a. Phase 1	
1. Study Complete	03/29/13
2. NRC Submittal	04/30/13
b. Phase 2	
1. Study Complete	05/27/15
2. NRC Submittal	05/27/15
Training completion for the strategies	Unit 1 - 10/30/15, Unit 2 - 05/31/16
Regional response center 2 (Phoenix) operational	08/28/14
Communications equipment implementation (see PG&E Letter DCL-12-110)	
a. Phase 1	12/31/13
b. Phase 2	10/27/15
Unit 1 FLEX implementation complete	10/30/15
Unit 2 FLEX implementation complete	05/31/16

Attachment 3

Conceptual Sketches

Figure Number	Title
1	Deployment Routes – Area 10 Storage Facility
2	Deployment Routes – Lot 11 Storage Facility
3	AFW Connection Points, SGs Available, Unit 1
4	AFW Connection Points, SGs Available, Unit 2
5A	Alt Sources – RWR, Unit 1 & 2
5B	Alt Sources – RWR, Unit 1 & 2
6A	All Strategies – Primary, Units 1 and 2, Elevation 115'
6B	All Strategies – Primary, Unit 1, Elevation 100'
6C	All Strategies – Primary, Unit 1, Elevation 85'
6D	All Strategies – Primary, Unit 1, Elevation 64'
7A	All Strategies – Primary, Unit 2, Elevation 115'
7B	All Strategies – Primary, Unit 2, Elevation 100'
7C	All Strategies – Primary, Unit 2, Elevation 85'
7D	All Strategies – Primary, Unit 2, Elevation 64'
8A	All Strategies – Alternate, Units 1 and 2, Elevation 115'
8B	All Strategies – Alternate, Unit 1, Elevation 100'
8C	All Strategies – Alternate, Unit 1, Elevation 85'
9A	All Strategies – Alternate, Unit 2, Elevation 115'
9B	All Strategies – Alternate, Unit 2, Elevation 100'
9C	All Strategies – Alternate, Unit 2, Elevation 85'
9D	All Strategies – Alternate, Unit 2, Elevation 85'
10	BAST Suction Connection Point, Unit 1
11	BAST Suction Connection Point, Unit 2
12	RCS Primary Connection Point, Unit 1
13	RCS Primary Connection Point, Unit 2
14	RCS Alternate Connection Point, Unit 1
15	RCS Alternate Connection Point, Unit 2
16	Spent Fuel Pool Primary Connection, Unit 1, Elevation 140'
17	Spent Fuel Pool Primary Connection, Unit 2, Elevation 140'
18	Spent Fuel Pool Alternate Connection, Unit 1, Elevation 100'
19	Spent Fuel Pool Alternate Connection, Unit 2, Elevation 100'
20A	480-Vac Staging and Cable Deployment, Elevation 85'
20B	480-Vac Cable Routing, Elevation 85'
20C	480-Vac Cable Routing, Elevation 100'
20D	480-Vac Cable Routing, Elevation 115'
21	4-kV Generator and Cable Routing, Unit 1, Elevation 85'
22	4-kV Generator and Cable Routing, Unit 2, Elevation 85'

