J. Todd Conner
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DTE Energy

10 CFR 2.202

February 28, 2013
NRC-13-0009

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

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) NRC Order EA-12-049, "Order to Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012

3) 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 Events," Revision 0, dated August 29, 2012

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

5) DTE Electric letter, NRC-12-0061, "Detroit Edison's Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses With Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated October 19, 2012

Subject: DTE Electric 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)

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 2) to DTE Electric Company* (DTE). Reference 2 was

* Previously The Detroit Edison Company

immediately effective and directed DTE 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-bases external event. Specific requirements are provided in Attachment 2 of Reference 2. Reference 2 requires submission of an Overall Integrated Plan by February 28, 2013.

Interim staff guidance (ISG) (Reference 3) was issued August 29, 2012 and endorsed industry guidance document NEI 12-06 Revision 0 (Reference 4) with some clarifications and exceptions.

Reference 5 provided DTE's initial status report regarding Mitigation Strategies for Beyond-Design-Basis External Events for Fermi 2, as required by Reference 2.

The purpose of this letter is to provide the Overall Integrated Plan pursuant to Section IV, Condition C.1, of Reference 2. The content of the plan is consistent with the guidance provided in Section 13.1 of Reference 4. This letter also confirms that DTE has received Reference 3 and has developed an Overall Integrated Plan in accordance with the guidance for defining and deploying strategies that will enhance the ability to cope with conditions resulting from beyond-design-basis events.

The enclosed Fermi 2 Overall Integrated Plan is based on conceptual design information. Final design details and associated procedure guidance, as well as any revisions to the enclosed Integrated Plan, will be provided in the six-month Integrated Plan updates required by Reference 2.

This letter contains no new regulatory commitments.

Should you have any questions or require additional information, please contact Mr. Kirk R. Snyder, Manager, Industry Interface at (734) 586-5020.

Sincerely,

cc: Director, Office of Nuclear Reactor Regulation
NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 5, Region III
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, J. Todd Conner, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

J. Todd Conner
Site Vice President, Nuclear Generation

On this 28th day of February, 2013 before me personally appeared J. Todd Conner, being first duly sworn and says that he executed the foregoing as his free act and deed.

Sharon S. Marshall
Notary Public

SHARON S. MARSHALL
NOTARY PUBLIC, STATE OF MI
COUNTY OF MONROE
MY COMMISSION EXPIRES Jun 14, 2013
ACTING IN COUNTY OF Monroe

Enclosure to
NRC-13-0009

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Fermi 2 February 2013 FLEX Overall Integrated Plan

General Integrated Plan Elements (PWR & BWR)	
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.*

The hazards applicable to Fermi are seismic, external flood, high winds, snow, ice, and cold and high temperature.

NEI 12-06 Section 5: Assess Seismic Impact

NEI 12-06 states the FLEX deployment strategy will address seismic hazards at all sites. The Fermi site is located in one of the seismically stable regions in the United States, and no earthquake epicenter has been located closer than 25 miles (UFSAR Section 2.5.2.5.1). The Reactor Building, which houses the drywell, suppression chamber, refueling and reactor servicing equipment, and the Spent Fuel Pool (SFP), consists of reinforced concrete and structural steel supported on the Reactor Building foundation mat (UFSAR Section 3.8.4.1.1.1). The Auxiliary Building (which is part of the same structure as the Reactor Building) houses several major safety-related systems and components and consists of reinforced concrete and structural steel supported on a reinforced concrete mat. The Auxiliary Building is separated from the Turbine Building by a four inch seismic rattle space (UFSAR Section 3.8.4.1.1.2). Finally, the Residual Heat Removal (RHR) Complex is a reinforced concrete structure supported on a base mat that serves as the Ultimate Heat Sink (UHS) for the reactor during normal shutdown. The complex is divided into two divisions, each with the capacity to safely shut down the reactor during normal and accident conditions (UFSAR Section 3.8.4.1.2).

These three Seismic Category I structures, as well as all seismic Category I structures, were modeled as slab-spring systems with lumped masses. The slabs are treated as infinitely rigid in their own planes and are interconnected by weightless, linear elastic spring, used to simulate the stiffness of shear walls within the structural system. These mathematical models were dynamically analyzed to determine the seismic response loads on structural components (UFSAR 3.7.2.1.2.2).

Seismic hazards are applicable at Fermi Station.

NEI 12-06 Section 6: Assess External Flooding Impact

Fermi Station is not a "dry site." Section 1.2.2.3.5 of the UFSAR states that site grade at Fermi is at 583 ft. The maximum stillwater elevation, based on the probable maximum meteorological event is 586.9 ft. All category I seismically qualified structures are flood protected (waterproofed) to an elevation of 588 ft. The RHR Complex is watertight to an elevation of 590 ft.

The maximum flooding would be due to a storm surge during the maximum monthly mean lake level (UFSAR Section 2.4.3). There is no upstream dam (UFSAR Section 2.4.14.2), and Fermi Station is not susceptible to a tsunami (UFSAR 2.4.6). Any low-amplitude seiche that could occur would be of negligible concern to the site (UFSAR

2.4.6). The maximum duration of a flooding event is estimated to be 17 hours (UFSAR Section 2.4.5.4.2.3).

Flooding hazards are applicable at Fermi Station.

NEI 12-06 Section 7: Assess Impact of Severe Storms with High Winds

Fermi Station is not susceptible to hurricanes due to location (reference figure 7-1 of NEI 12-06). According to the UFSAR, all Category I classified structures are able to withstand a design basis tornado with wind velocities of 300 mph (UFSAR Section 3.3.2.1).

An analysis of tornado missile hazard on the Reactor Building was performed to assess the probability of any design basis missile penetrating the building. The probability was 1.15×10^{-7} per year. This has been evaluated as acceptable (UFSAR Section 3.5.1.3.2.3).

Tornados are applicable at Fermi Station.

NEI 12-06 Section 8: Assess Impact of Snow, Ice and Extreme Cold

According to NEI 12-06 figure 8-2, Fermi Station is susceptible to Level 5 ice severity. This is a catastrophic destruction of power lines and/or existence of extreme amounts of ice. The greatest ice accumulation on record is three inches (UFSAR 2.3.1.3.5). The lowest temperature on record was -19° F (UFSAR 2.3.1.2).

Extreme snow, ice, and cold are applicable at Fermi Station.

NEI 12-06 Section 9: Assess Impact of High Temperatures

NEI 12-06 states that all sites must consider high temperatures. The issues here are similar to cold and ice in that the equipment must be sufficiently protected from the high temperatures so that it will still be able to function when necessary. The highest temperature ever recorded at the Fermi site was 105° F (UFSAR 2.3.1.2)

High temperatures are applicable at Fermi Station.

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 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, appropriate issues will be entered into the corrective action system and addressed on a schedule commensurate with other licensing bases changes.* • *Exceptions for the site security plan or other (license/site specific) requirements of 10CFR 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.*

Key assumptions associated with implementation of FLEX Strategies:

- Flood and seismic walkdowns (References 1 and 2) are completed and their reports have confirmed there is no impact to the Systems, Structures or Components (SSCs) relied upon for implementing the proposed FLEX strategies.
- The initial condition is assumed to be a loss-of-offsite power event with no prospect for recovery of off-site power for an extended period of time.
- All installed sources of emergency AC power and Station Black-Out (SBO) alternative AC power sources are assumed to be not available and not imminently recoverable.
- The following conditions exist:
  - Safety related SSCs relied on in these strategies are available and protected from external hazards.
  - Plant initial response is the same as SBO (20.300.SBO procedure).
  - Entry to Extended Loss of AC Power (ELAP) will be at 1 hour.
  - Modular Accident Analysis Program (MAAP) analysis for decay heat is used to establish maximum operator response timelines and actions (Reference 7).
  - No single failure of an SSC is assumed beyond those specified in NEI 12-06.
  - Flood duration will be 17 hours (UFSAR Section 2.4.5.4.2.3).
  - There will be early warning for a flooding event (NEI 12-06 Section 6.2.2). Flood warning would initiate a reactor shutdown and plant cool down (Abnormal Operating Procedure (AOP) 20.000.01, Acts of Nature).
- The FLEX connections will either be hardened or in diverse locations to ensure connections are available following the event.
- Decay heat is based on ANSI/ANS 5.1, 1979 evaluation methods (Reference 4, Chapter 6.2). This bounds the NEI 12-06 specified power history of 100 days at 100% power
- AC on site distribution system, DC on site distribution system and batteries are available based on design standards and location in Seismic Category 1 structures (Reference 5, 3.2.1.3 (8))
- Implementation strategies are assessed for hazards impact.
- All Phase 2 components are stored on site and available for FLEX.
- Additional staff resources are expected to arrive to the site beginning at 6 hours, and the site will be fully staffed 24 hours after the event per Section 2.2 sub item 4 of NEI 12-06.
- The Condensate Storage Tank (CST), if available, will be used in the FLEX strategy (Reference NEI 12-06 Section 3.2.2 item 5).
- Recirculation pump seal leakage is an expected reactor coolant inventory loss (Reference NEI 12-06 Section 3.2.1.5).
- All Phase 3 components will be available consistent with considerations of Section 3.3 of NEI 12-06.
- The FLEX equipment in Phase 3 will be capable of indefinite coping until such a time as the Residual Heat Removal (RHRSW) service water pumps can be commissioned or restored as allowed in NEI Section 3.2.1.7 item 3.