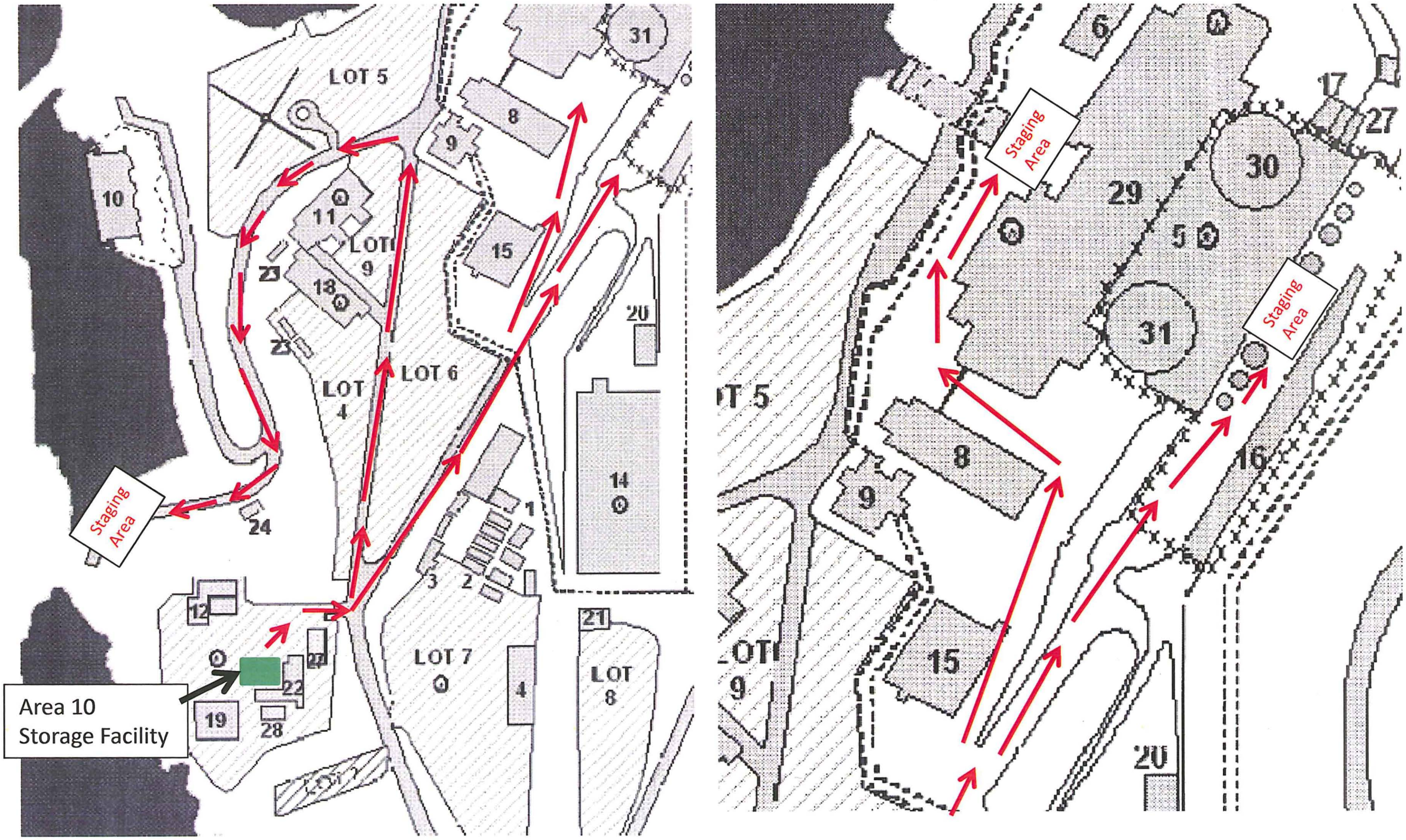


Figure 1
Deployment Routes
Area 10 Storage Facility

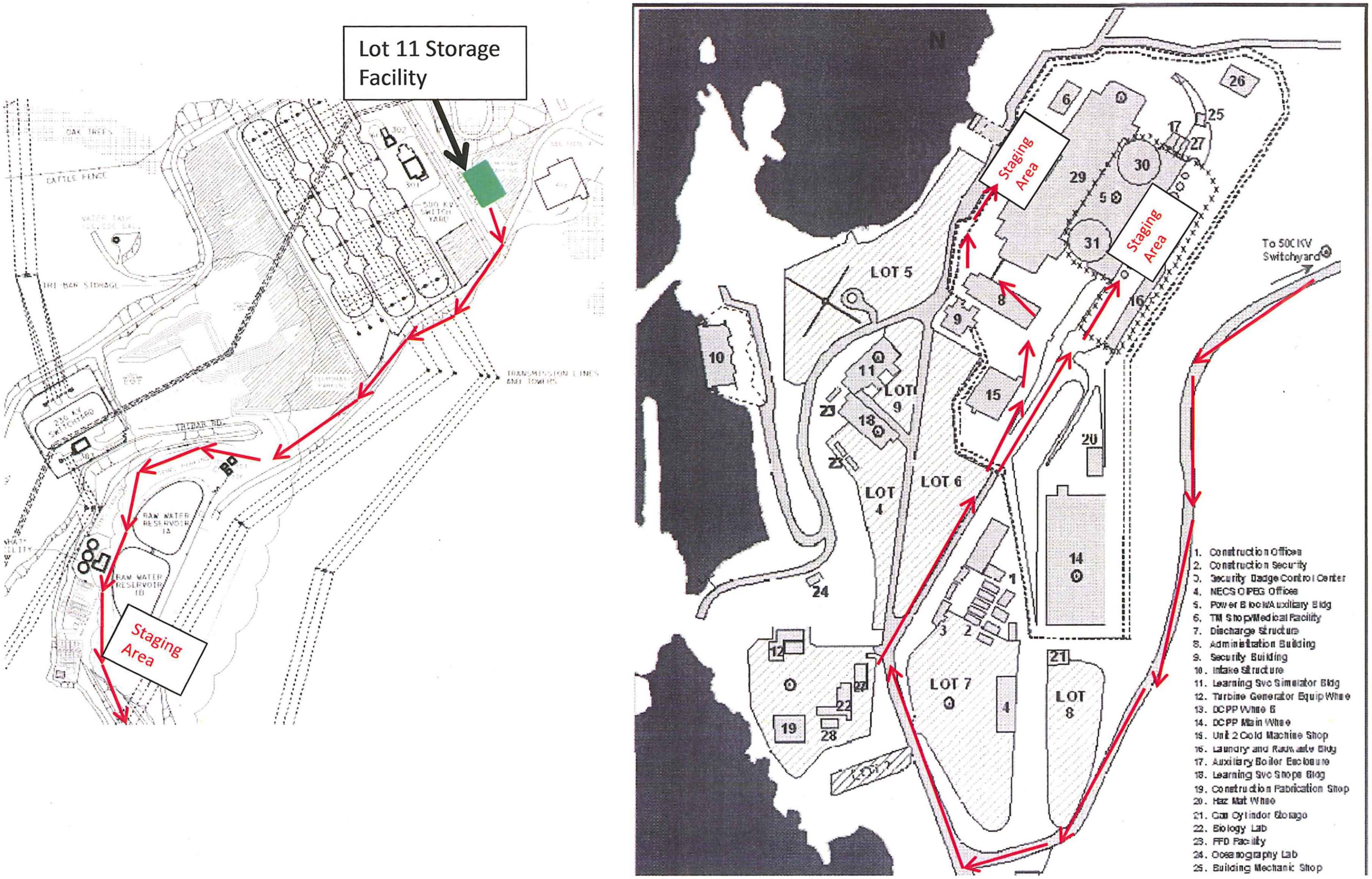


Figure 2
Deployment Routes
Lot 11 Storage Facility

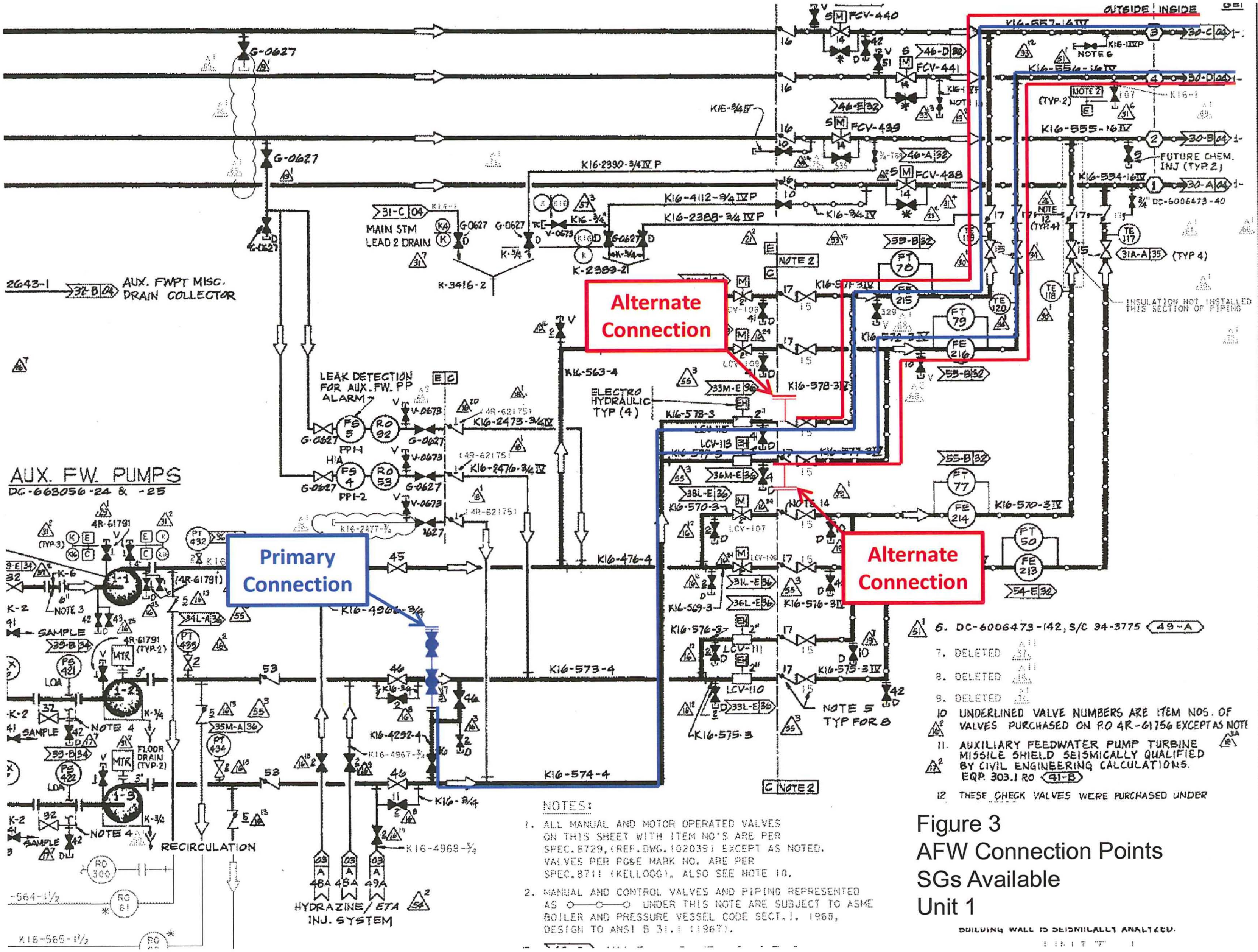


Figure 3
AFW Connection Points
SGs Available
Unit 1

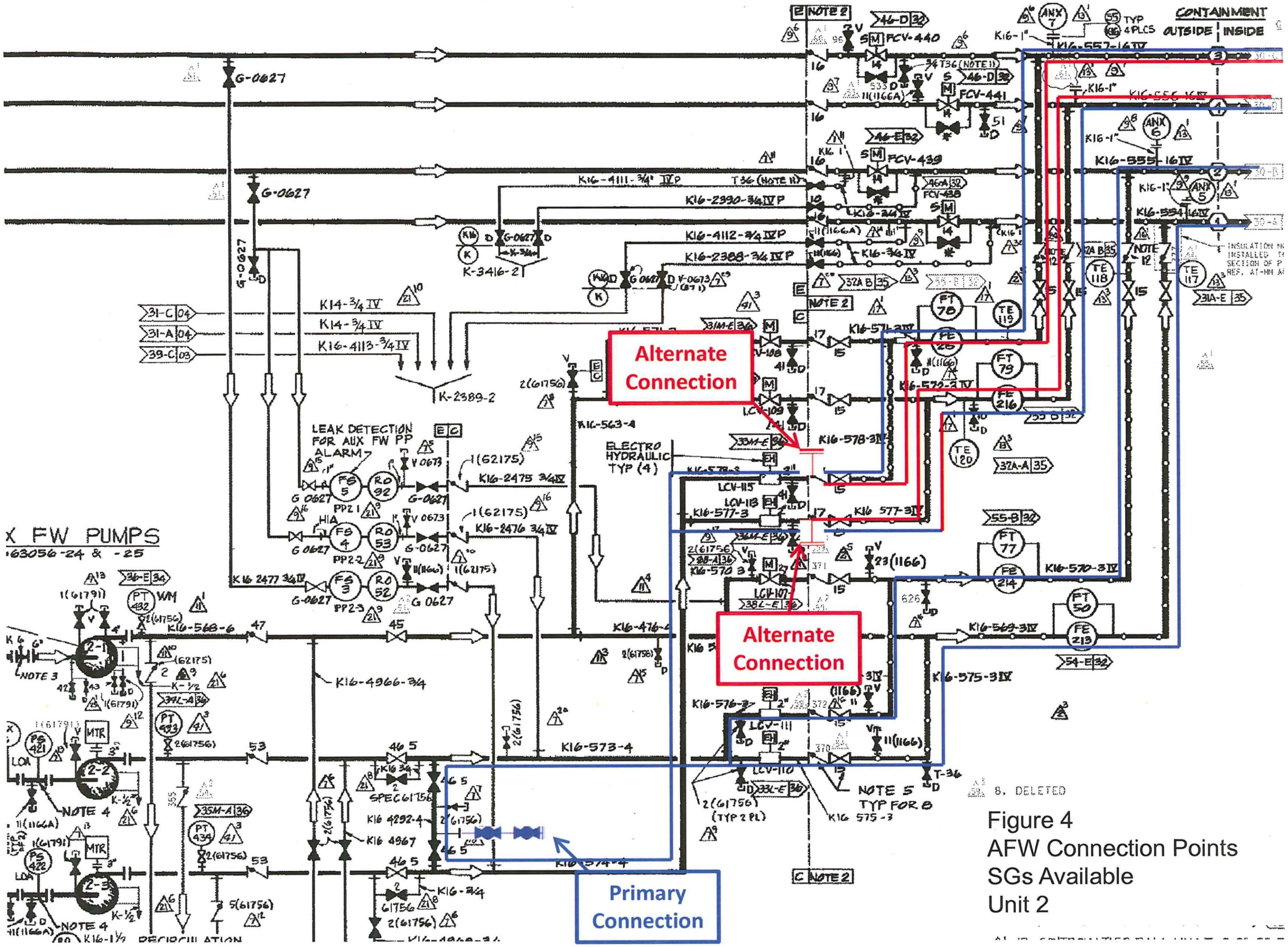


Figure 4
AFW Connection Points
SGs Available
Unit 2

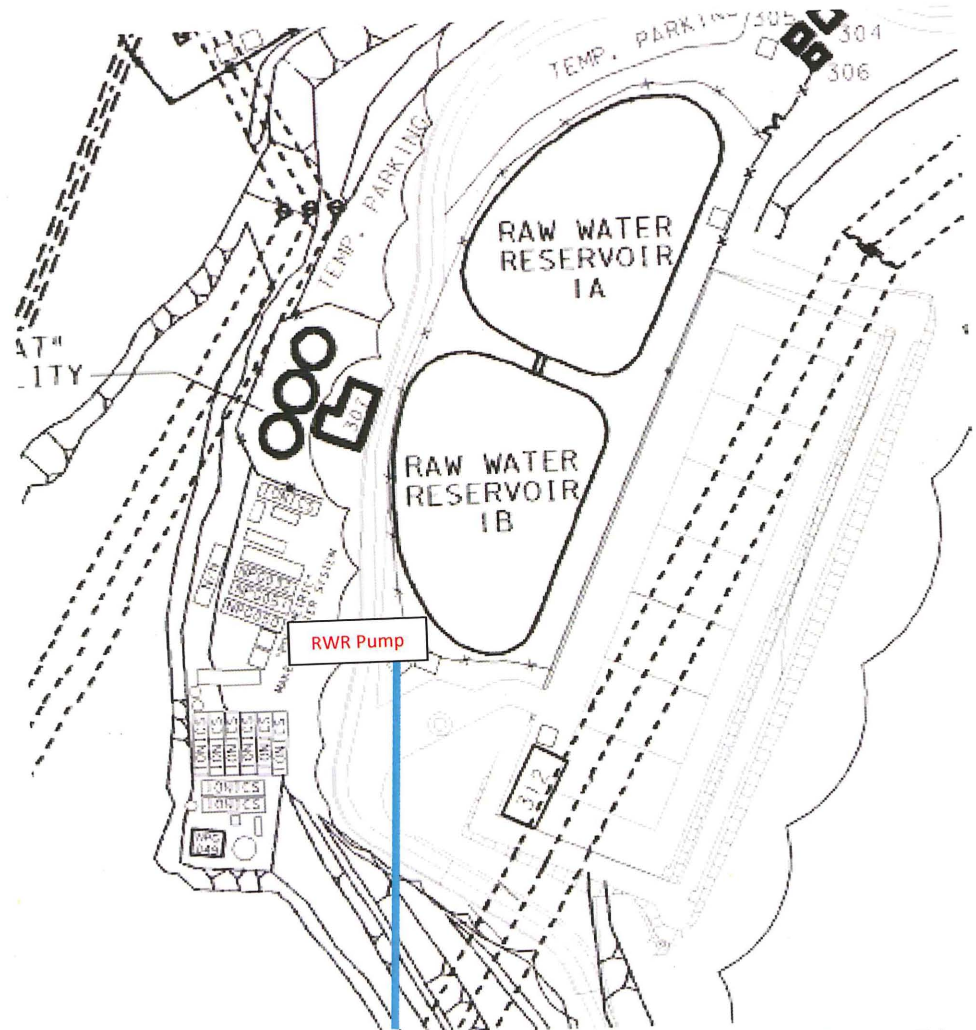


Figure 5A
Alt Sources – RWR
Unit 1 & 2

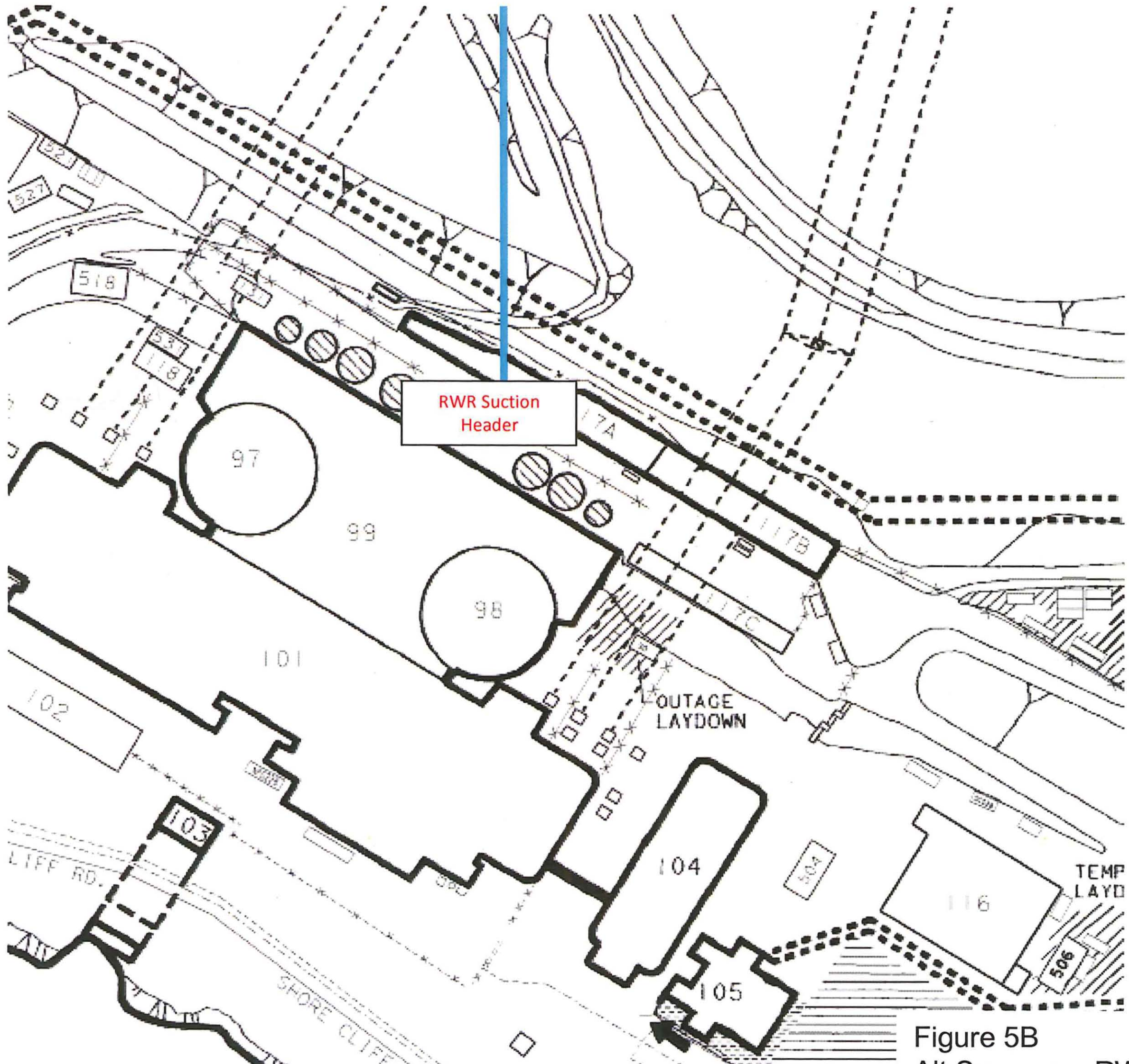


Figure 5B
Alt Sources – RWR
Unit 1 & 2

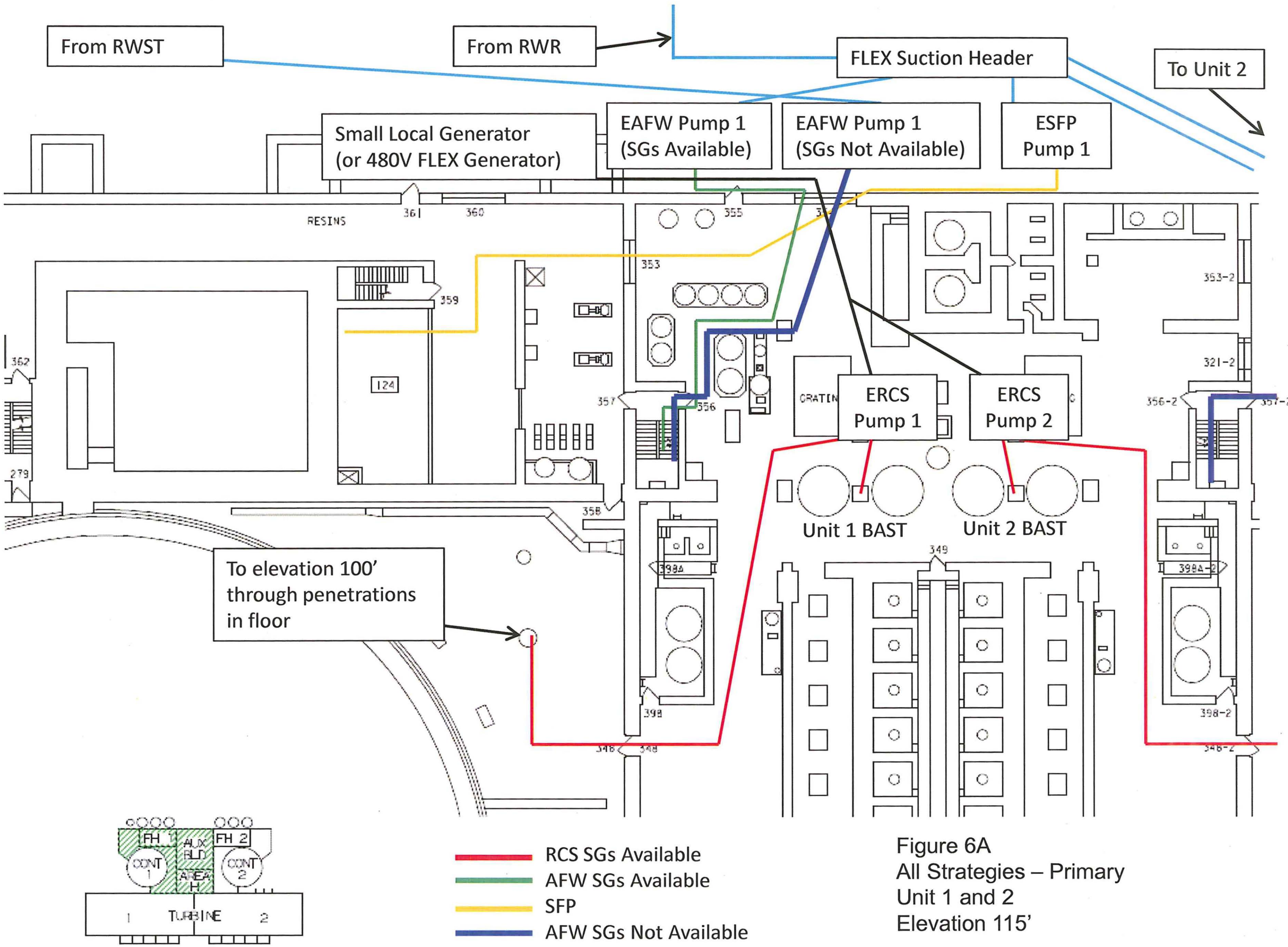


Figure 6A
All Strategies – Primary
Unit 1 and 2
Elevation 115'

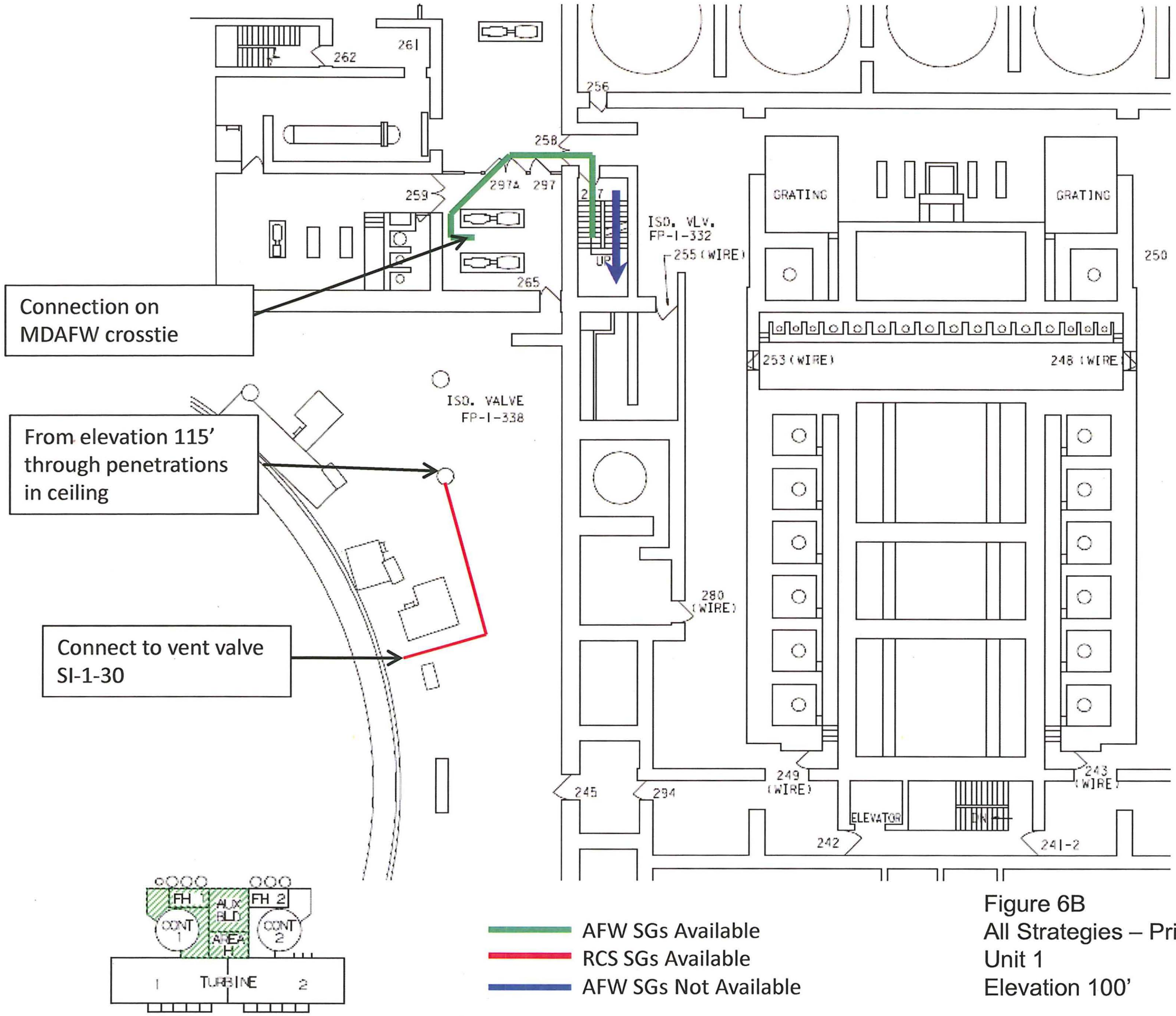


Figure 6B
All Strategies – Primary
Unit 1
Elevation 100'

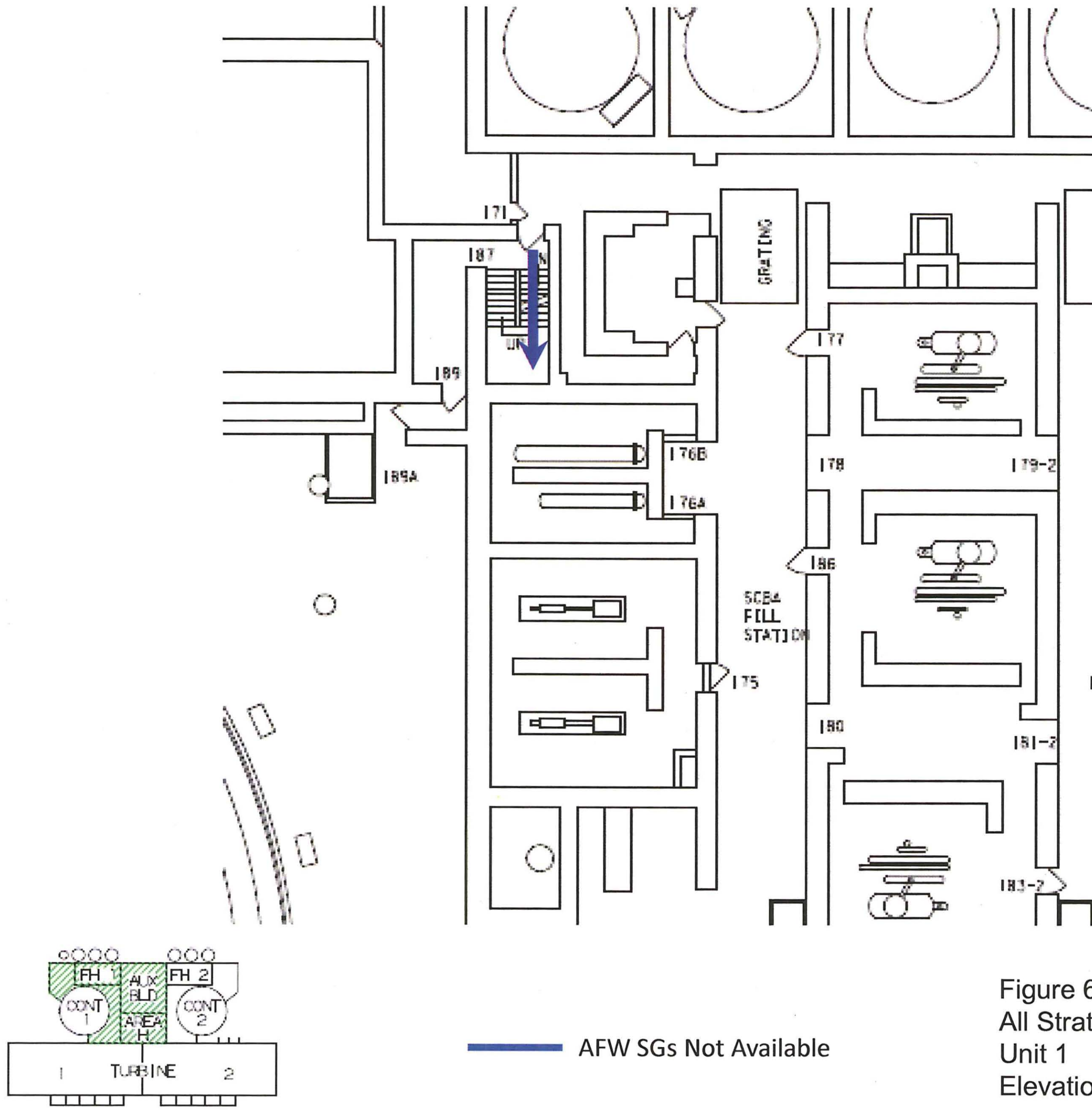


Figure 6C
All Strategies – Primary
Unit 1
Elevation 85'