- Instrumentation for key parameters specified in this plan is powered from Engineered Safety Feature (ESF) DC. This ESF DC is available in Phase 1 and restored in Phase 2 electrical actions.

- This plan defines strategies capable of mitigating a simultaneous loss of all alternating current (ac) power and loss of normal access to the ultimate heat sink resulting from a beyond-design-basis 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 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 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 beyond-design-basis event may place the plant in a condition where it cannot comply with certain Technical Specifications 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).

References:

1) AOP 20.300.SBO, Rev 18, "Loss of Offsite and Onsite Power"
2) NRC-12-0076 Fermi 2 NPP External Flooding Walkdown Report, November 9, 2012
3) TMPE-125-0294 Fermi 2 NPP Seismic Walkdown Report, Rev 0
4) Fermi 2 Updated Final Safety Report, Rev 18
5) NEI 12-06, Rev 0
6) AOP 20.000.01, Acts of Nature
7) DTE MAAP Analysis Runs, "Fermi 2 FLEX Coping Time Evaluation", and "Series 600 Cases for Fermi 2 FLEX MAAP Scoping Time Analysis"
8) 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)

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.*

Fermi Station has no known deviations to the guidelines in JLD-ISG-2012-01 and NEI 12-06. If deviations are identified, then the deviations will be communicated in a future 6 month update following identification.

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**	*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 walkthrough of deployment).* *Describe in detail in this section the technical basis for the time constraint identified on the sequence of events timeline Attachment 1A.* *See attached sequence of events timeline (Attachment 1A).* *Technical Basis Support information, see attached NSSS Significant Reference Analysis Deviation Table (Attachment 1B).*

A MAAP analysis (Reference 1) has been performed to determine key parametric values versus time. A table-top exercise showed that these actions can be accomplished in the required time frames (Reference 19). This will be validated using Fermi Station Time Critical Operator Action Validation/Verification Process once all procedures, training, and equipment have been implemented. (Reference 13)

1. Enter Extended Loss of AC Power (ELAP) at one hour and begin installing FLEX equipment. Determination of an ELAP condition within one hour is reasonable based on the actions in AOP 20.300.SBO (Reference 5) for operators to start/evaluate standby AC sources. The Emergency Response organization (ERO) would also be required to evaluate the loss of AC under procedure EP-101, "Classification of Emergencies" (Reference 17). Maximum time to declare the Emergency as a General Emergency (GE) is four hours based on Initiating Condition (IC) SG1. These are time critical actions.
2. DC battery voltage drops below the minimum required to sustain the necessary loads at 8 hours (Reference 6). RCIC would still be available if DC was lost using the Black Start Operation described in procedure 29.EDM.09 for RPV makeup. DC load shedding (Reference 7) must be accomplished for the strategies of containment heat removal, Safety Relief Valve (SRV) operation, and monitoring of required instrumentation. This is a time critical action.
3. Connection of FLEX DC equipment must be accomplished before the DC battery voltage drops below the minimum voltage required to maintain necessary loads. DC is required for containment heat removal and monitoring of required instrumentation. (Reference 8) This is a time critical action.

4. Drywell Pressure control in response to Reactor Recirculation Pump (RRP) Seal leakage (assumed at 41 gpm per pump) is accomplished with FLEX Phase 2 AC generators installed within 6 hours. Operators use these FLEX Phase 2 AC generators to power up and close required Reactor Recirculation Isolation valves to isolate the potential RRP seal leak(s). With these actions, exceeding the Pressure Suppression Pressure (PSP) can be avoided (References 7, 9, 10, 11). This would avoid forced Reactor Pressure Vessel (RPV) depressurization using the SRVs. This is a time critical action.

5. If the FLEX Phase 2 AC generators are NOT installed, Drywell pressure control would be based on operator response to the Emergency Operating Procedures (EOPs) (References 2, 3, and 4). MAAP run 600 (Reference 1) shows that with assumed Recirculation Seal leakage of 41 gpm per Recirc Pump, PSP will be exceeded at 8.4 hours. This drives RPV depressurization to 200 psig per the EOP for primary containment control (References 2 and 3). This is not a time critical action as this scenario is not expected to occur in the current timeline.

6. MAAP run DTE_0210 shows the earliest time for exceeding Reactor Core Isolation Cooling (RCIC) oil temperature limits is 10.8 hours. Prior to reaching the RCIC temperature limit (240° F) at 10.8 hours, FLEX equipment will be installed to reduce Torus temperature to maintain oil temperatures for continued RCIC operations AND to provide for containment heat removal. A feasibility study will be performed to ensure station personnel can deploy FLEX equipment prior to this point. If installed by 5 hours, the projected Torus temperature in MAAP run DTE_605 would not exceed 190 F. This is a time critical action.

7. MAAP run DET_001 shows Torus temperature impact without feed and bleed heat removal. This requires the earliest use of Torus Hardened Vent, i.e. Hardened Containment Vent System (HCVS), in our strategies. This run shows HCVS would be required by 12.9 hours. No FLEX phase 2 actions are required for use of the HCVS but this time sets the response requirements for HCVS use (Reference 18). If Torus temperature reduction efforts with feed and bleed are not successful and Torus temperature rises to 230° F, then venting via HCVS will be required (Reference 7) for containment heat removal. This is a time critical action.

8. For a recent full core offload, water in the Spent Fuel Pool (SFP) begins to boil after 4.2 hours with a maximum boiling water loss rate of 90.77 gpm (Reference 12). Using the Spent Fuel Pool Dimensions of 34' x 40' (Reference 12), the boiling water loss rate is equal to approximately 6 inches per hour. From the time of the event, there will be approximately 28 hours until ten feet above top of the racks is reached, and FLEX pumps must be in place to provide makeup to the SFP. Installation of the FLEX water sources is required for RPV makeup and containment heat removal in time frames much less than this 28 hour period (see above). This is NOT a time critical activity.

9. MAAP DTE_0605 analysis (Reference 1) shows that the drywell temperature and pressure limits will not be exceeded. Assessing the leakage into the drywell is not a time-critical action.

References

1. DRAFT DTE MAAP Analysis Runs, "Fermi 2 FLEX Coping Time Evaluation", and "Series 600 Cases for Fermi 2 FLEX MAAP Scoping Time Analysis"
2. EOP 29.100.01, Sheet 2, Revision 12, "Primary Containment Control"
3. EOP 29.100.01, Sheet 3, Revision 9, "RPV Flooding, Emergency Depressurization and Steam Cooling"
4. EOP 29.100.01 Sheet 6, Revision 15, "Curves, Cautions, and Tables"
5. AOP 20.300.SBO, Revision 18, "Loss of Offsite and Onsite Power"
6. Study Number 29827-1050-17-Study-001, Evaluation of Battery Coping Time for an Extended Loss of AC Power Event.
7. Emergency Support Procedure (ESP) 29.ESP.EXTSBO, Revision 0 "Extended SBO"
8. Extreme Damage Mitigation (EDM) procedure 29.EDM.16, Revision 0 "Supplemental DC Power"
9. SOP 23.138.01, Revision 106 "Reactor Recirc System"
10. Alarm Response Procedure (ARP) 3d145, Revision 10 "Recirc Pump B – Outer Seal Leakage High"
11. ARP 3d121, Revision 9 "Recirc Pump A – Outer Seal Leakage High"
12. Calculation HI-992207, "Bulk SFP Thermal-Hydraulic Analyses for Reracking of Fermi Unit 2," Rev 5
13. Performance Evaluation Procedure 27.000.09, Revision 1, "Time Critical Actions Validation and Verification"
14. EDM 29.EDM.17, Revision 0, "Suppression Pool Cooling"
15. EDM 29.EDM.18, Revision 0, "Water Management/Fuel Management"
16. NEI 12-06, Revision 0, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide"
17. Radiological Emergency Response Implementing Procedure EP-101, Revision 38, "Classification of Emergencies"
18. NRC Order EA-12-050, "Reliable Hardened Containment Vents"
19. TMII 13-001, "Nexus/Fermi Tabletop of FLEX strategies"

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.*

Deployment routes shown in Figure 1are expected to be utilized to transport FLEX equipment to the deployment areas. A liquefaction study will be performed to validate there will be no soil liquefaction along the proposed route due to a seismic event. The identified paths and deployment areas will be accessible during all modes of operation. This deployment strategy will be included within an administrative program (Flex Support Guidelines) in order to keep pathways clear or actions to clear the pathways. Deployment is done on Flood watch notification by National Weather Service for flooding events so accessibility is not challenged. No Flood barriers or post flood dewatering pump are required for FLEX implementation locations. Dewatering capability for the Reactor Building can be restored in Phase 2 after connection of supplemental AC power.