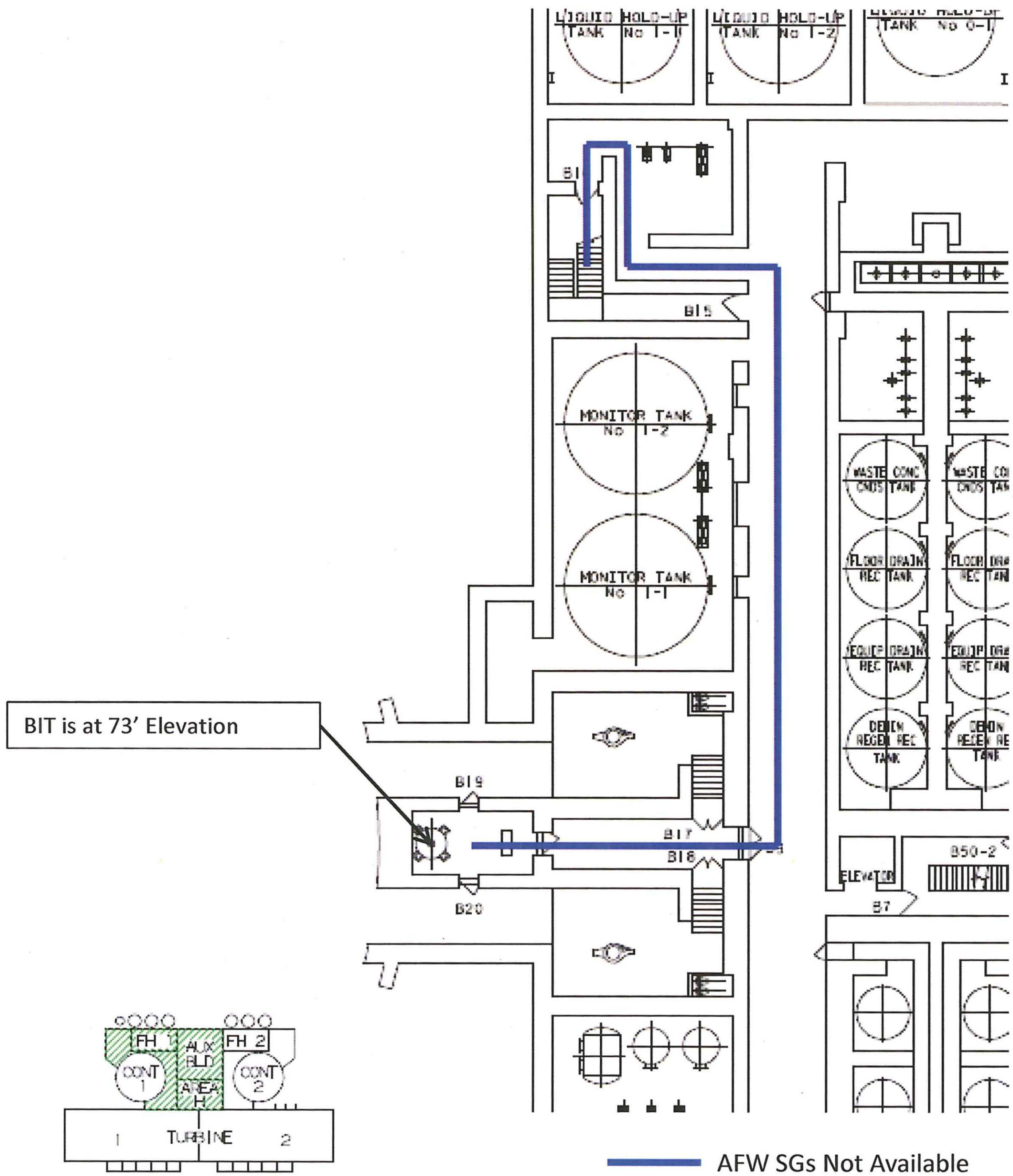


Figure 6D
All Strategies – Primary
Unit 1
Elevation 64'

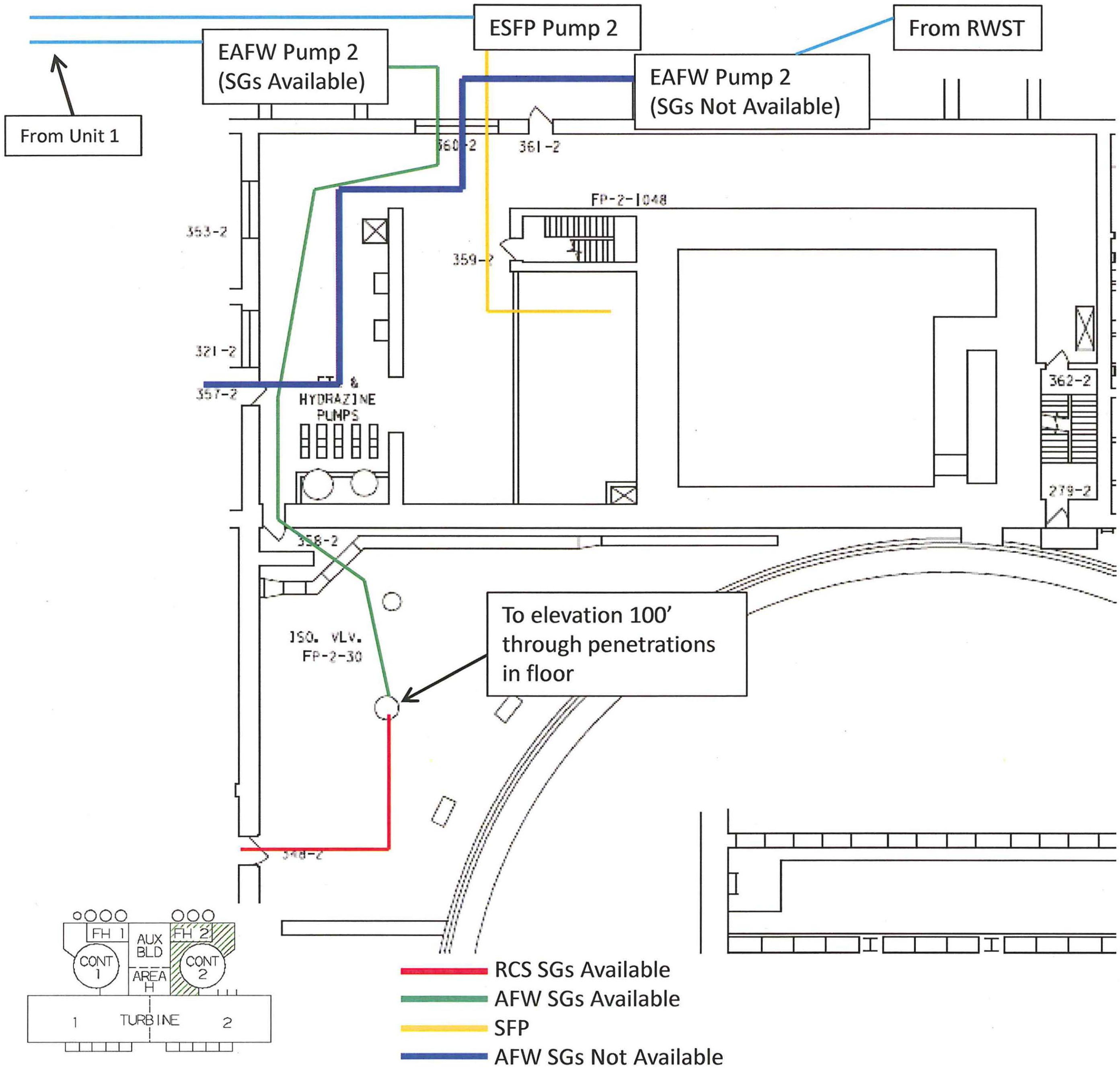
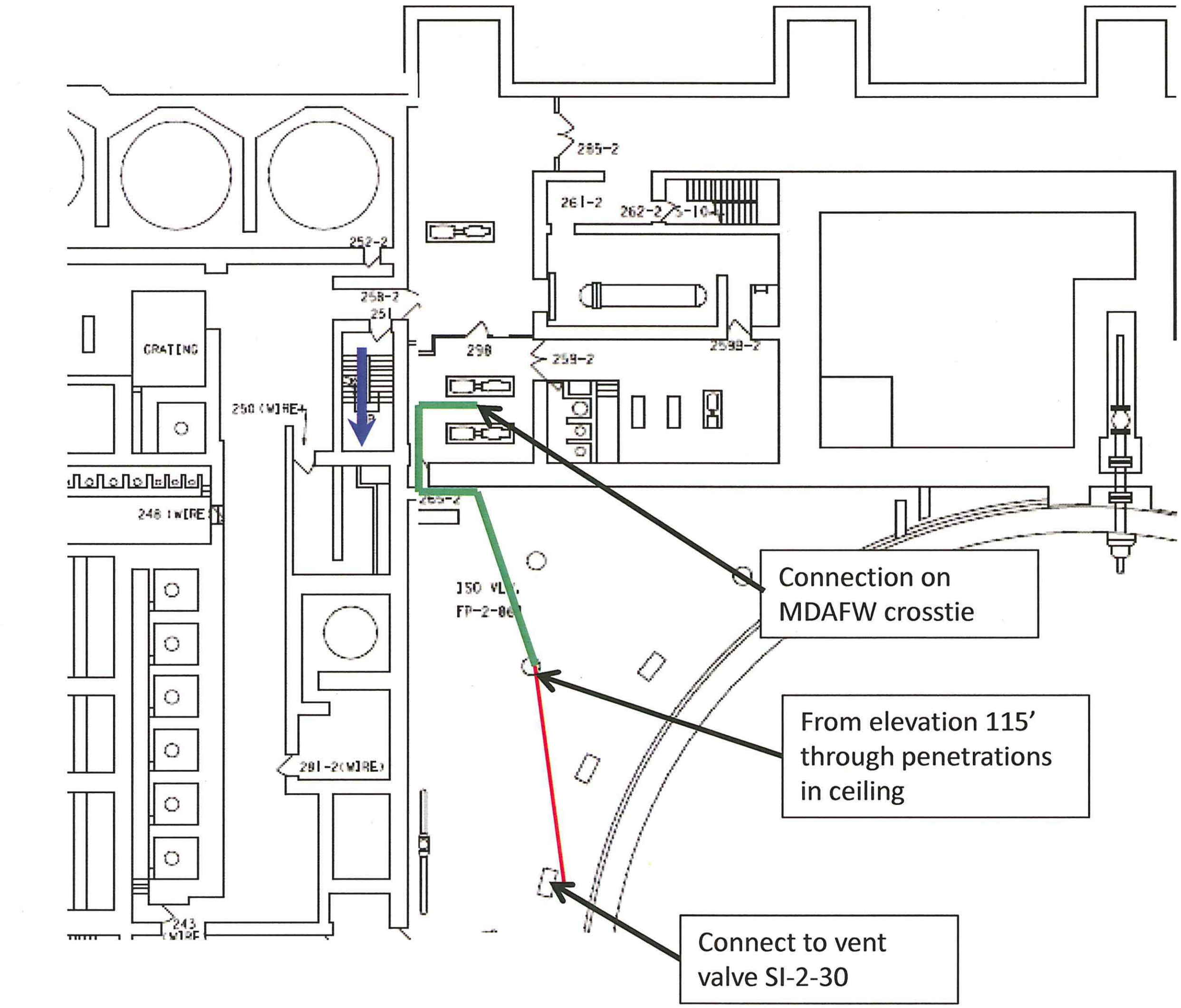
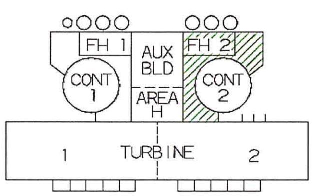


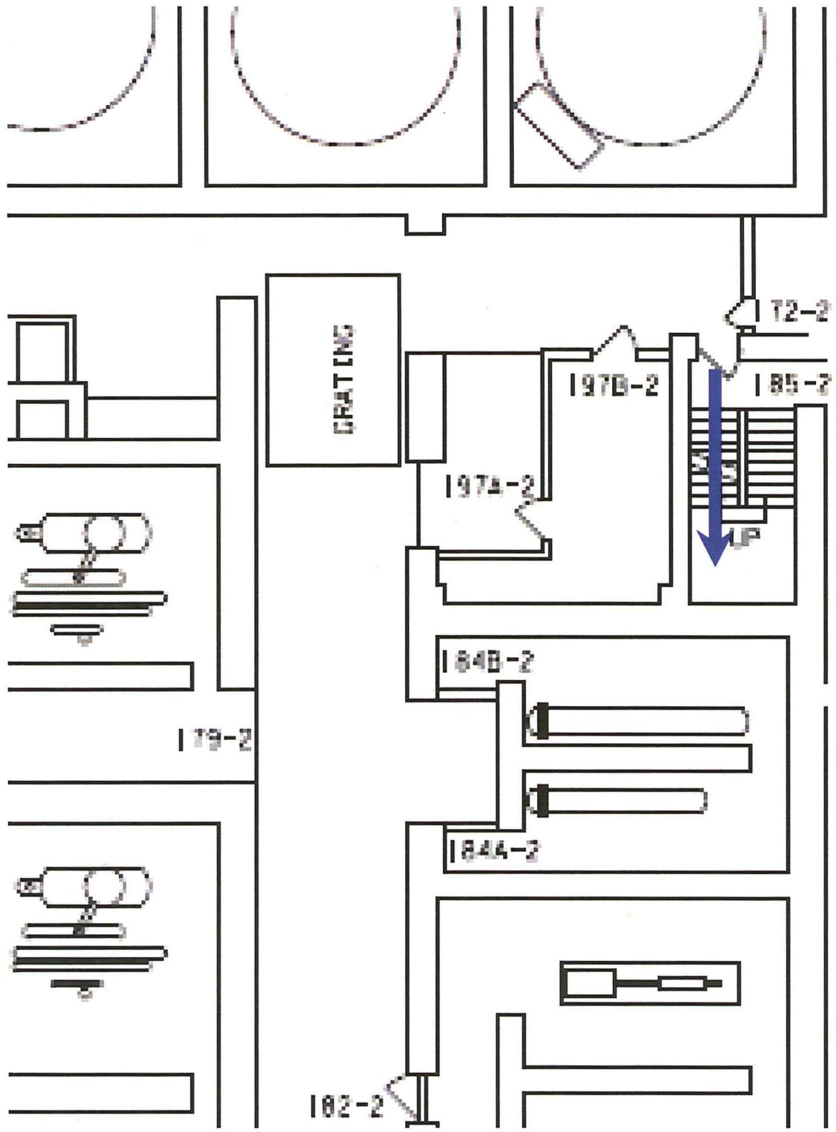
Figure 7A
All Strategies – Primary
Unit 2
Elevation 115'

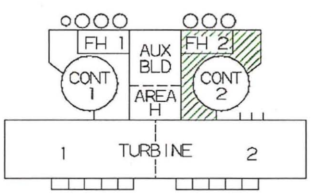




AFW SGs Available
RCS SGs Available
AFW SGs Not Available

Figure 7B
All Strategies – Primary
Unit 2
Elevation 100'





AFW SGs Not Available

Figure 7C
All Strategies – Primary
Unit 2
Elevation 85’

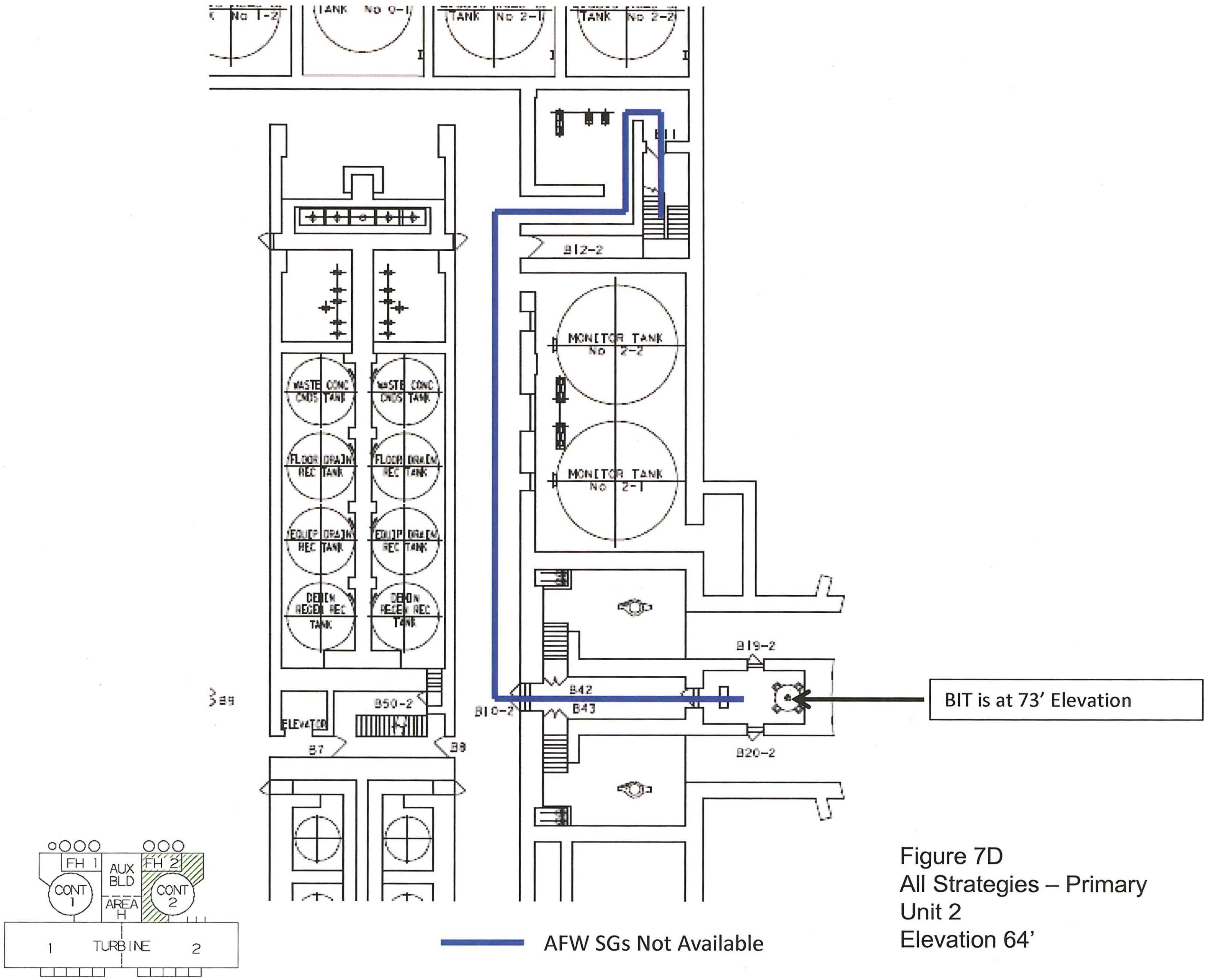


Figure 7D
All Strategies – Primary
Unit 2
Elevation 64'

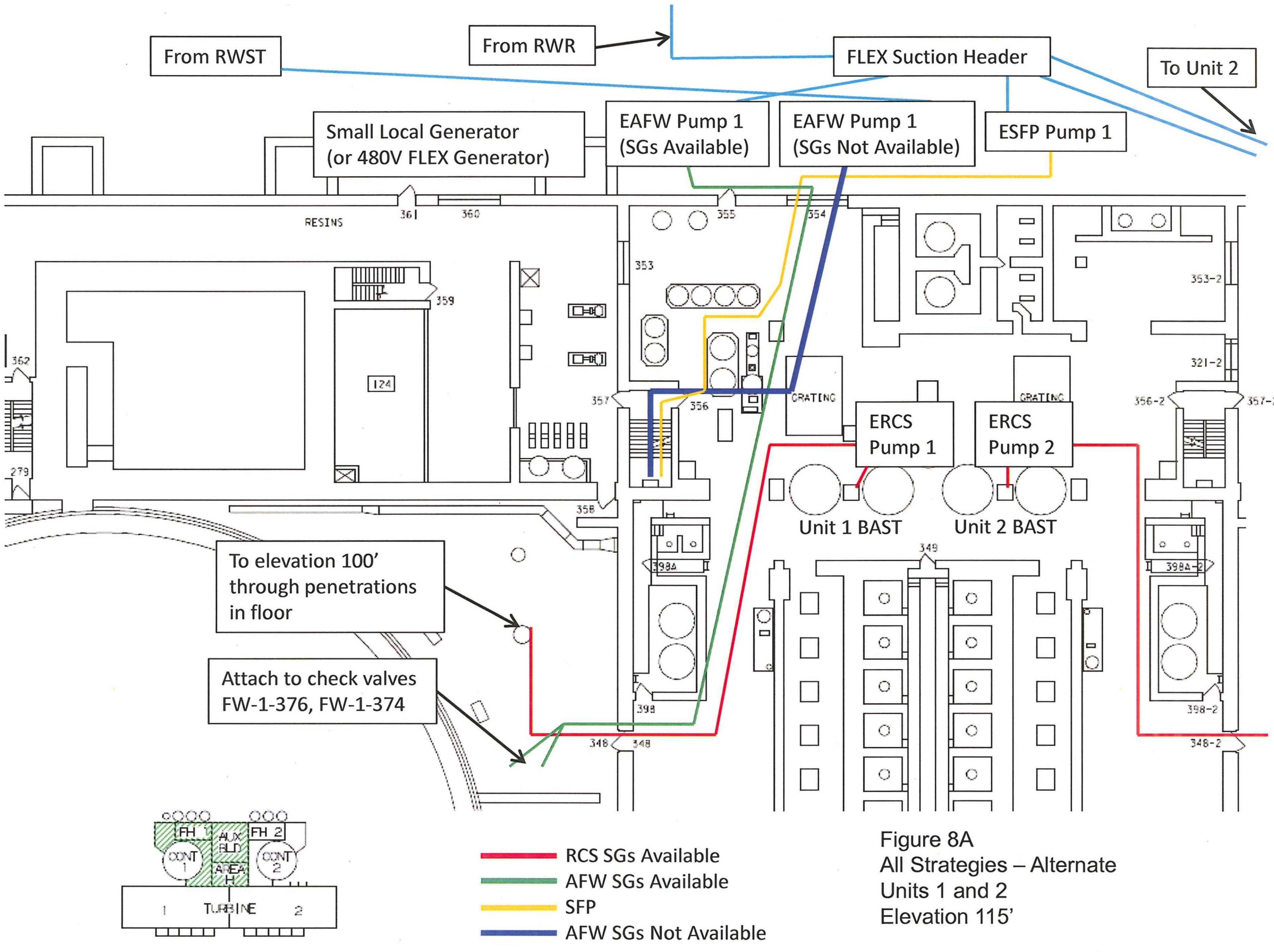
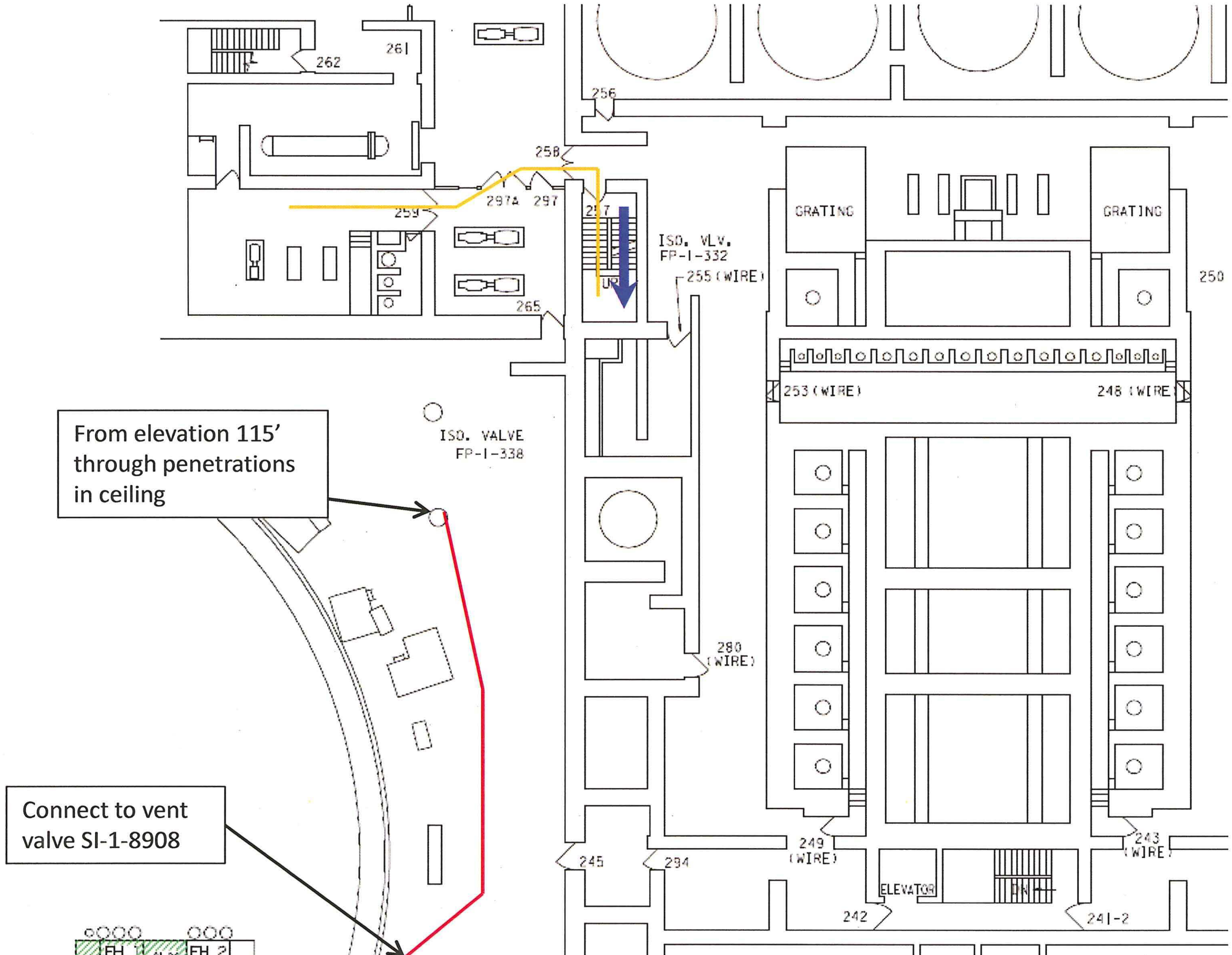
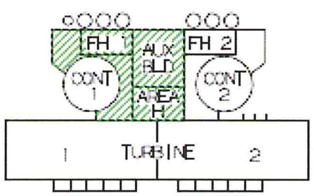


Figure 8A
All Strategies – Alternate
Units 1 and 2
Elevation 115'





SFP
RCS SGs Available
AFW SGs Not Available

Figure 8B
All Strategies – Alternate
Unit 1
Elevation 100'

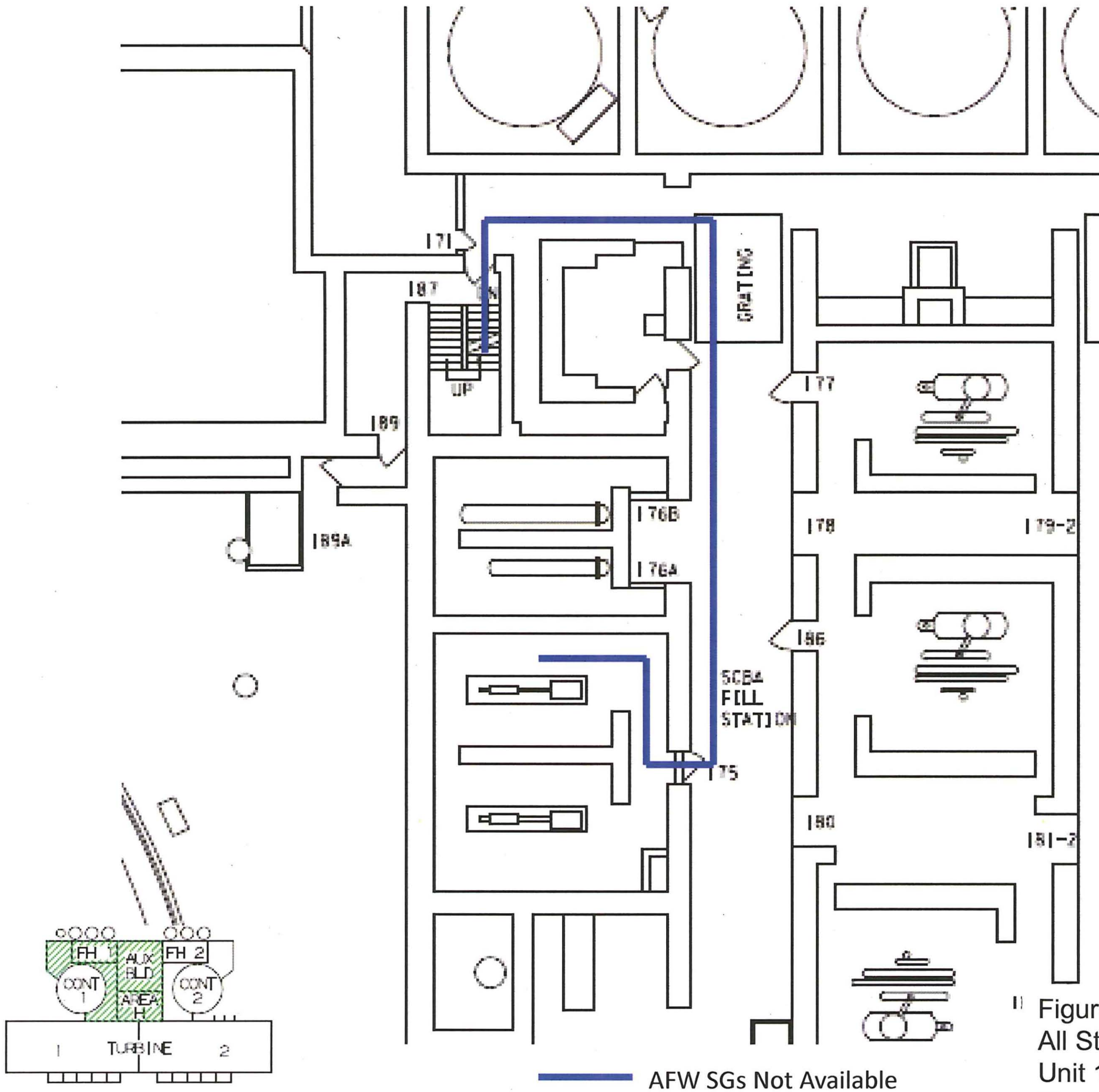


Figure 8C
All Strategies – Alternate
Unit 1
Elevation 85’

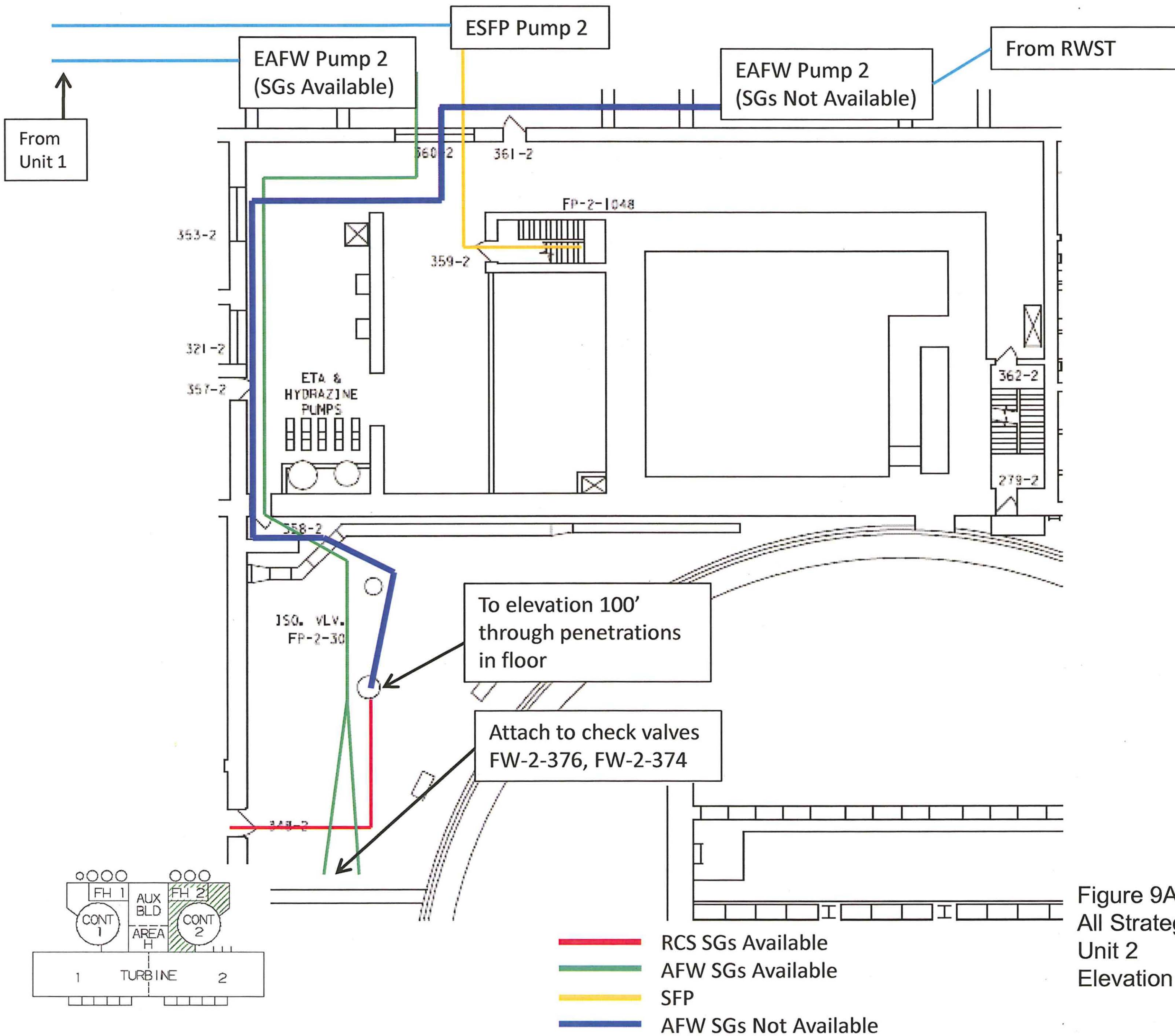


Figure 9A
All Strategies – Alternate
Unit 2
Elevation 115'