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
	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 (six month) status reports.
	See attached milestone schedule Attachment 2.

See attached milestone schedule in Attachment 2.	

Identify how the programmatic controls will be met. **Ref: NEI 12-06 section 11** **JLD-ISG-2012-01 section 6.0**	*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.*
Fermi Station will implement a FLEX administrative program (FLEX Support Guidelines). The equipment for ELAP will be dedicated and will have unique identification numbers. FLEX equipment will be procured in accordance with the NEI 12-06 guidelines. Installed structures, systems, and components pursuant to 10CFR50.63(a) will continue to meet the augmented quality guidelines of Regulatory Guide 1.155, "Station Blackout." Fermi Station will establish PMs for the FLEX related components and testing procedures will be developed and frequencies established based on type of equipment and considerations made within EPRI and NEI 12-06 guidelines. Fermi Station will assess the addition of program descriptions into UFSAR and Technical Requirements Manual. Fermi Station will comply with Section 11 of NEI 12-06. The FLEX administrative program will ensure FLEX routes are maintained for use.	

Describe training plan	*List training plans for affected organizations or describe the plan for training development*
Training elements of the FLEX order will be performed using a systematic approach to training. All training will be completed prior to startup from refueling outage 17 (no later than December 2016). Fermi Station will comply with Section 11.6 of NEI 12-06.	

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 (2) Regional Response Centers (RRCs) to support utilities during beyond design basis events. Each RRC will hold five (5) sets of equipment, four (4) of which 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 the utility. Communications will be established between the affected nuclear site and the SAFER team and required equipment moved to the site as needed. First arriving equipment, as established during development of the nuclear site's playbook, will be delivered to the site within 24 hours from the initial request. Prior to implementation, DTE will have contracts established with the RRC for delivery of equipment appropriate for the station's Phase 3 strategy. The program will be administered by the site-specific playbook.	

Maintain Core Cooling	
Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications, utilizing methods described in Table 3-1 of NEI 12-06: • **RCIC/HPCI/IC** • **Depressurize RPV for injection with portable injection source** • **Sustained water source**	
BWR Installed Equipment Phase 1:	
Provide a general description of the coping strategies using installed equipment including modifications that are proposed to maintain core cooling. Identify methods (RCIC/HPCI/IC) and strategy(ies) utilized to achieve this coping time. RCIC will be used to maintain core cooling by injecting into the RPV. RCIC will take suction from either the CST, if available, or the Torus. High Pressure Coolant Injection (HPCI) will also be operating, if sufficient steam pressure is available, to control reactor pressure so that the SRVs do not need to be operated. Before HPCI is brought into service, SRV actuation does not require pneumatic power (UFSAR Section 5.2.2). During plant conditions where RCIC is not available, there is sufficient water inventory in the vessel, combined with the lower decay heat, to allow for the deployment of FLEX pumps prior to uncovering the core. A calculation to verify this will be performed. Fermi does not rely on blackstart capability of RCIC, though that capability exists (NRC SER, "Fermi 2 Conforming License Amendment to Incorporate the Mitigation Strategies Required by Section B.5.b of Commission Order EA-02-026 and the Radiological Protection Mitigation Strategies Required by Commission Order EA-06-137 (TAC No. MD4S32)", dated August 23, 2007).	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*
The following proposed procedures are being developed or revised: • The operation of RCIC/HPCI will be governed by System Operating Procedure (SOP) 23.206 (RCIC) and 23.202 (HPCI) for RPV injection (RCIC) and minimum flow mode (HPCI) respectively. • The AOP 20.300.SBO, "Loss of Offsite and Onsite Power," procedure is being modified with a condition to go to the extended SBO procedure (29.ESP.ExtSBO), and a condition to reset Alternate Rod Insertion (ARI) to reduce DC loading will be added to AOP 20.300.SBO.	

[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.

- The 29ESP.ExtSBO, "Extended SBO", procedure will cover DC load shedding and provides a cross reference to available instrumentation/power sources and redundant instrumentation/power supplies. A listing of local instruments that are power independent AND methods to monitor temperatures using thermocouple readers will also be supplied in this procedure.

Identify modifications	*List modifications*
• No Modifications required.	
Key Reactor Parameters	*List instrumentation credited for this coping evaluation.*

Parameters	**Transmitter PIS #**	**Indication PIS #**
Reactor water level – wide range	B21-N091B/C	B21-R623A/B
Reactor Pressure – wide range	B21-N051A/B	B21-R623A/B
RCIC suction	E51-R002	E51-R609
RCIC discharge	E51-R001	E51-R609

Maintain Core Cooling	
BWR Portable Equipment Phase 2:	
Provide a general description of the coping strategies using on-site portable equipment including modifications that are proposed to maintain core cooling. Identify methods (RCIC/HPCI/IC) and strategy(ies) utilized to achieve this coping time. Two diesel driven pumps in series will move water from the FLEX water sources (preferred suction is the Circulating Water Pond) into the Reactor Building and into the RHR system for RPV injection. The lift pump is a 3,000 gpm, 150 psi pump capable of taking water from the FLEX water source and boosting pressure for transit to a second pump. The second pump is a 3,000 gpm, 150 psi rated booster pump which will boost the pressure into the Reactor Building. Diverse connection points are provided by tapping into the Division 1 RHR system and the Division 2 RHR system. The Division 1 and 2 FLEX connections are shown in Figure 2.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*
• The 29.EDM.16, "Supplemental DC Power," procedure establishes an alternate DC battery charging capability. • The 29.EDM.17, "Suppression Pool Cooling," procedure will cover FLEX equipment hookup for Torus cooling. • The 29.ESP.ExtSBO, "Extended SBO," procedure will cover AC load shedding, implementation of alternate AC through generators, and provides a cross reference to available instrumentation/power sources and redundant instrumentation/power supplies. A listing of local instruments that are power independent AND methods to monitor temperatures using thermocouple readers will also be supplied in this procedure. • The 29.EDM.18, "Water Management/Fuel Management" procedure will cover water sources, discharge location, and fueling of diesel driven equipment. • AOP 20.000.01, "Acts of Nature, Flooding", is being revised to include warnings and interface with National Weather Service (NWS) along with actions to pre-stage equipment and potentially reduce heat loads by plant actions.	
Identify modifications	*List modifications*
The following modifications are necessary for Core Cooling in Phase 2: • A modification will be required for FLEX equipment to breach the security fence. • A modification will be required for FLEX equipment to enter the Reactor Building into the RHR system.	
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.*

Maintain Core Cooling		
BWR Portable Equipment Phase 2:		
Parameters	**Transmitter PIS #**	**Instrumentation PIS #**
Reactor water level – wide range	B21-N091B/C	B21-R623A/B
Reactor Pressure – wide range	B21-N051A/B	B21-R623A/B
RCIC Suction	E51-R002	E51-R609
RCIC Discharge	E51-R001	E51-R609

Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List how equipment is protected or schedule to protect*
Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 Section 11. Fermi Station procedures and programs are being developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to Fermi.	
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level	*List how equipment is protected or schedule to protect*
Fermi Station is not susceptible to flooding without warning. The staging areas for the equipment will be above the flood plain or otherwise protected from the maximum probable flood.	
Severe Storms with High Winds	*List how equipment is protected or schedule to protect*
Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 Section 11. Fermi Station procedures and programs are being developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to Fermi.	
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect*
Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 Section 11. Fermi Station procedures and programs are being developed to address storage structures requirements, haul path requirements, personnel protective equipment storage and use, and FLEX equipment requirements relative to the hazards applicable to Fermi.	
High Temperatures	*List how equipment is protected or schedule to protect*
Storage structures will be ventilated to allow for equipment functions. Ventilated buildings are expected to stay within the temperature ranges of the equipment stored in those locations. Storage structures will be ventilated to allow for equipment to function. Active cooling systems are not required as normal room ventilation will be utilized. Fermi Station procedures and programs are being developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to Fermi.	