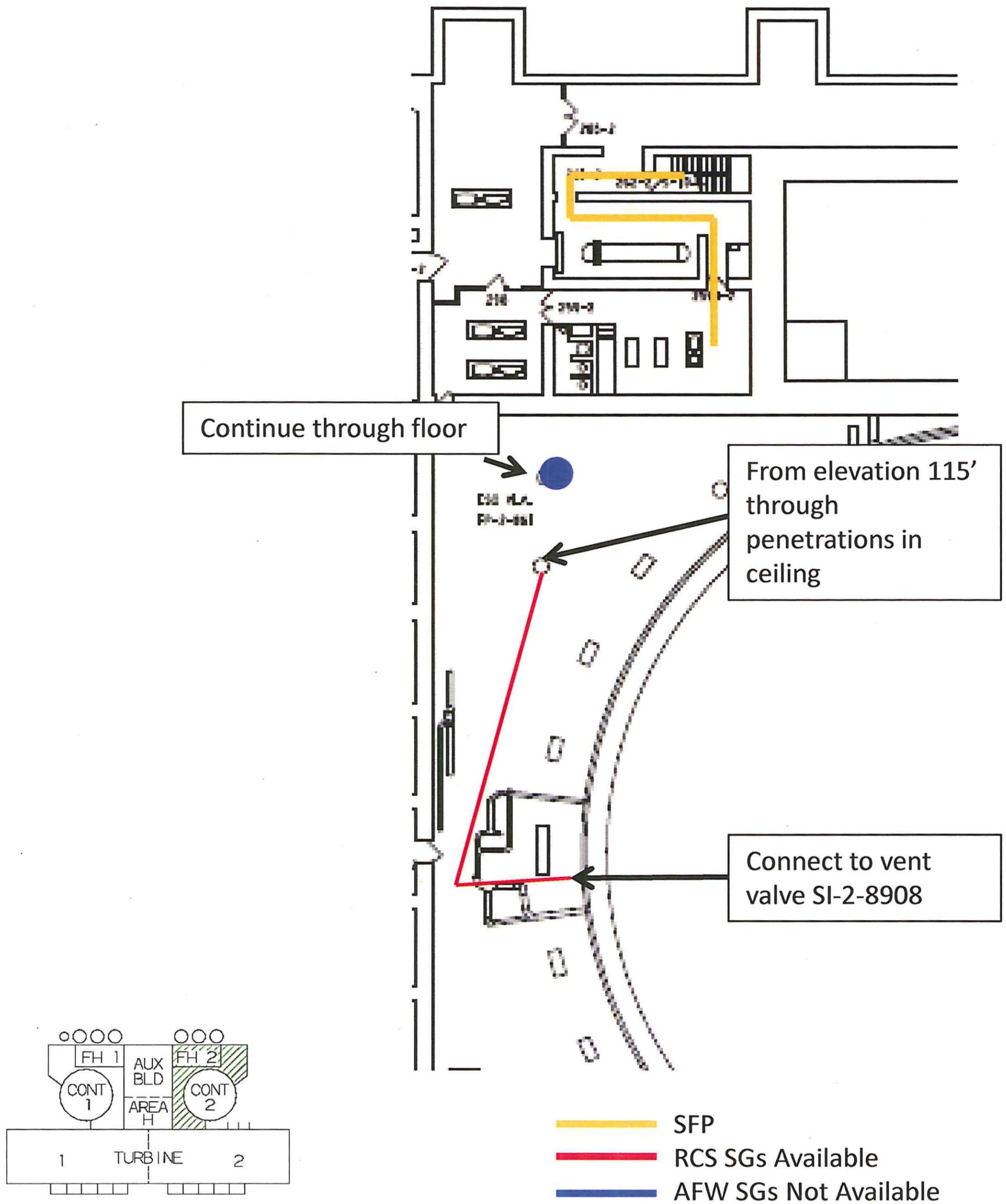
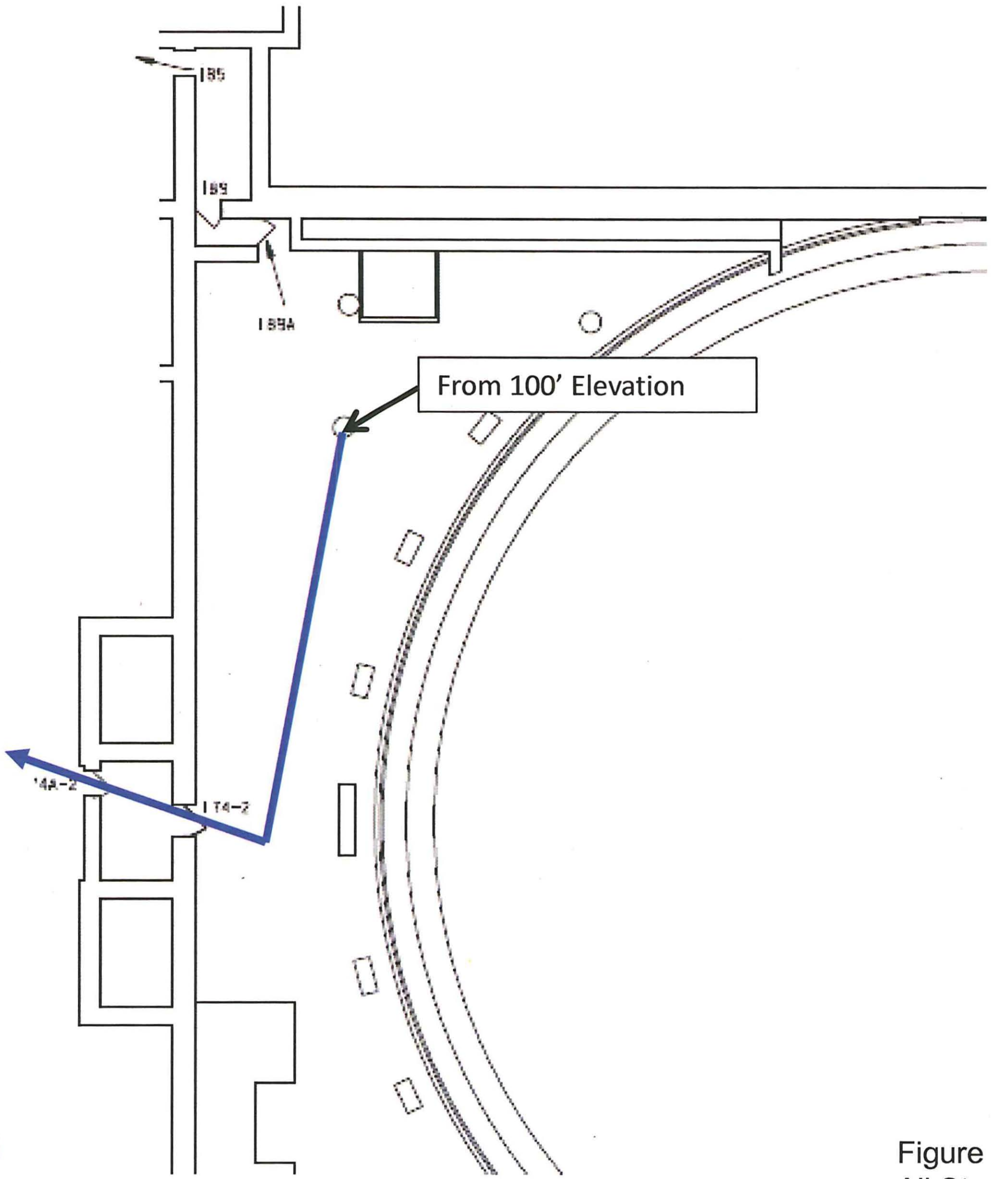
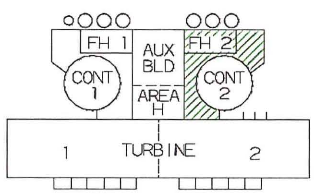


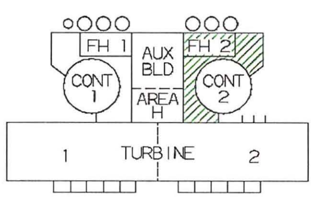
Figure 9B
All Strategies – Alternate
Unit 2
Elevation 100'





AFW SGs Not Available

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



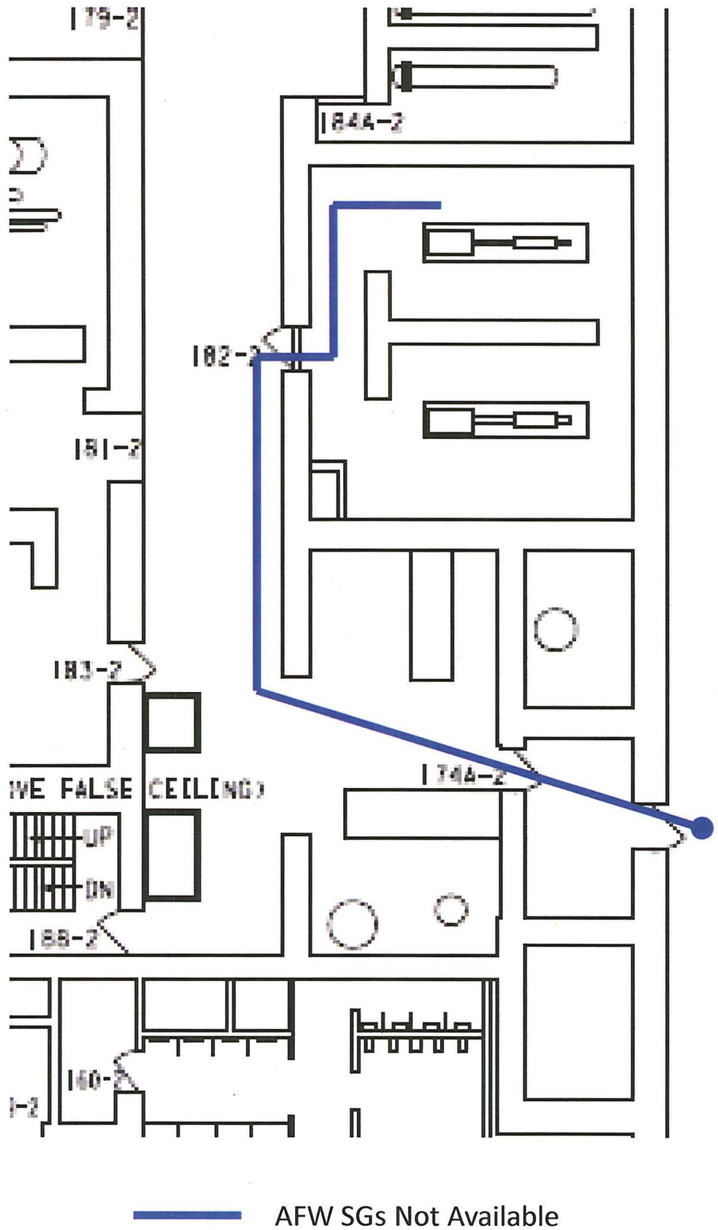


Figure 9D
All Strategies – Alternate
Unit 2
Elevation 85’

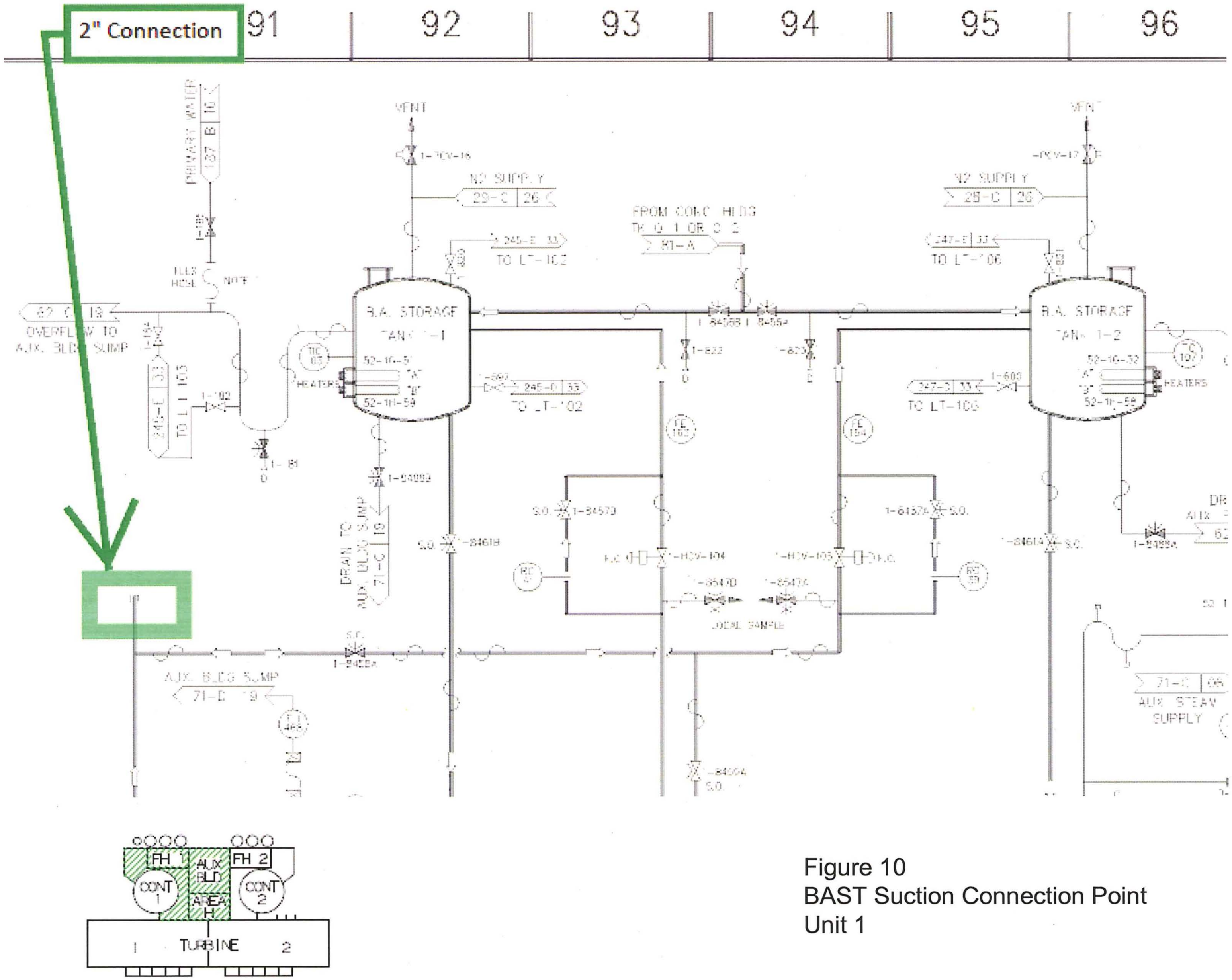
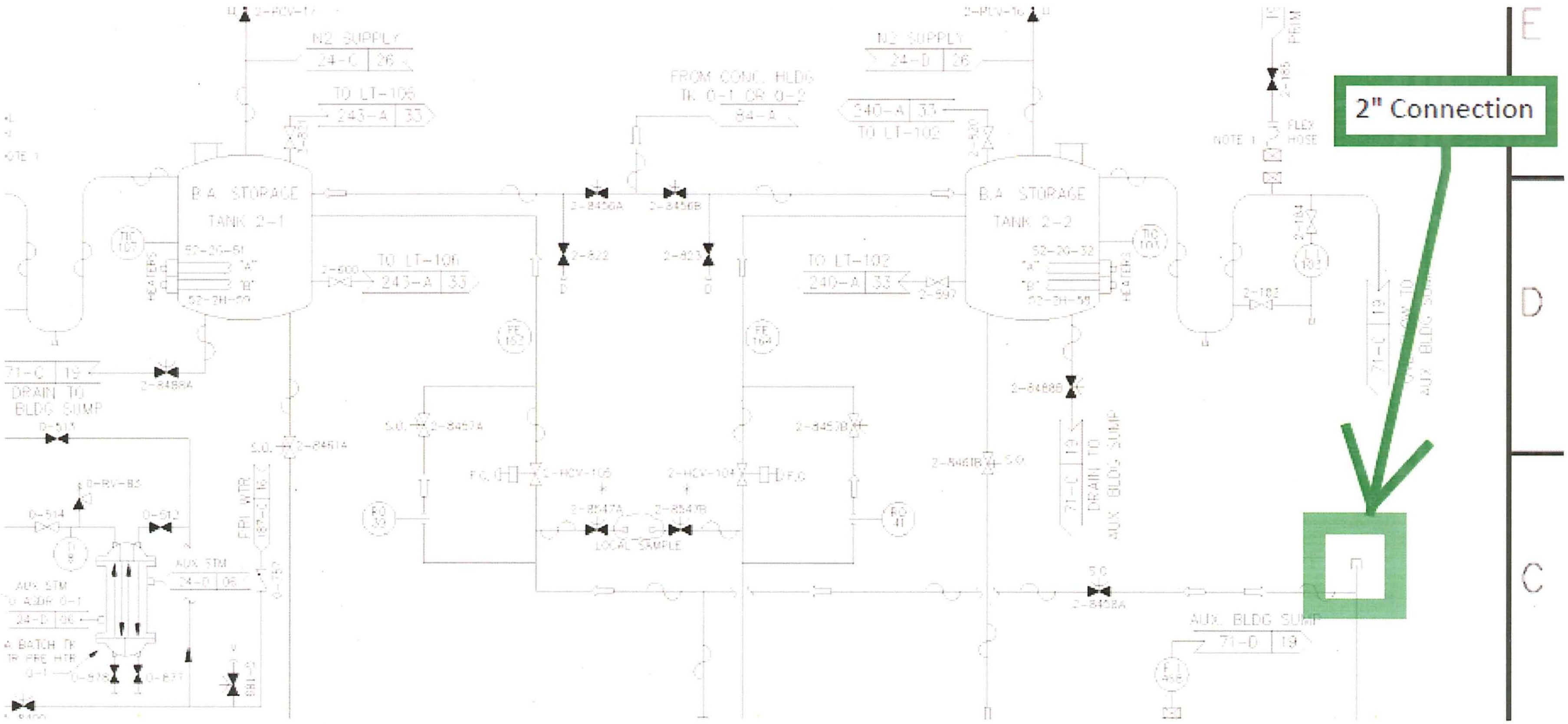


Figure 10
BAST Suction Connection Point
Unit 1



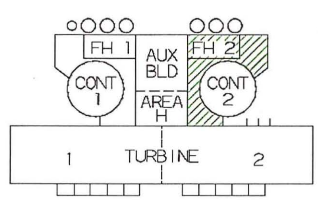


Figure 11
BAST Suction Connection Point
Unit 2

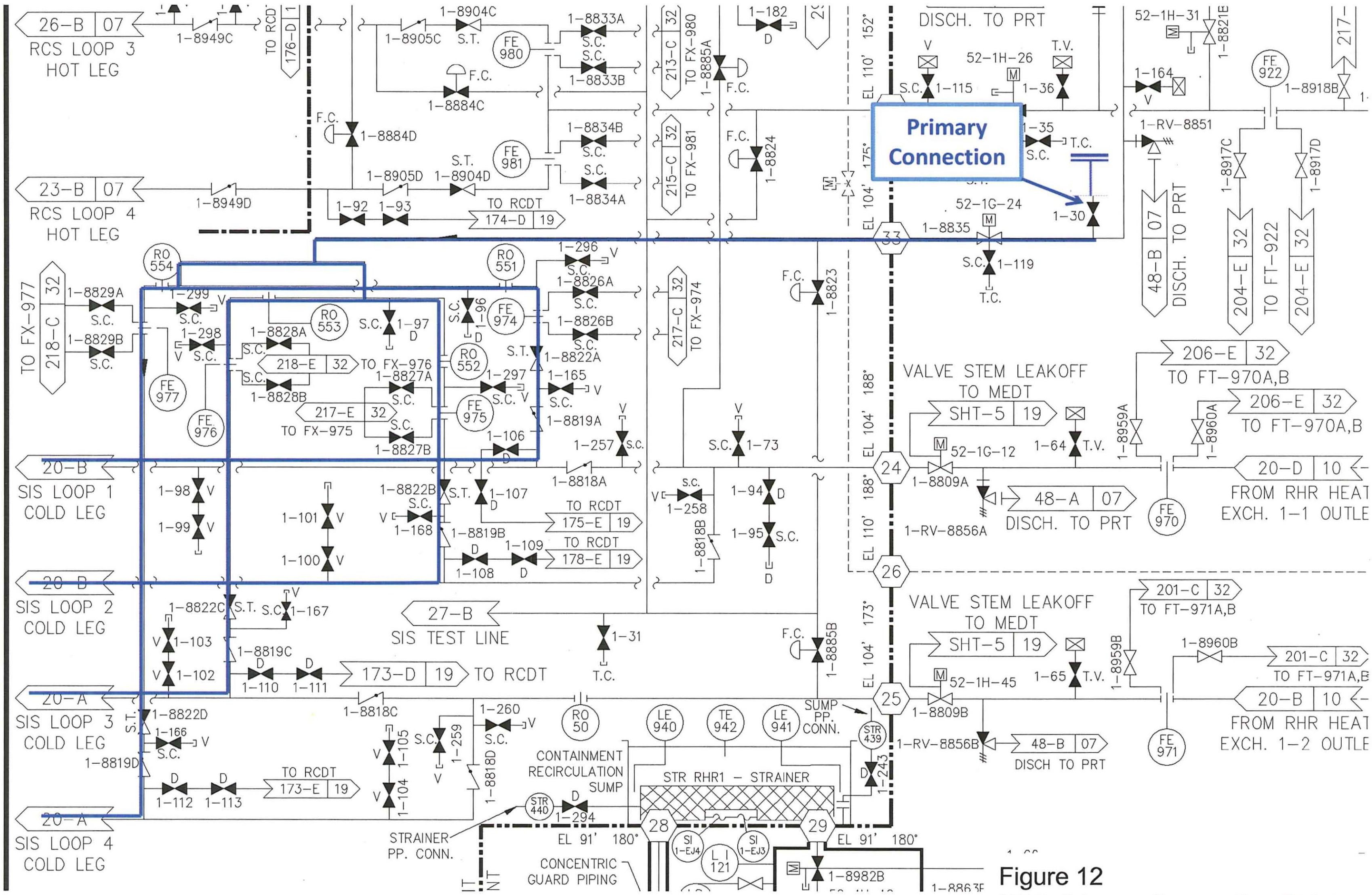


Figure 12
RCS Primary Connection Point
Unit 1

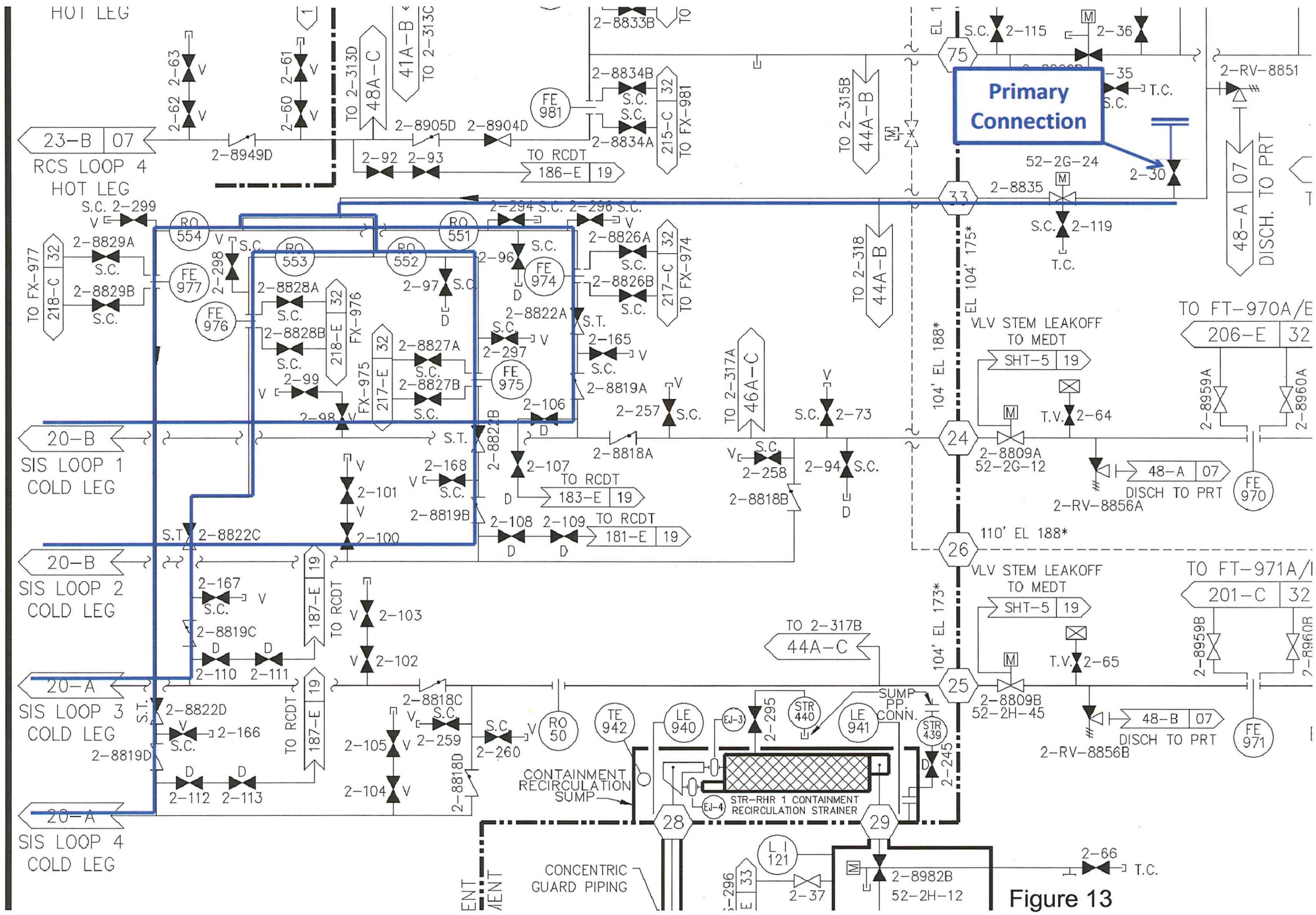


Figure 13
RCS Primary Connection Point
Unit 2

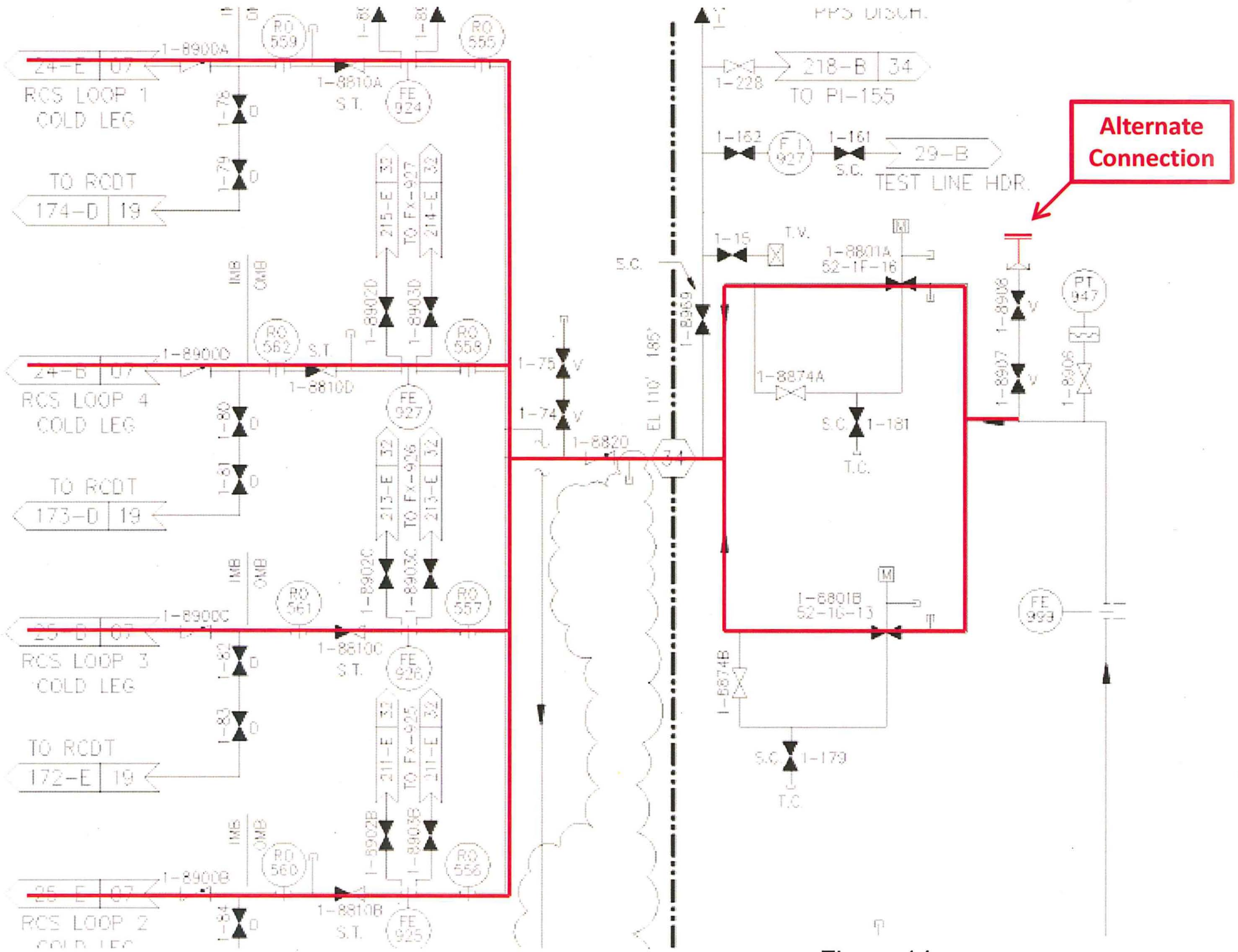


Figure 14
RCS Alternate Connection Point
Unit 1

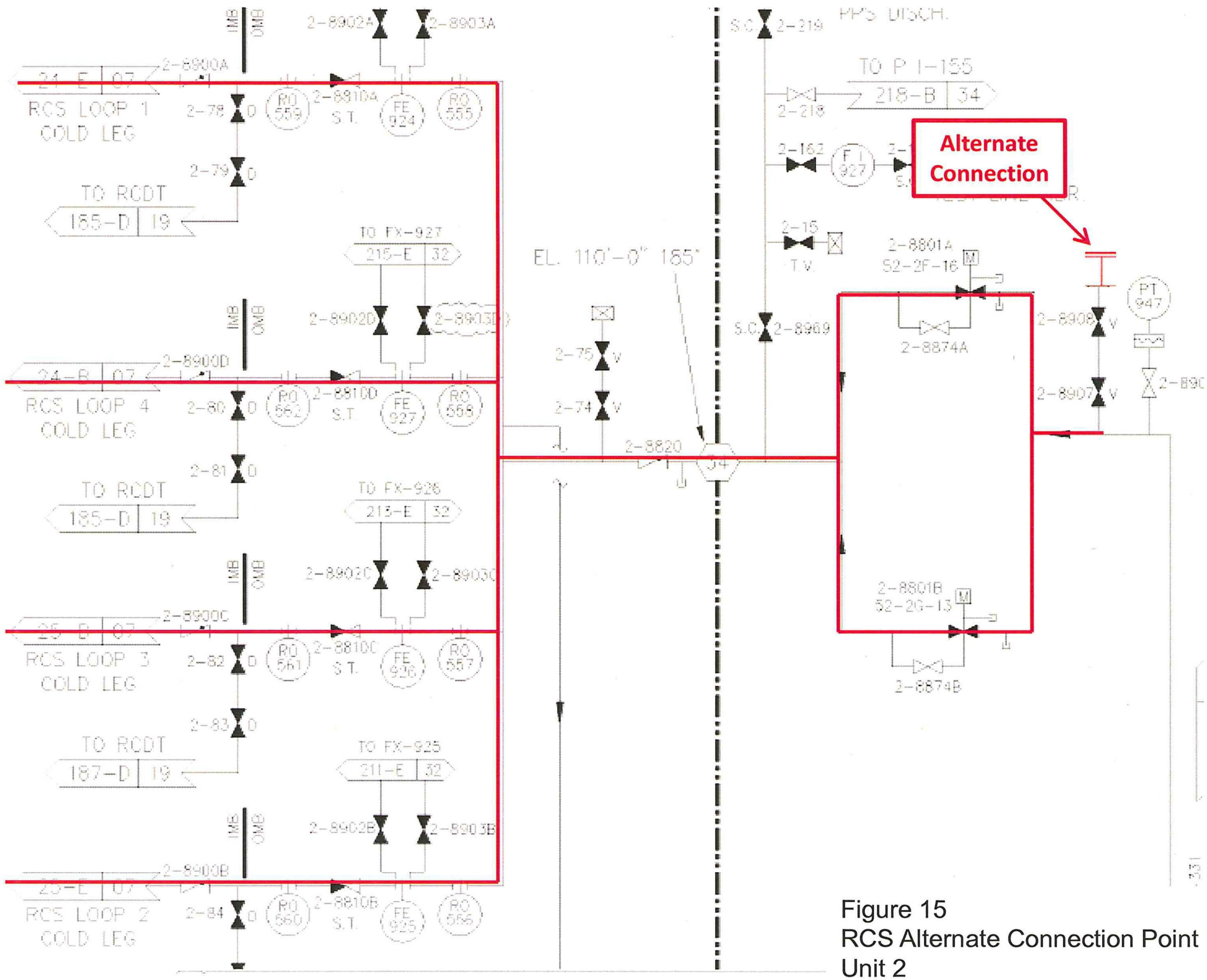
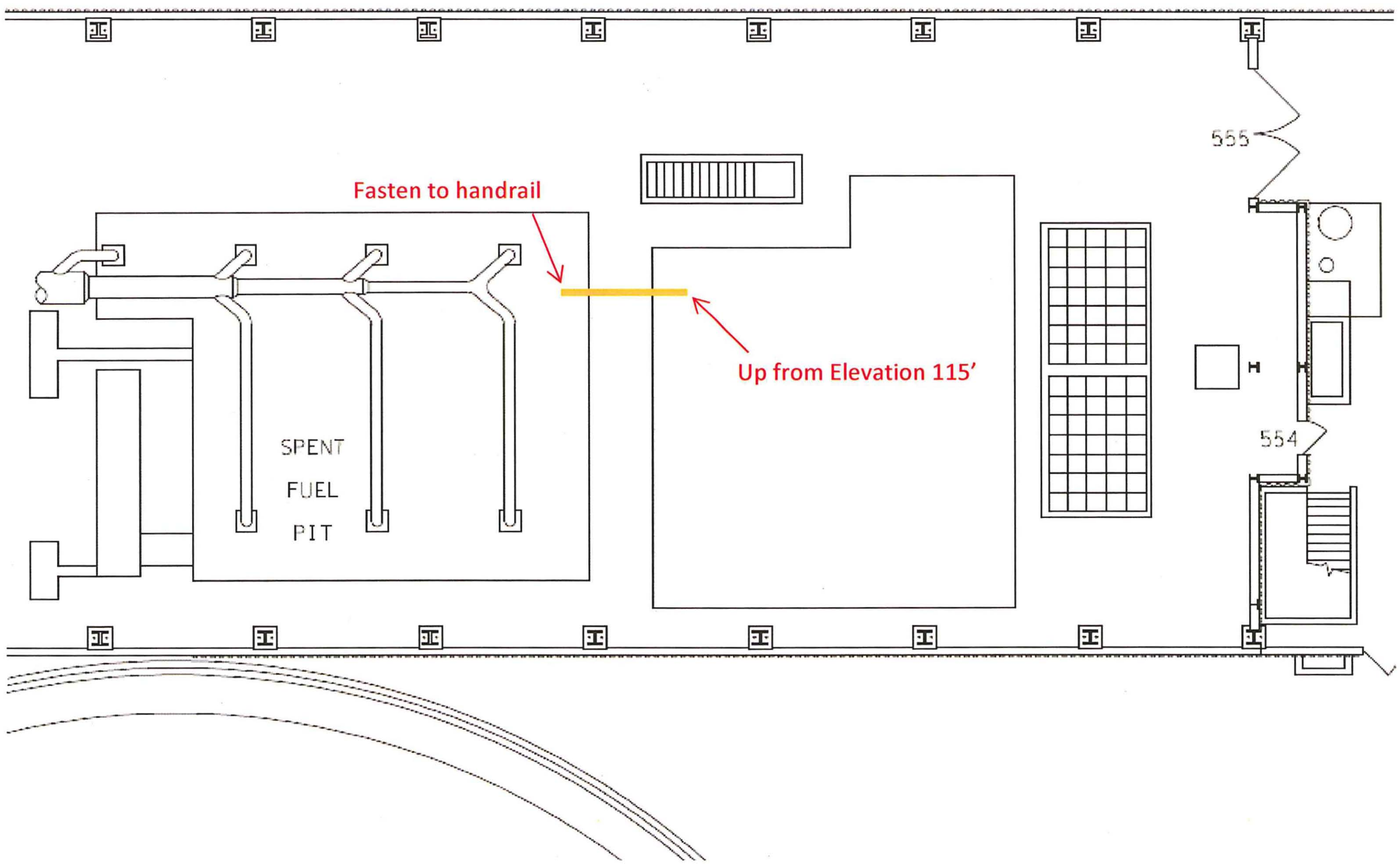


Figure 15
RCS Alternate Connection Point
Unit 2



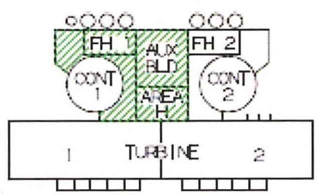
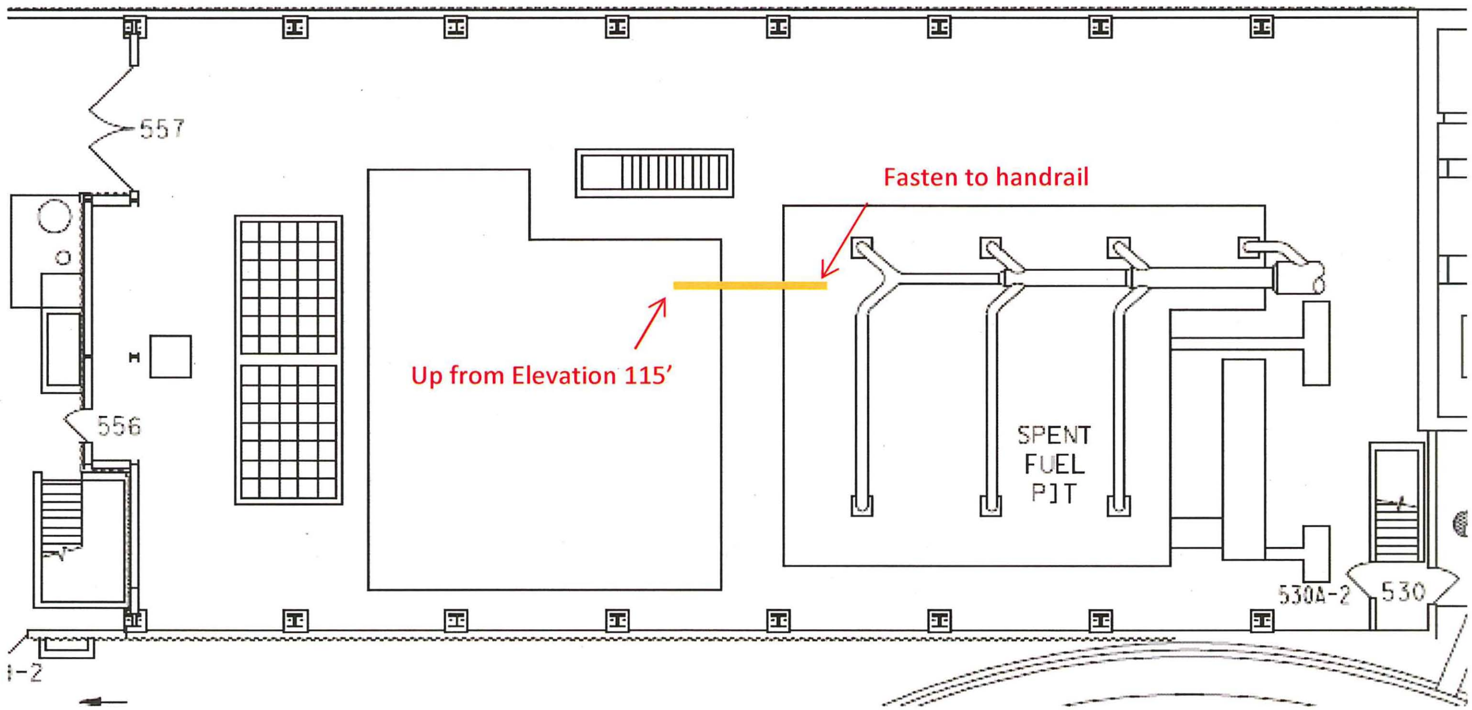