Deployment Conceptual Modification **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Primary FLEX equipment will be stored at the location of its expected use. Backup FLEX equipment will be stored in a diverse location with a clear travel path to a suitable location for connection. Dedicated FLEX trucks, housed with the equipment, will deploy the FLEX hoses to the connection points. Fuel capacity in installed fuel tank of the FLEX pumps will support 8 hours of operation. A fuel truck or trailered tank will be required, along with debris clearing, to refuel the pumps within 8 hours of their operation.	• A modification will be performed to transition FLEX pipe through the security fences. This transition pipe will have connection points on both sides for the attachment of FLEX hose. The connections for the FLEX hoses will be flood protected, and the piping will be seismically robust. • Penetration(s) of the Reactor Building west wall will be required to facilitate tapping into both divisions of the RHR system for the FLEX pumps.	• The connection points will be flood protected, seismically robust, and protected from missiles.

Maintain Core Cooling

BWR Portable Equipment Phase 3:

Provide a general description of the coping strategies using Phase 3 equipment including modifications that are proposed to maintain core cooling. Identify methods (RCIC/HPCI/IC) and strategy(ies) utilized to achieve this coping time.

Fermi Station will continue to utilize Phase 2 equipment to cool the core. As the time after shutdown increases there will be a point in time, greater than 72 hours, where decay heat can no longer produce enough steam to operate HPCI and eventually RCIC. When this occurs, the Phase 2 FLEX pumps will be shifted from Torus feed-and-bleed to makeup to the reactor for core cooling.

In parallel with these activities, Fermi Station will actively work on restoring the Residual Heat Removal Service Water (RHRSW) pumps (or commissioning new pumps if the installed pumps are not recoverable). It is important to note Fermi's RHRSW pumps are located in the RHR complex. This complex is a safety related structure protected against all known hazards. Thus, the station will eventually be able to restore or commission new RHRSW pumps. The electric power for the RHRSW pumps will either be supplied by the Phase 3 electrical generators or through the eventual restoration of either the off-site power sources or the EDGs. Once RHRSW is restored the RHR pumps will be able to cool the core in the SDC mode of operation. The RHR pumps will also require power from either the Phase 3 electrical generators or the restoration of permanent plant equipment.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*

- The 29.EDM.19 procedure will cover the implementation of off-site resources.
- The 29.ESP.ExtSBO procedure will put the station into Shutdown Cooling (SDC) once all RRC equipment is in place and RHRSW is restored.

Identify modifications	*List modifications*

- Create an interface between FLEX generators supplied by the RRC to permanent plant electrical distribution system.

Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.*

Parameters	**Transmitter PIS #**	**IndicationPIS #**
Reactor water level – wide range	B21-N091B/C	B21-R623A/B
Reactor Pressure – wide range	B21-N051A/B	B21-R623A/B

Deployment Conceptual Modification **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Equipment will be delivered from the RRC to the staging area. From there, the equipment will be transported to the site and hooked-up by both RRC personnel and plant personnel per the playbook. Equipment will then be operated by plant procedures. A fuel truck or trailered tank will be required, along with debris clearing, to refuel the FLEX pumps.	• An option to connect the RRC equipment to the permanent plant equipment using standard connections.	• Connections will be designed to withstand the applicable hazards.

Maintain Containment	
Determine Baseline coping capability with installed coping[2] modifications not including FLEX modifications, utilizing methods described in Table 3-1 of NEI 12-06: • **Containment Venting or Alternate Heat Removal** • **Hydrogen Igniters (Mark III containments only)**	
BWR Installed Equipment Phase 1:	
Provide a general description of the coping strategies using installed equipment including modifications that are proposed to maintain containment integrity. Identify methods (containment vent or alternative / Hydrogen Igniters) and strategy(ies) utilized to achieve this coping time. All Containment parameters are expected to remain within design values during the Phase 1 coping period (MAAP run 605).	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*
• The following three procedures may need to be modified to describe what needs to be done when the PSP is exceeded: 1. EOP 29.100.01, Sheet 2, Rev 12, "Primary Containment Control" 2. EOP 29.100.01, Sheet 3, Rev 9,"RPV Flooding Emergency Depressurization and Steam Cooling" 3. EOP 29.100.01 Sheet 6, Rev 15, "Curves, Cautions, and Tables" • The 20.300.SBO, "Loss of Offsite and Onsite Power," procedure is being modified with a condition to go to the extended SBO procedure (29.ESP.ExtSBO), and a condition to reset ARI to reduce DC loading. • The 29.ESP.ExtSBO is the procedure which will govern actions for extended SBO and provides a cross reference to available instrumentation/power sources and redundant instrumentation/power supplies. A listing of local instruments that are power independent AND methods to monitor temperatures using thermocouple readers will also be supplied in this procedure.	
Identify modifications	*List modifications*
• Modifications to restore Drywell pressure and Torus level instrumentation.	

[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.

Key Containment Parameters	*List instrumentation credited for this coping evaluation.*	
Parameters	**Transmitter PIS #**	**Indication PIS #**
Torus Pressure	T50-N414A/B	T50-R802A/B
Drywell Pressure	T50-N415A/B	T50-R802A/B
Torus Level	T50-N406A/B	T50-R804A/B
Torus Temperature	------	T50-R800A/B
Drywell Temperature	------	T50-R800A/B

Maintain Containment

BWR Portable Equipment Phase 2:

Provide a general description of the coping strategies using on-site portable equipment including modifications that are proposed to maintain containment integrity. Identify methods (containment vent or alternative / Hydrogen Igniters) and strategy(ies) utilized to achieve this coping time.

The Phase 2 strategy is to control the Containment pressure and temperature by performing a feed-and-bleed of the Torus water. HPCI and/or FLEX pumps will supply cool water to the Torus and HPCI/RCIC will pump out the hot water. The FLEX pumps water supply will be the Circulating Water Pond. The CST, if available, would supply HPCI/RCIC. The water will be rejected to a controlled location. If this strategy is insufficient, the Torus hardened vent will be used as a backup.

Implement DC load shedding and DC supplemental power as well as AC load shedding and supplemental power. Once supplemental AC power is established, drywell leakage is addressed by closing isolation valves.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*

The following procedures are being developed or revised:

- The 20.300.SBO, "Loss of Offsite and Onsite Power," procedure is being modified with a condition to go to the extended SBO procedure (29.ESP.ExtSBO), and a condition to reset ARI to reduce DC loading.
- 29.EDM.16, "Supplemental DC Power" procedure covers the implementation of supplemental DC power.
- 29.ESP.ExtSBO procedure covers the operation in an extended SBO condition, DC load shedding, AC load shedding and supplemental AC power, closure of DW valves to eliminate Reactor Recirculation seal leakage (if required), operation of Torus Hardened Vent (if required) and provides a cross reference to available instrumentation/power sources and redundant instrumentation/power supplies. A listing of local instruments that are power independent AND methods to monitor temperatures using thermocouple readers will also be supplied in this procedure.

Maintain Containment

BWR Portable Equipment Phase 2:

- 29.EDM.17, "Suppression Pool Cooling," procedure covers containment cooling with FLEX equipment.
- 29.EDM.18, "Water Management/Fuel Management" procedure covers water management (location of sources and discharge locations) and Fuel supplies to Diesels/Generators.
- AOP 20.000.01, "Acts of Nature, Flooding", is being revised to include warnings and interface with NWS along with actions to pre-stage equipment and potentially reduce heat loads by plant actions.

Identify modifications	*List modifications*

- A modification will be required for FLEX equipment to breach the security fence.
- A modification will be required to enter the Reactor Building into the RHR system.
- A modification to accept the water from the HPCI test return line may be required.
- A modification will be required to tie in the two 550 kW generators to the AC buses.
- A modification may be required for the Supplemental DC.
- Modifications to restore Drywell pressure and Torus level

Key Containment Parameters	*List instrumentation credited or recovered for this coping evaluation.*

Parameters	**Transmitter PIS #**	**Indication PIS #**
Torus Pressure	T50-N414A/B	T50-R802A/B
Drywell Pressure	T50-N415A/B	T50-R802A/B
Torus Level	T50-N406A/B	T50-R804A/B
Torus Temperature	------	T50-R800A/B
Drywell Temperature	------	T50-R800A/B
HPCI Suction/Discharge Pressure Gauge	E41-N019	E41-R609

Storage / Protection of Equipment :
Describe storage / protection plan or schedule to determine storage requirements

Seismic	*List how equipment is protected or schedule to protect*

Equipment will be located in diverse locations away from any non-seismic structures (See Figure 1). Additionally, the equipment will be housed in structures designed to meet NEI 12-06 Section 11 type requirements, which affords additional protection from falling debris due to a seismic event.

Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List how equipment is protected or schedule to protect*

Fermi is not susceptible to flooding without warning. The staging areas for the equipment will be above the flood plain or otherwise protected from the maximum probable flood.

Severe Storms with High Winds	*List how equipment is protected or schedule to protect*

Maintain Containment	
BWR Portable Equipment Phase 2:	
Equipment will be stored in diverse locations and provided additional protection by structures designed to meet NEI 12-06 Section 11 type requirements.	
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect*
The equipment housed inside the structures will be protected from snow, ice and extreme cold personnel protective equipment storage and use will be stored on FLEX Vehicles.	
High Temperatures	*List how equipment is protected or schedule to protect*
The equipment housed inside the structures will be provided with adequate ventilation.	