Figure 16
Spent Fuel Pool Primary Connection
Unit 1
Elevation 140'



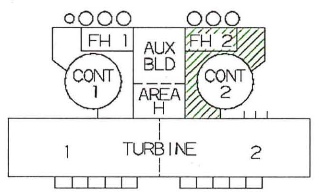


Figure 17
Spent Fuel Pool Primary Connection
Unit 2
Elevation 140'

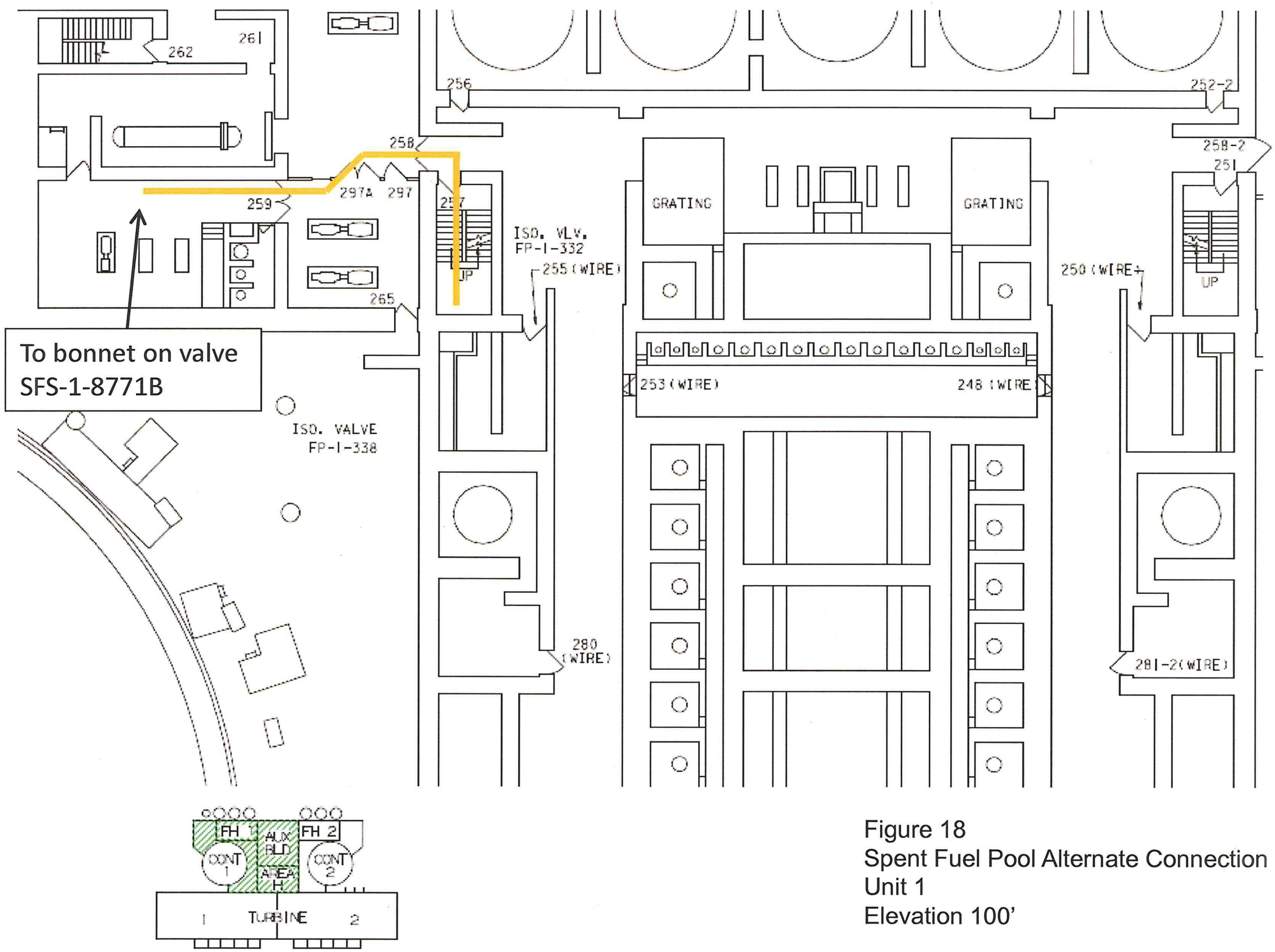
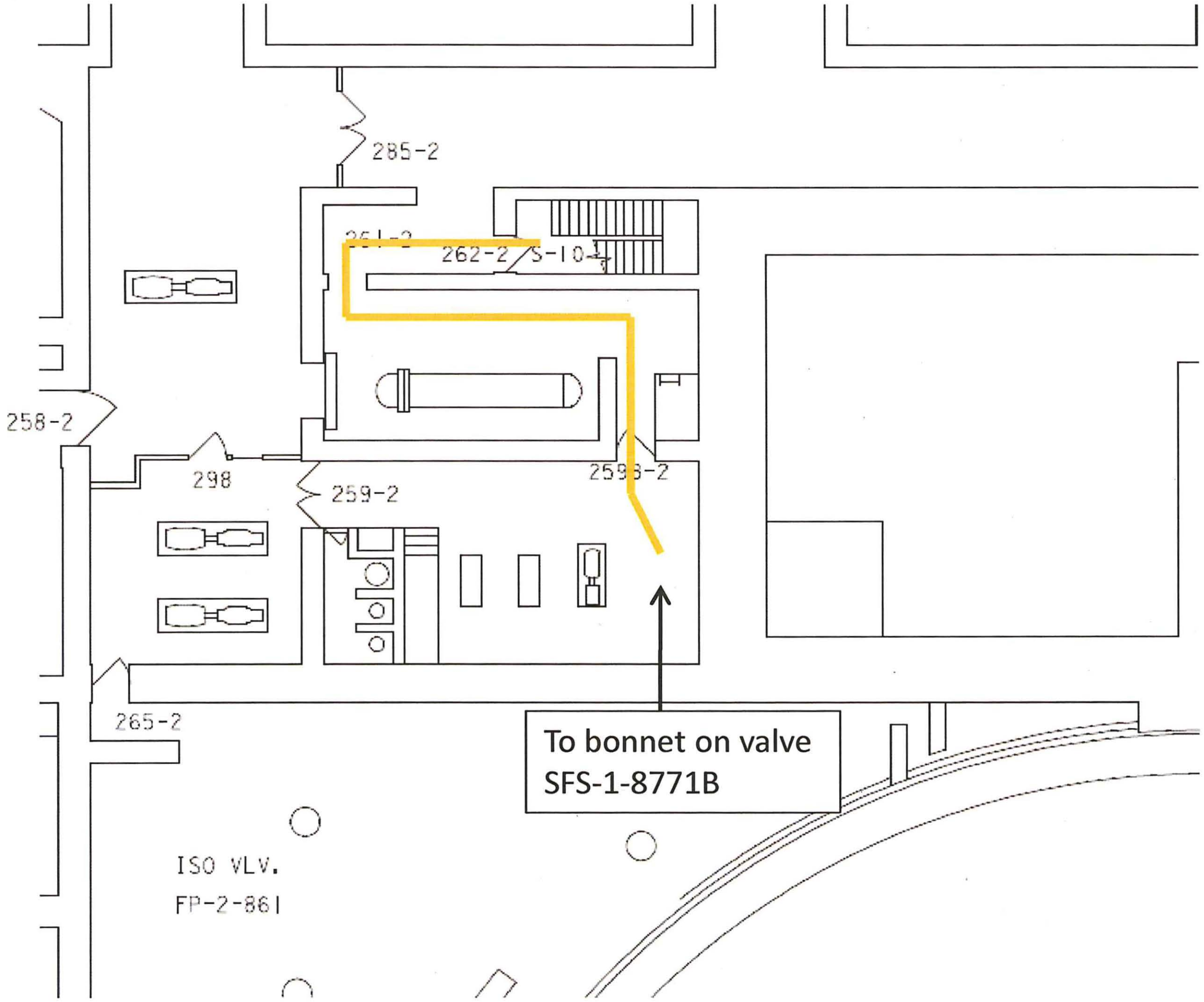


Figure 18
Spent Fuel Pool Alternate Connection
Unit 1
Elevation 100’



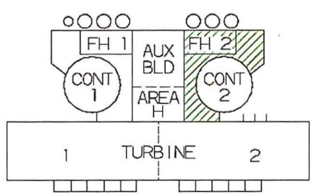
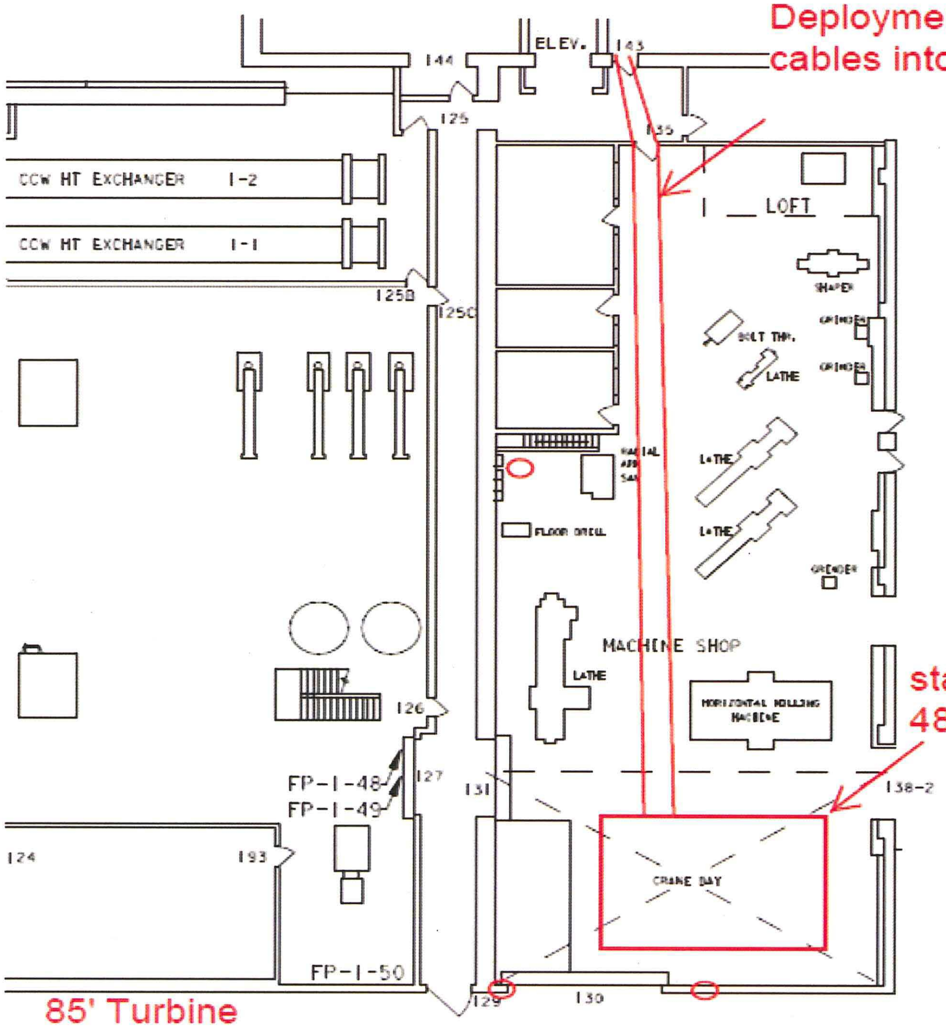


Figure 19
Spent Fuel Pool Alternate Connection
Unit 2
Elevation 100’



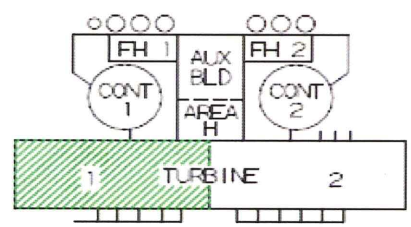
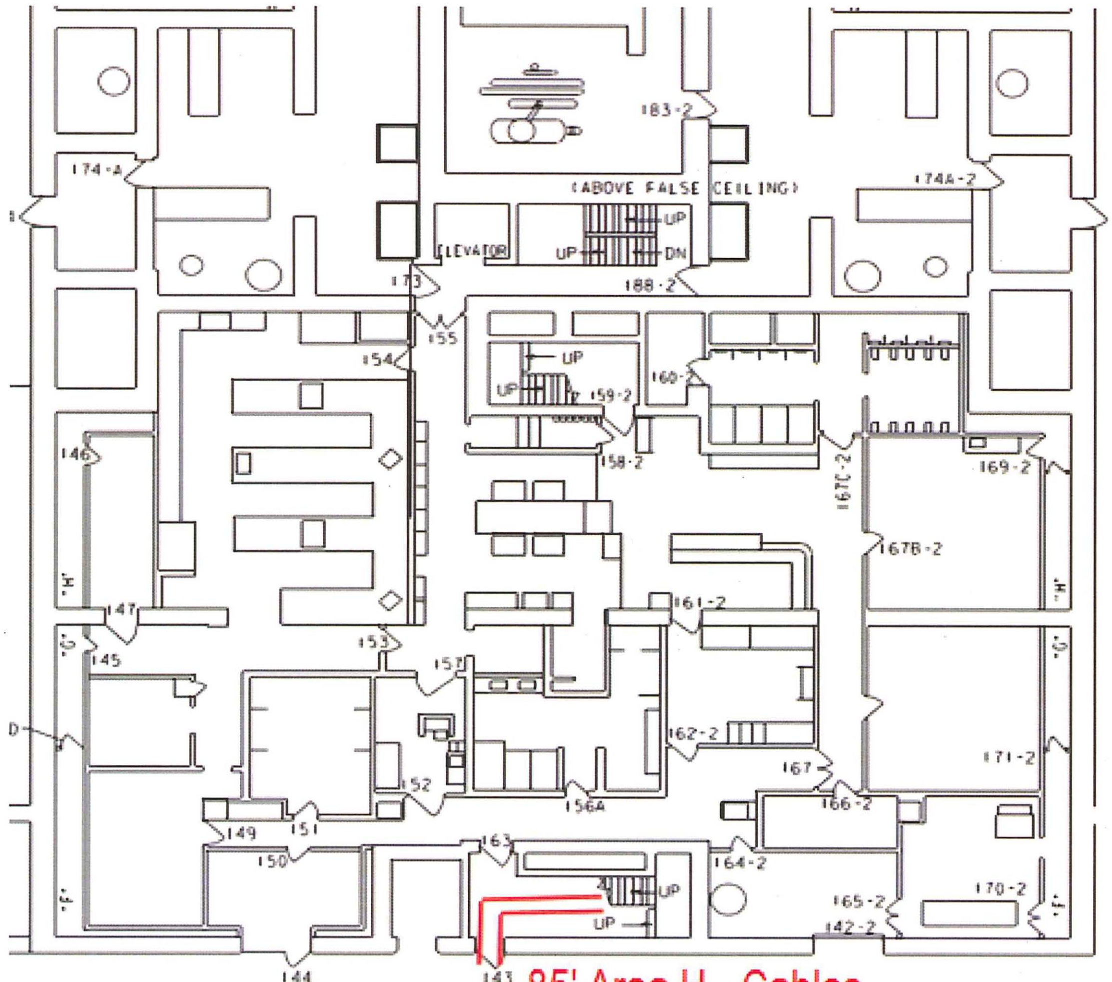


Figure 20A
480-Vac Staging and Cable Deployment
Elevation 85’



85' Area H - Cables routed up stairwell to 100' (primary) or 115' (alternate).TCOM cables routed to 128'.

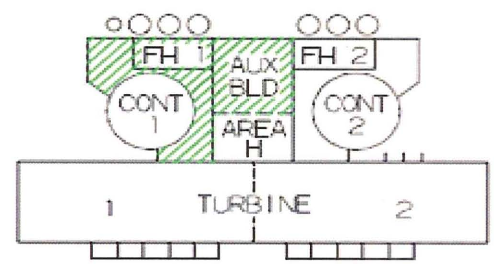
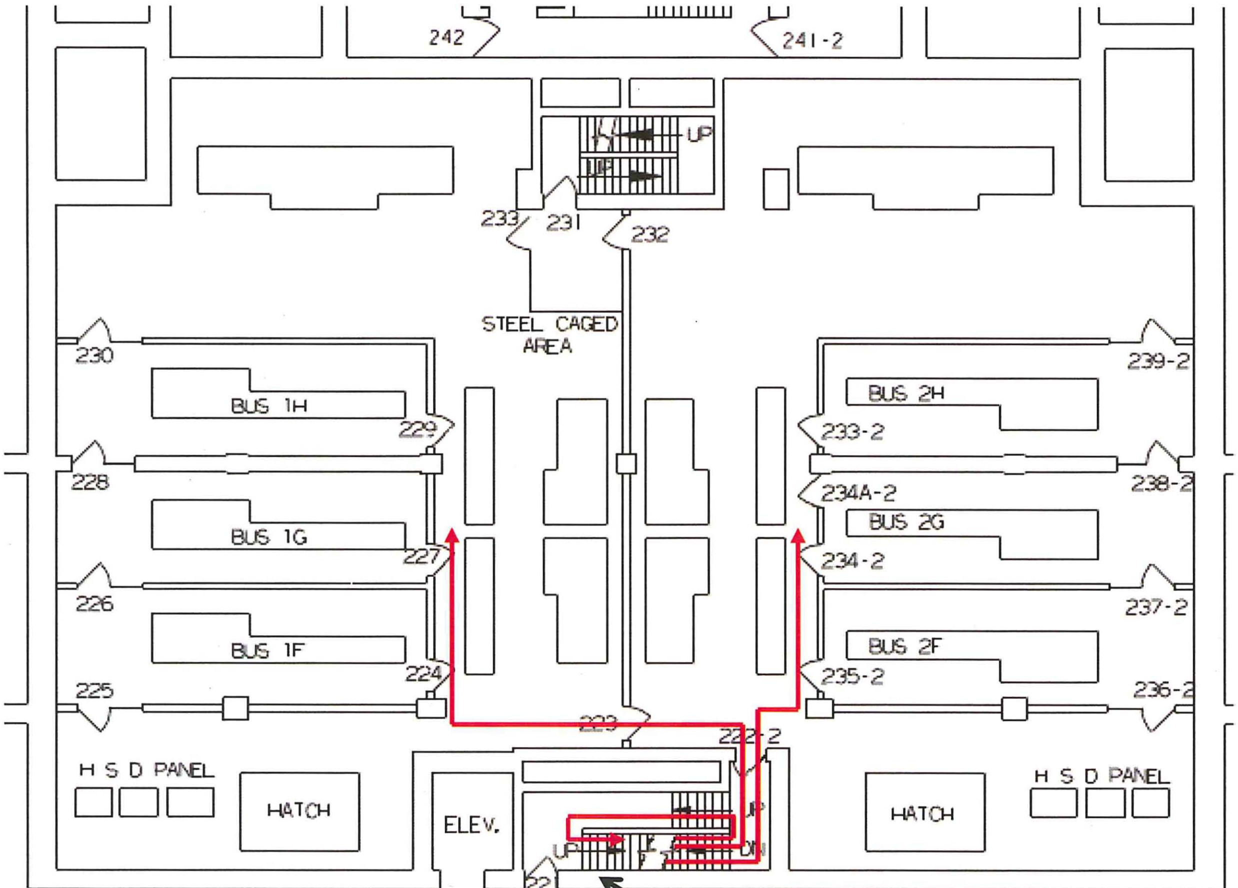


Figure 20B
480-Vac Cable Routing
Elevation 85'



100' Area H – Primary connection. Cables routed into switchgear rooms and connected to new transfer switch in each room. Bus G is preferred bus.

TCOM cables routed up stairwell to 128'

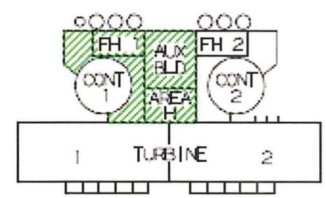


Figure 20C
480-Vac Cable Routing
Elevation 100'

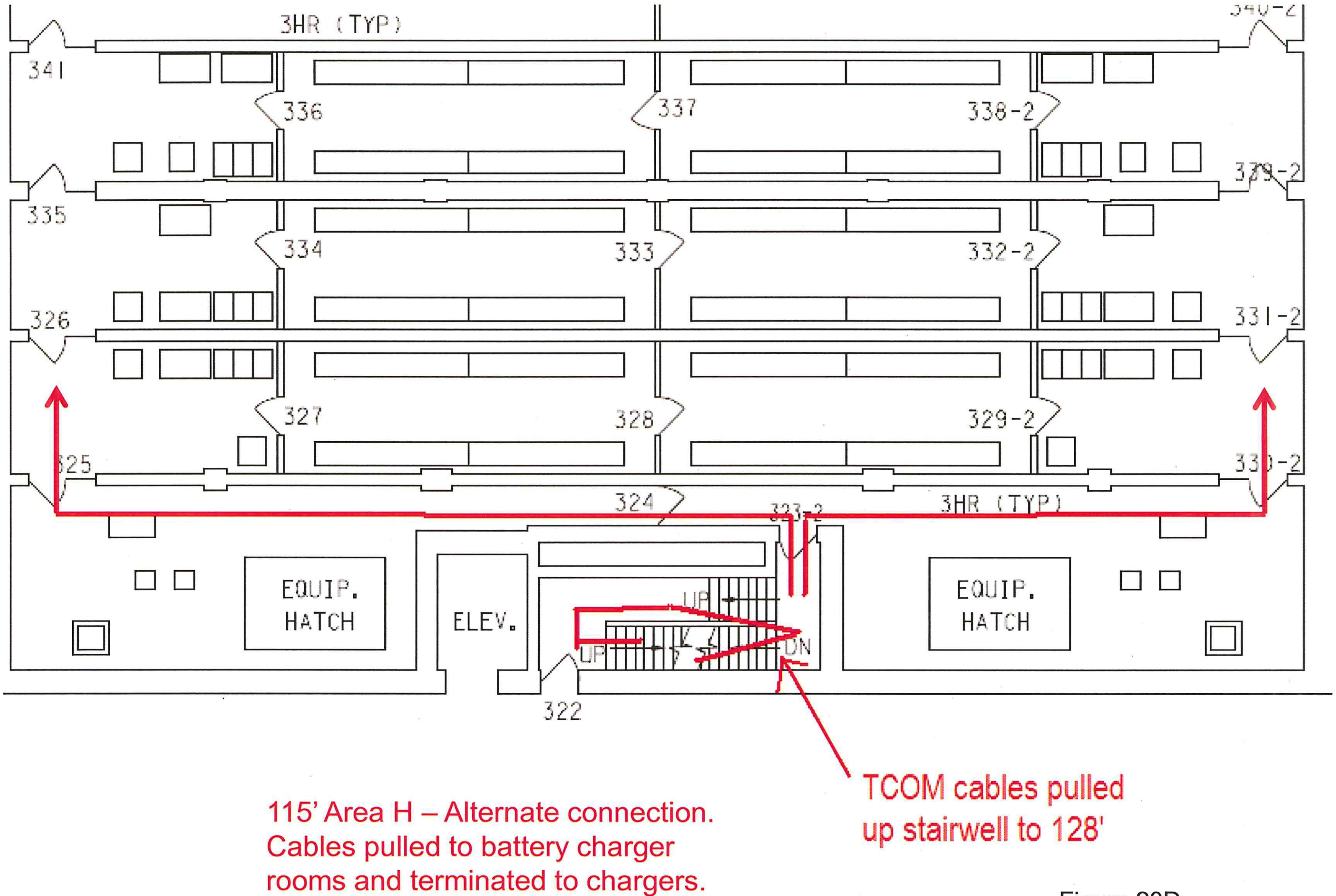


Figure 20D
480-Vac Cable Routing
Elevation 115'

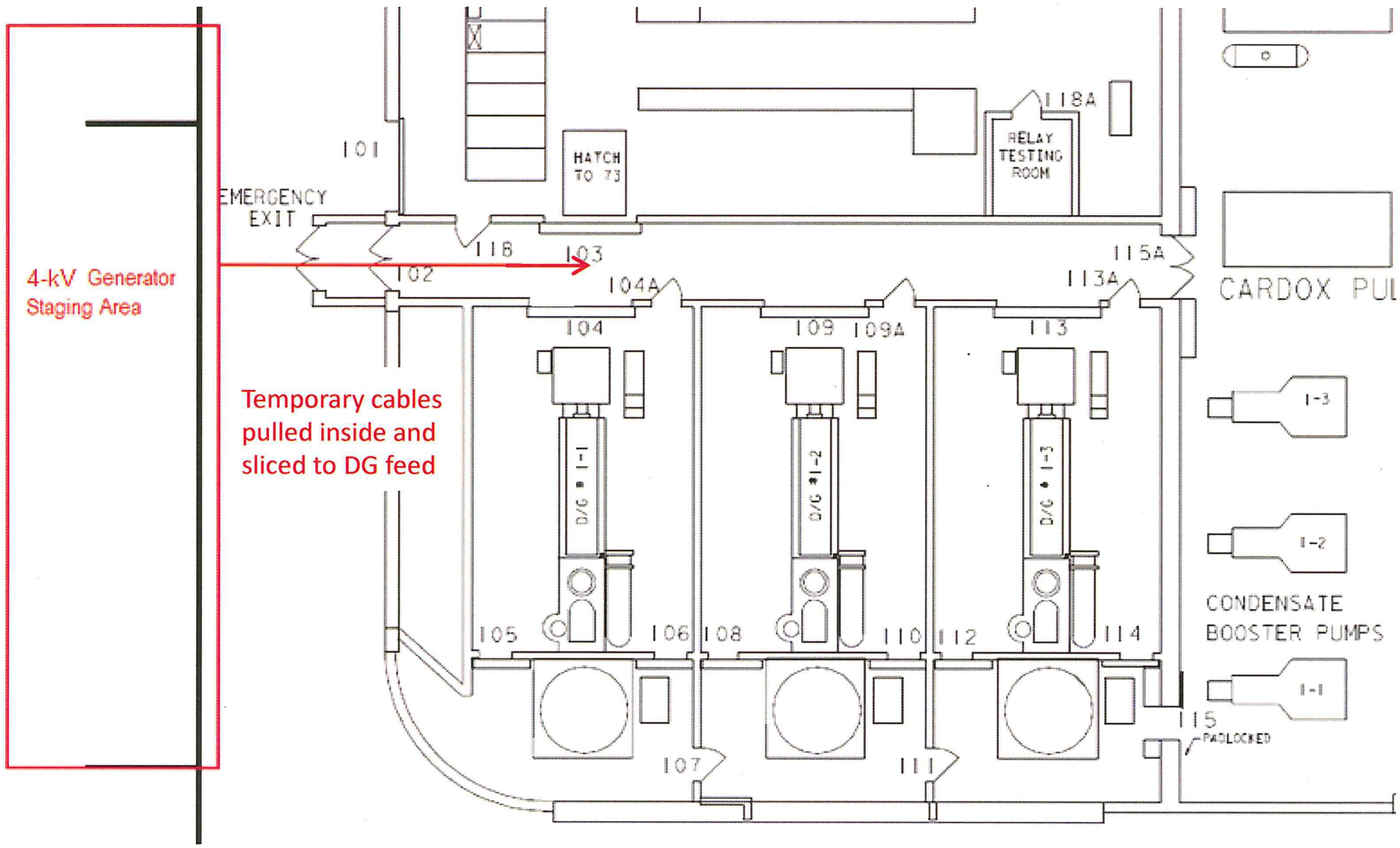


Figure 21
4-kV Generator and Cable Routing
Unit 1 - Elevation 85'

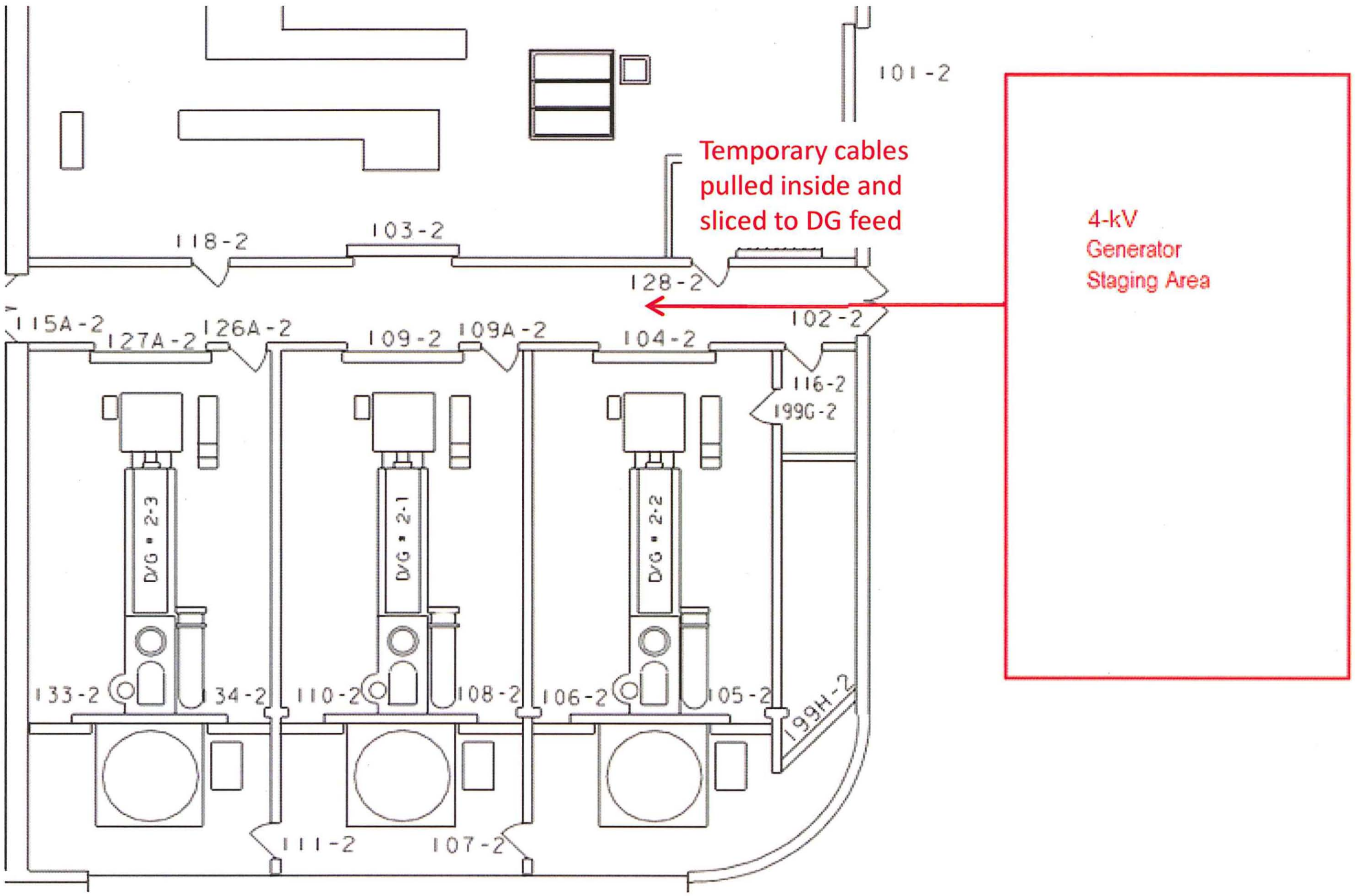


Figure 22
4-kV Generator and Cable Routing
Unit 2 - Elevation 85'

References

(1) Diablo Canyon Power Plant Updated Final Safety Analysis Report, Revision 20
(2) PG&E Letter DCL-12-048, "60-Day Response to NRC Letter, 'Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident,' dated March 12, 2012," dated May 9, 2012
(3) PG&E Calculation STA-295, Battery Charger / Inverter Room and Control Room Heat up Evaluation due to loss of HVAC as a result of loss of complete AC power, Revision 0
(4) Westinghouse Calculation CN-PEUS-12-10, Diablo Canyon FLEX Battery Coping Analysis, Revision 3
(5) PG&E Calculation RE-20130204, SFP Sloshing Impact on Heat Up Time Estimates, Revision 0
(6) Notification 50539719: Extension of RE-20130204 Analysis
(7) PG&E Calculation RE-20111111, Coping Time Estimates for IER L1-11-4 Item 1, Revision 1
(8) OP AP SD-0, Loss of, or Inadequate Decay Heat Removal, Revision 12
(9) EOP ECA-0.0 Unit 1, Loss of All Vital AC Power, Revision 28
(10) EOP ECA-0.0 Unit 2, Loss of All Vital AC Power, Revision 22
(11) Notification 50539911: RWR Draining Following DBD Event
(12) Westinghouse Calculation CN-FSE-13-2-NP, Diablo Canyon Unit 1 and Unit 2 (PGE/PEG) Reactor Coolant System (RCS) Inventory and Shutdown Margin Analyses to Support Diverse Flexible Coping Strategy (FLEX), Revision 0
(13) PG&E Calculation 335-DC, Emergency Lighting and Communications – System 68, Revision 8
(14) MP E-67.5A, Testing and Maintenance of Battery Operated Lights Inside Power Block, Revision 32
(15) PG&E Calculation STA-294, Fukushima Emergency Pump Sizing, Revision 2
(16) PG&E Calculation STA-286, Alternate ASW Pump, Revision 0
(17) Diablo Canyon Power Plant Emergency Plan, Revision 4
(18) OP D-1:V Unit 1, Auxiliary Feedwater System – Alternative Auxiliary Feedwater Supplies, Revision 21
(19) OP D-1:V Unit 2, Auxiliary Feedwater System – Alternate Auxiliary Feedwater Supplies, Revision 18
(20) Notification 50541938, FLEX Borated Water Usage Time

Open Items

OI-1. Required staffing levels will be verified by walkthroughs, tabletops, and simulations of the identified FLEX strategies as a part of the Phase 2 staffing studies conducted in accordance with NEI 12-01.

OI-2. PG&E is also evaluating the use of portable water processing units to be supplied by the RRC.

OI-3. PG&E is evaluating the use of mobile boration units to be supplied by the RRC.

OI-4. RHR suction valves, accumulator isolation valves, and other valves inside containment are required to be manipulated. PG&E is currently evaluating the best method to manipulate these valves.

OI-5. PG&E will perform a containment evaluation based on the boundary conditions described in NEI 12-06, Section 2. Based on the results of this analysis, required actions to ensure maintenance of containment integrity and required instrument function will be developed.

OI-6. PG&E will develop procedures to read this instrumentation locally, where applicable, using a portable instrument as required by NEI 12-06, Section 5.3.3.

OI-7. PG&E is developing the performance criteria for items with "TBD" in the Performance Criteria column in Table 1.

OI-8. DCPP has existing safety-related, wide-range accumulator level indicators. PG&E is evaluating the use of the accumulators to inject into the RCS while preventing the injection of nitrogen.

Regulatory Commitments

PG&E is making the following regulatory commitments (as defined by NEI 99-04) in this submittal:

Commitments	Due Date
PG&E will fully comply with the guidance in JLD-ISG-2012-01 and NEI 12-06 in implementing FLEX strategies for the DCPP site as documented in the FLEX Integrated Plan and subsequent regulatory correspondence.	Spring 2016