Deployment Conceptual Design **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Primary FLEX equipment will be stored at the location of its expected use. Backup FLEX equipment will be stored in a diverse location with a clear travel path to a suitable location for connection. Dedicated FLEX trucks, housed with the equipment, will deploy the hose to the connection points. Fuel capacity in installed fuel tank of the FLEX pumps will support 8 hours of operation. A fuel truck or trailered tank will be required, along with debris clearing, to refuel the pumps within 8 hours of their operation. Water would be removed from the Torus with HPCI or RCIC to either on-site tanks or an on-site containment. Cooler water would be added from FLEX water supply through FLEX equipment to the Torus, providing feed-and-bleed cooling.	• A modification will be performed to transition FLEX pipe through the security fences. This transition pipe will have connection points on both sides for the attachment of FLEX hose. The connections for the FLEX hoses will be flood protected, and the piping will be seismically robust. • Two penetrations of the Reactor Building west wall will be required to facilitate tapping into both divisions of the RHR system for the FLEX pumps. • Modifications may be required to accept the water from the HPCI test return line. • Modifications to receive power from the 550 kW generators.	• The connection points will be flood protected, seismically robust, and protected from missiles.

Maintain Containment

BWR Portable Equipment Phase 3:

Provide a general description of the coping strategies using Phase 3 equipment including modifications that are proposed to maintain containment integrity. Identify methods (containment vent or alternative / Hydrogen Igniters) and strategy(ies) utilized to achieve this coping time.

At a point where steam pressure will not support HPCI and RCIC operation, Torus Water Management (TWMS) in conjunction with the FLEX pumps, will be used to maintain Containment Cooling.

Fermi Station will deploy Phase 3 FLEX generators to power the Torus Water Management (TWMS) Pumps. These TWMS pumps will then supplant HPCI and provide a method to reduce Torus inventory. This cycle can continue for an indefinite period of time as the decay heat load decreases. If TWMS is not sufficient to control cooling, Containment venting will be used to prevent exceeding Containment design pressure. Additionally, to prevent uncontrolled heat up of the hotwell (location for heat transfer from TWMS), Fermi Station would deploy a FLEX pump to establish flow through the Circulation Water (CW) system and the hotwell to prevent over-pressurization of the main condenser as needed.

In parallel with these activities, Fermi Station will actively work on restoring the RHRSW pumps (or commissioning new pumps if the installed pumps are not recoverable).

It is important to note Fermi Station's RHRSW pumps are located in the RHR complex. The RHR complex is a safety related structure protected against all known hazards. Thus Fermi Station will eventually be able to restore or commission new RHRSW pumps. The electric power for the RHRSW pumps will either be supplied by the Phase 3 electrical generators or through the eventual restoration of either the off-site power sources or the EDGs. Once RHRSW is restored the RHR pumps will be able to cool the Torus in the Torus cooling mode of operation. The RHR pumps will also require power from either the Phase 3 electrical generators or the restoration of permanent plant equipment.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*

- The 29.EDM.19 procedure will cover the implementation of off-site resources.
- The 29.ESP.ExtSBO procedure will put the station into Torus Cooling once all RRC equipment is in place.

Maintain Containment	
BWR Portable Equipment Phase 3:	
Identify modifications	*List modifications*
Create an interface option to connect RRC equipment to permanent plant equipment.	

Key Containment Parameters	*List instrumentation credited or recovered for this coping evaluation.*	
Parameters	**Transmitter PIS #**	**IndicationPIS #**
Torus Pressure	T50-N414A/B	T50-R802A/B
Drywell Pressure	T50-N415A/B	T50-R802A/B
Torus Level	T50-N406A/B	T50-R804A/B
Torus Temperature	------	T50-R800A/B
Drywell Temperature	------	T50-R800A/B

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Equipment will be delivered from the RRC to the staging area. From there, the equipment will be transported to the site and hooked-up by both RRC personnel and plant personnel per the playbook. Equipment will then be operated by plant procedures. A fuel truck or trailered tank will be required, along with debris clearing, to refuel the FLEX pumps.	• An option to connect the RRC equipment to the permanent plant equipment using standard connections.	• Connections will be designed to withstand the applicable hazards.

Maintain Spent Fuel Pool Cooling	
Determine Baseline coping capability with installed coping[3] modifications not including FLEX modifications, utilizing methods described in Table 3-1 of NEI 12-06: • **Makeup with Portable Injection Source**	
BWR Installed Equipment Phase 1:	
Provide a general description of the coping strategies using installed equipment including modifications that are proposed to maintain spent fuel pool cooling. Identify methods (makeup with portable injection source) and strategy(ies) utilized to achieve this coping time. The only Phase 1 action required is to monitor Spent Fuel Pool (SFP) level based on adequate SFP level and bounding heat load of a full core off-load. Venting the Reactor Building (RB), RB-5 area is not done per NEI 12-06 Table C-3 based on proper qualification of Hardened Containment Vent System (HCVS) components on RB-5 and the lack of a monitored path to the environment. Opening doors to the RB area would challenge the RB environment further and thus challenge RCIC and other RB located equipment utilized in FLEX Phase 1. Based on qualifications of RB-5 located components AND the challenge to FLEX Phase 1 required systems, venting of RB-5 will not be done.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*
• The EOPs are being revised to include SFP controls. • EOP 29.100.01, Rev 9, Sheet 5 "Secondary Containment and Rad Release".	
Identify modifications	*List modifications*
SFP instruments to be installed per Order EA-12-051.	
Key SFP Parameters	*List instrumentation credited or recovered for this coping evaluation.*
• SFP instruments to be installed per Order EA-12-051.	

[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 Spent Fuel Pool Cooling	
BWR Portable Equipment Phase 2:	
Provide a general description of the coping strategies using on-site portable equipment including modifications that are proposed to maintain spent fuel pool cooling. Identify methods (makeup with portable injection source) and strategy(ies) utilized to achieve this coping time. The normal SFP water level at the event initiation is approximately 22 feet over the top of the stored spent fuel (Tech Spec 3.7.7). Using the design basis maximum heat load, the SFP water inventory will begin to boil off at 4.2 hours (Reference 1). This corresponds to a 90.77 gpm boil off water loss rate, which is equal to approximately 6 inches per hour of level loss. Makeup for the Spent Fuel Pool will be provided by the FLEX pumps that are hooked up to the RHR system for the Core Cooling strategy. Sufficient capacity exists with the FLEX pumps to provide the required flow rates for concurrent Containment Cooling, Core Cooling, and Spent Fuel Pool makeup. Spent Fuel Pool monitoring described in Phase 1 will continue to be used to monitor water level to determine whether water needs to be added via FLEX equipment. Control of makeup flow to the Spent Fuel Pool is provided by a manual-operated valve located near the SFP level monitor available on the 2nd floor of the Reactor Building. Additional methods to provide makeup to the Spent Fuel Pool are detailed in procedure 29.EDM.03, Revision 3, as previously developed for 10CFR50.54(hh)(2) (NRC SER, "Fermi 2 Conforming License Amendment to Incorporate the Mitigation Strategies Required by Section B.5.b of Commission Order EA-02-026 and the Radiological Protection Mitigation Strategies Required by Commission Order EA-06-137 (TAC No. MD4S32)", dated August 23, 2007). 1. Calculation HI-992207, "Bulk SFP Thermal-Hydraulic Analysis for Reracking of Fermi Unit 2," Rev 5	
Schedule:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*
• The 29.ESP.ExtSBO procedure will dictate when/how to add water for SPF level makeup per the strategy described above. • Procedure 29.EDM.03 "SFP Makeup/Spray – External Strategy"	
Identify modifications	*List modifications*
• A modification will be required for FLEX equipment to breach the security fence. • A modification will be required to enter the Reactor Building into the RHR system. • SFP instruments to be installed per Order EA-12-051.	
Key SFP Parameters	*List instrumentation credited or recovered for this coping evaluation.*
• SFP instruments to be installed per Order EA-12-051.	

Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List how equipment is protected or schedule to protect*
Equipment will be located in diverse locations away from any non-seismic structures. Additionally, the equipment will be housed in a structure designed to meet NEI 12-06 Section 11 type requirements which affords additional protection from falling debris due to a seismic event.	
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List how equipment is protected or schedule to protect*
Fermi is not susceptible to flooding without warning. The staging areas for the equipment will be above the flood plain or otherwise protected from the maximum probable flood.	
Severe Storms with High Winds	*List how equipment is protected or schedule to protect*
Equipment will be stored in diverse locations (Figure 1) and provided additional protection by a structure designed to meet NEI 12-06 Section 11 type requirements.	
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect*
The equipment housed inside the structures will be protected from snow, ice and extreme cold and personnel protective equipment storage and use will be stored on FLEX Vehicles..	
High Temperatures	*List how equipment is protected or schedule to protect*
The equipment housed inside the structures will be provided with adequate ventilation.	

Deployment Conceptual Design **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Primary FLEX equipment will be stored at the location of its expected use. Backup FLEX equipment will be stored in a diverse location with a clear travel path to a suitable location for connection. Dedicated FLEX trucks, housed with the equipment, will deploy the hose to the connection points. Fuel capacity in installed fuel tank of the FLEX pumps will support 8 hours of operation. A fuel truck or trailered tank will be required, along with debris	• A modification will be performed to transition FLEX pipe through the security fences. This transition pipe will have connection points on both sides for the attachment of FLEX hose. The connections for the FLEX hoses will be flood protected, and the piping will be seismically robust. • Two penetrations of the Reactor Building west wall will be required to facilitate	• The connection points will be flood protected, seismically robust, and protected from missiles.

clearing, to refuel the pumps within 8 hours of their operation. Water would be added to the SFP using the RHR piping and installed Fuel Pool flow path.	tapping into both divisions of the RHR system for the FLEX pumps.	

Maintain Spent Fuel Pool Cooling	
BWR Portable Equipment Phase 3:	
Provide a general description of the coping strategies using Phase 3 equipment including modifications that are proposed to maintain spent fuel pool cooling. Identify methods (makeup with portable injection source) and strategy(ies) utilized to achieve this coping time. Continued inventory control will be maintained by Phase 2 FLEX pumps indefinitely. The Phase 3 equipment supplied to the site will utilize portable generators to supply power for makeup to the SFP. This will also involve the restoration and commission of any equipment damaged during the event.	
Schedule:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*
• The 29.EDM.19 procedure will cover the implementation of off-site resources. • SOP 23.104 "Condensate Storage and Transfer System" will cover Spent Fuel Pool makeup. • SOP 23.708 "Fuel Pool Cooling and Cleanup System" will cover Spent Fuel Pool cooling.	
Identify modifications	*List modifications*
Create an interface option to connect RRC equipment to permanent plant equipment.	
Key SFP Parameter	*List instrumentation credited or recovered for this coping evaluation.*
SFP instruments to be installed per Order EA-12-051	

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Equipment will be delivered from the RRC to the staging area. From there, the equipment will be transported to the site and hooked-up by both RRC personnel and plant personnel per the playbook. Equipment will then be operated by plant procedures. Fuel capacity in installed fuel tank of the FLEX pumps will support 8 hours of operation. A fuel truck or trailered tank will	• An option to connect the RRC equipment to the permanent plant equipment using standard connections.	• Connections will be designed to withstand the applicable hazards.

Maintain Spent Fuel Pool Cooling		
BWR Portable Equipment Phase 3:		
be required, along with debris clearing, to refuel the pumps within 8 hours of their operation.		

Safety Functions Support	
Determine Baseline coping capability with installed coping[4] modifications not including FLEX modifications.	
BWR Installed Equipment Phase 1	
Provide a general description of the coping strategies using installed equipment including station modifications that are proposed to maintain and/or support safety functions. Identify methods and strategy(ies) utilized to achieve coping times. Installed equipment is the Division 1 and Division 2 DC supply and distribution system. The DC distribution system supplies the power to the equipment necessary to achieve the FLEX strategy outlined in the above sections. Equipment utilized for this coping includes: HPCI, RCIC, SRVs, inverters, and some Control Room instrumentation. AC power is unavailable. Access for Phase 1 involves the Division 1 and Division 2 ESF Switchgear Room, Relay Room, DC battery and Motor Control Center (MCC) area and Control Room only. These areas are located in non-steam environments, and are not expected to have any appreciable increase in temperature, and have been previously evaluated per the previous SBO rulemaking (UFSAR 8.4.2.3.4, UFSAR 6.4.1.2). Venting the RB-5 is not done per NEI 12-06 Table C-3 based on proper qualification of HCVS components on RB-5 and the lack of a monitored path to the environment. Opening doors to the RB area would challenge the RB environment further, thus challenging RCIC and other RV located equipment utilized in FLEX Phase 1. Based on qualification of RB-5 located components AND the challenge to FLEX Phase 1 required system, venting of RB-5 will not be done.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*
• The 29.ESP.ExtSBO covers the plant strategy for coping during an extended SBO and provides a cross reference to available instrumentation/power sources and redundant instrumentation/power supplies. A listing of local instruments that are power independent AND methods to monitor temperatures using thermocouple readers will also be supplied in this procedure. • .	
Identify modifications	*List modifications*
No modifications required.	

[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.

Key Parameter	*List instrumentation credited for this coping evaluation phase.*	
Parameters	**Transmitter PIS #**	**Indication PIS #**
DC voltage		R3200-S051 R3200-S052 R3200-S053 R3200-S054 R3200-S055 R3200-S056

Safety Functions Support	
BWR Portable Equipment Phase 2	
Provide a general description of the coping strategies using on-site portable equipment including station modifications that are proposed to maintain and/or support safety functions. Identify methods and strategy(ies) utilized to achieve coping times. Supplemental DC power supplies will be connected with a sufficient capacity, in conjunction with load shedding, to power all DC loads required for FLEX. Divisions 1 and 2 of the DC loadings are shown in Figures 3 and 4, respectively. Supplemental 550 kW FLEX generators will be connected to power all AC loads required for FLEX. The plant 480 V system and the tie-in locations for the FLEX generators are shown on Figure 5. The 550 kW generators have been sized to power all necessary phase 2 FLEX loads. Execution of the Phase 2 FLEX strategy involves short term access to the Reactor Building 1st floor, 2nd floor, and the Auxiliary Building Basement. Access to these areas is only for a short period of time and is conducted prior to significant Torus heatup (less than five hours for the deployment of the Phase 2 FLEX strategy). Access for Phase 2 involves the Division 1 and Division 2 ESF Switchgear Room, Relay Room, DC battery and MCC area and Control Room. These areas are located in non-steam environments, and are not expected to have any appreciable increase in temperature, and have been previously evaluated per the previous SBO rulemaking (UFSAR 8.4.2.3.4, UFSAR 6.4.1.2). Long term ventilation for the DC battery areas will be established through portable fans to mitigate hydrogen buildup.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*
• The 29.ESP.ExtSBO procedure covers AC and DC load shedding and provides a cross reference to available instrumentation/power sources and redundant instrumentation/power supplies. A listing of local instruments that are power independent AND methods to monitor temperatures using thermocouple readers will also be supplied in this procedure. • The 29.EDM.16, "Supplemental DC Power," procedure will cover implementation of alternate DC.	
Identify modifications	*List modifications*
Connection point to the Division 1 and Division 2 480 V buses.	

Safety Functions Support		
BWR Portable Equipment Phase 2		
Key Parameter	*List instrumentation credited for this coping evaluation phase.*	
Parameters	**Transmitter PIS #**	**Indication PIS #**
DC voltage		R3200-S051 R3200-S052 R3200-S053 R3200-S054 R3200-S055 R3200-S056
AC voltage		R14-R852 R14-R900 R14-R809 R14-R849 R14-R897
Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**		
Seismic	*List how equipment is protected or schedule to protect*	
The AC and DC generators will be stored in accordance with the NEI 12-06 guidelines to be protected from all applicable hazards.		
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List how equipment is protected or schedule to protect*	
The AC and DC generators will be stored in accordance with the NEI 12-06 guidelines to be protected from all applicable hazards.		
Severe Storms with High Winds	*List how equipment is protected or schedule to protect*	
The AC and DC generators will be stored in accordance with the NEI 12-06 guidelines to be protected from all applicable hazards.		
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect*	
The AC and DC generators will be stored in accordance with the NEI 12-06 guidelines to be protected from all applicable hazards and personnel protective equipment storage and use will be stored on FLEX Vehicles..		
High Temperatures	*List how equipment is protected or schedule to protect*	
The AC and DC generators will be stored in accordance with the NEI 12-06 guidelines to be protected from all applicable hazards.		

Safety Functions Support		
BWR Portable Equipment Phase 2		
Deployment Conceptual Design **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
The DC generators are on hand-carts and will be wheeled out to the roof of the building for ventilation. Extension cords will be run from the generators to the batteries. The AC generators will have the ability to connect to a local disconnect switch which is in turn tapped into the 480 v buses. A fuel truck or trailered tank will be required, along with debris clearing, to provide refueling to the generators.	• Implementation of the disconnect switch which will allow the AC generators to tap into the 480 V buses.	• The connection points are located inside buildings which are protected from all applicable hazards.

Safety Functions Support		
BWR Portable Equipment Phase 3		
Provide a general description of the coping strategies using Phase 3 equipment including modifications that are proposed to maintain and/or support safety functions. Identify methods and strategy(ies) utilized to achieve coping times. Supplemental 4160 V FLEX generators will be connected to power all AC loads required for Phase 3. The plant 4160 V system and the tie-in locations for the FLEX generators are shown on Figure 5. The 4160 V generator will have sufficient capacity to restore one division of Residual Heat Removal (RHR) and other necessary Phase 3 loads. As Phase 3 equipment becomes available and installed, it is expected that there will be a restoration of plant cooling and ventilation systems as needed to allow access for the implementation of the Phase 3 FLEX strategy.		
Details:		
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation*	
• The 29.EDM.19 procedure will cover the implementation of off-site resources.		
Identify modifications	*List modifications*	
• Create an interface option to connect RRC equipment to permanent plant equipment.		
Key Parameters	*List instrumentation credited or recovered for this coping evaluation.*	
Parameters	**Transmitter PIS #**	**Indication PIS #**
DC voltage		R3200-S051 R3200-S052 R3200-S053 R3200-S054 R3200-S055 R3200-S056
AC voltage		R14-R852 R14-R900 R14-R809 R14-R849 R14-R897

Deployment Conceptual Design **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Equipment will be delivered from the RRC to the staging area. From there, the equipment will be transported to the site and hooked-up by both RRC personnel and plant personnel per the playbook. Equipment will then be operated by plant procedures. A fuel truck or trailered tank will be required, along with debris clearing, to refuel FLEX equipment as required.	• An option to connect the RRC equipment to the permanent plant equipment using standard connections.	• Connections will be designed to withstand the applicable hazards.

BWR Portable Equipment Phase 2							
Use and (potential / flexibility) diverse uses							*Maintenance*
List portable equipment	Performance Criteria	Core	Containment	SFP	Instrumentation	Accessibility	Maintenance / PM requirements
Four Generators for DC battery charging	**10 KW, 260v generators**	**X**	**X**				**Will follow NEI 12-06 Section 11 requirements**
Eight (8) Battery Chargers	**25 Amp, 130 Volt DC**	**X**	**X**		**X**		**Will follow NEI 12-06 Section 11 requirements**
Two (2) Red Devil Blowers	**N/A**					**X**	**Will follow NEI 12-06 Section 11 requirements**
Two (2) Generators for AC loads	**550 KW, diesel generators**	**X**	**X**	**X**		**X**	**Will follow NEI 12-06 Section 11 requirements**
Two (2) Lift pumps for drawing water from CW Pond	**3000 GPM, 150 psi**	**X**	**X**	**X**			**Will follow NEI 12-06 Section 11 requirements**
Two (2) booster pumps for boosting pressure into the Reactor Building	**3000 GPM, 150 psi**	**X**	**X**	**X**			**Will follow NEI 12-06 Section 11 requirements**
Four (4) Super Aquaduct Flexible Pipeline	**10" diameter x 660 ft**	**X**	**X**	**X**			**Will follow NEI 12-06 Section 11 requirements**

BWR Portable Equipment Phase 2							
Use and (potential / flexibility) diverse uses							*Maintenance*
List portable equipment	Performance Criteria	Core	Containment	SFP	Instrumentation	Accessibility	Maintenance / PM requirements
Duplex Strainer	**10-inch**	**X**	**X**	**X**			**Will follow NEI 12-06 Section 11 requirements**

BWR Equipment Phase 3							
Use and (potential / flexibility) diverse uses							*Maintenance*
List portable equipment	Criteria	Core	Containment	SFP	Instrumentation	Accessibility	Maintenance / PM requirements
Two (2) Self-Powered Low Pressure Pump	-----	**X**	**X**	**X**			**Will follow NEI 12-06 Section 11 requirements**
Two (2) Diesel Generator, Large Load	**At least 3 MW capacity**	**X**	**X**	**X**			**Will follow NEI 12-06 Section 11 requirements**

	> 24 Hour Response	
	Item	**Notes**
	Radiation Protection Equipment • Survey instruments • Dosimetry • Off-site monitoring/sampling	
	Commodities • Food • Potable water	Provide at least one week of food and water.
	Fuel Requirements • Diesel Fuel	
	Portable Lighting	Diesel driven lighting system.
	Communications • Satellite phones • Radios	

Attachment 1A
Sequence of Events Timeline-Non Flood

Time	Action
0 hours – 5 min	EVENT occurs and begins SBO scenario. • In the control room: Use EOPs and other procedures to restore and maintain level. Verify rods in (P603), then reset Alternate Rod Insertion (ARI). • All operators head to control room. • RCIC will continue to feed from the CST, if available. • HPCI and RCIC start and inject on RPV level 2.
10 min	Send operators to EDGs and Combustion Turbine Generators.
50 min – 4 hours	The shift manager declares an extended loss of AC power. EXIT SBO and ENTER ELAP/LUHS procedures. This ensures timely entry into ELAP/LUHS procedures. • Begin DC load shedding [50 – 75 min] o Initiate supplemental DC with battery chargers (the two 10 kW generators) [75 – 120 min]. • Put HPCI in Torus-to-Torus (override E4150F011) [start at 60 min] • SBO/ELAP items are ongoing [60 min] • Dispatch operators to Circulating Water Pond for FLEX pumps [60 min – 240 min] • HPCI pressure control [60 min – FLEX is ready] • AC Stripping [1-3 hours]
5 hours	Operators finish preparing FLEX equipment. Both the FLEX pumps and the AC generators are ready to operate to support the three safety functions.
5 hours	Begin pumping water out of the Torus. • HPCI can pump out until approximately 72 hours • Then use RCIC • Then use Torus Water Management System (TWMS) pumps from Torus to Hotwell
24 hours	First generator arrives at staging area
30 hours +	FLEX generator(s) are hooked up to supply power to ESF Bus per 29.EDM.19. Restore power to 4160 VAC ESF buses per 29.ESP.ExtendedSBO and restore the following: • Restore RHR pump to service per 29.ESP.ExtendedSBO (fill and vent, power, disconnect any FLEX pumps to RHR connections or close connections) • Evaluate restoration of RHRSW per 29.ESP.ExtendedSBO (fill

	and vent, pump evaluation etc). • Start RHRSW and use RHR/RHRSW in Shutdown Cooling (SDC) mode (continue to use Phase 2 heat rejection to Hotwell using TWMS system). • When possible shift to RHR in Torus Cooling per 29.ESP.Extended SBO (based on RPV temperature and use of two hour windows for no RPV circulation). If RHRSW cannot be restored, reject Torus heat to Condenser Hotwell using TWMS pumps per 29.EDM.19 and connect a portable FLEX pump (Phase 3) connected to provide cooling water flow through Circulating Water (CW) tubes in Hotwell per 29.EDM.19. Energize the following electrical distribution systems: RPS and MPU #1 and MPU #2 to support the restoration of Control Room HVAC. Restore Station Air per SOP 23.129.01/23.129. Restore Non-Interruptible Air Supply (NIAS) per SOP 23.129 to support the restoration of Control Room HVAC. A RRC FLEX pump and flange to Emergency Equipment Service Water (EESW) discharge valve may be required to be hooked up per 29.EDM.19.
72 hours	Second generator arrives at staging area
78 hours	Second set of FLEX generator(s) are hooked up to supply power to opposite division of ESF buses per 29.EDM.19. Restore power to 4160 VAC ESF buses per 29.ESP.ExtendedSBO. • Restore other division RHR pump to service per 29.ESP.ExtendedSBO (fill and vent, power). • Evaluate restoration of other loop RHRSW per 29.ESP.ExtendedSBO (fill and vent, pump evaluation etc). If possible start RHRSW and use other loop RHR/RHRSW in Torus Cooling mode). • Evaluate Cooling water restoration for ventilation and habitability at General Service Water (GSW)/potentially use GSW flanges and Phase 3 Pumps. If RHRSW cannot be restored, continue to reject Torus heat to Condenser Hotwell using TWMS pumps per 29.EDM.19 and connect a portable FLEX pump (Phase 3) connected to provide cooling water flow through CW tubes in Hotwell per 29.EDM.19.

NOTE	Specific references to items in this table are covered by the Sequence of Events references located earlier in this plan.

Attachment 1A
Sequence of Events Timeline-Flood

Time	Action
-36 hours	If the National Weather Service (NWS) projects a potential flood then a flood watch would be issued. Flood watch actions include setting staffing per 29.ESP.ExtSBO and staging equipment for flood response per AOP 20.000.01, Acts of Nature. This includes manning remote stations and connecting FLEX Phase 2 equipment except for supplemental AC/DC connections.
-12 hours	If the NWS projects an actual flood, a flood warning would be issued. Flood warning actions include confirming flood equipment in place and manning of the remote stations per 29.ESP.ExtSBO and AOP 20.000.01. AOP 20.000.01, Acts of Nature-Flooding would direct a reactor shutdown and cooldown to place the plant in cold shutdown prior to the possible loss of the station's normal heat sink. Reactor Cold shutdown is expected by -2 hours based on plant shutdown procedures and prior shutdown experience. Reactor Recirculation Piping would be isolated at this time prior to loss of AC to prevent seal leakage issues.
0 hours – 5 min	EVENT occurs and begins SBO event. • In the control room: Use EOPs and other procedures to restore and maintain RPV level. No steam draw occurs as RPV temperature will start at 110 F rising to 187 psig (381 F) at about 4 hours after the SBO. Based on this the initial actions will be to monitor only • All operators proceed to control room.
10 min	Send operators to EDGs and Combustion Turbine Generators.
50 min – 3 hours	The shift manager declares an extended loss of AC power. EXIT SBO and ENTER ELAP/LUHS procedures • Begin DC load shedding [50 – 75 min] o Initiate supplemental DC with battery chargers (the two 10 kW generators) [75 – 120 min]. • SBO/ELAP items are ongoing [60 min] • AC Stripping [1-2 hours]
4 hours	Based on Decay heat in the RPV at 12 hours after shutdown, the RPV temperature will rise to 381 F about 4 hours after loss of AC. • RCIC would be started and injection started at this point
5 hours	Energize the Supplemental AC and connect to critical loads (specifically the Battery Chargers, Lighting and communications)
5-17 hours	Evaluate FLEX hose routing following flooding and determine if sections need to be redeployed using N+1 hose prior to the 21 hour point
17-21 hours	Redeploy FLEX hoses as required after the flood recedes.
21 hours	Begin pumping water out of the Torus at about 3000 gpm with HPCI (batching with FLEX pumps supplying at 2000 gpm) at Torus

	Temperature of about 205 F. • HPCI can pump out until approximately 72 hours • Then use RCIC • Then use Torus Water Management System (TWMS) pumps from Torus to Hotwell
24 hours	First generator arrives at staging area
30 hours +	FLEX generator(s) are hooked up to supply power to ESF Bus per 29.EDM.19. Restore power to 4160 VAC ESF buses per 29.ESP.ExtendedSBO.and restore the following systems: Restore RHR pump to service per 29.ESP.ExtendedSBO (fill and vent, power, disconnect any FLEX pumps to RHR connections or close connections) • Evaluate restoration of RHRSW per 29.ESP.ExtendedSBO (fill and vent, pump evaluation, etc.) • Start RHRSW and use RHR/RHRSW in Shutdown Cooling (SDC) mode (continue to use Phase 2 heat rejection to Hotwell using TWMS system). • When possible shift to RHR in Torus Cooling per 29.ESP.Extended SBO (based on RPV temperature and use of two hour windows for no RPV circulation). If RHRSW cannot be restored, reject Torus heat to Condenser Hotwell using TWMS pumps per 29.EDM.19 and connect a portable FLEX pump (Phase 3) connected to provide cooling water flow through CW tubes in Hotwell per 29.EDM.19. Energize the following electrical distribution systems: RPS and MPU #1 and MPU #2 to support the restoration of Control Room HVAC. Restore Station Air per SOP 23.129.01/23.129. Restore NIAS per SOP 23.129 to restore to support the restoration of Control Room HVAC. A RRC FLEX pump and flange to EESW discharge valve may be required to be hooked up per 29.EDM.19.

Attachment 2
Milestone Schedule

Task	13-Feb	13-Mar	13-Apr	13-May	13-Jun	13-Jul	13-Aug	13-Sep	13-Oct	13-Nov	13-Dec	14-Jan	14-Feb	14-Mar	14-Apr	14-May	14-Jun	14-Jul	14-Aug	14-Sep	14-Oct	14-Nov	14-Dec	15-Jan	15-Feb	15-Mar	15-Apr	15-May	15-Jun	15-Jul	15-Aug	15-Sep	15-Oct	15-Nov
6 Month Status Update						■						■						■						■						■				
Submit Integrated Plan	■																																	
Develop Mods	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																			
Implement Mods												■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Perform Staffing Analysis																							■	■	■	■	■	■	■	■				
Time Validation Study																							■	■	■	■	■	■	■	■				
Develop Training Plan																							■	■	■	■	■	■	■	■	■	■	■	
Implement Training																					■	■	■	■	■	■	■	■	■	■	■	■	■	■
Issue FSGs												■	■	■	■	■	■	■	■	■	■	■	■											
Develop Strategies/ Contract with RRC	■	■	■	■	■	■	■	■	■																									
Identify and Procure Staging Location						■	■	■	■	■	■																							
Purchase Equipment	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■															
Procure Equipment	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■															
Create Maintenance Procedures											■	■	■	■	■	■	■	■	■	■	■	■	■											

Attachment 3, Conceptual Sketches

Figure 1 – Overview of Phase 2 equipment storage and FLEX deployment path

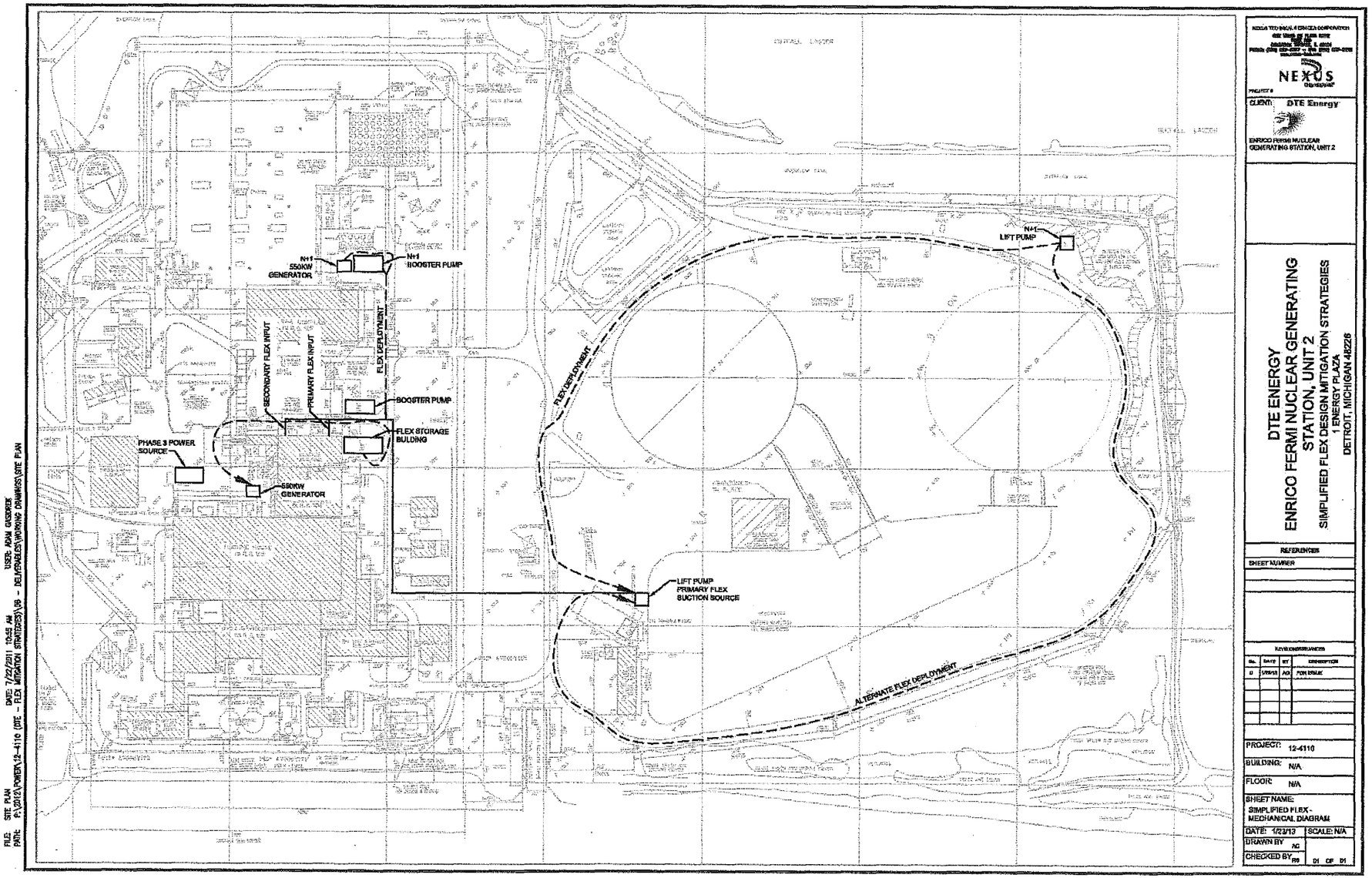
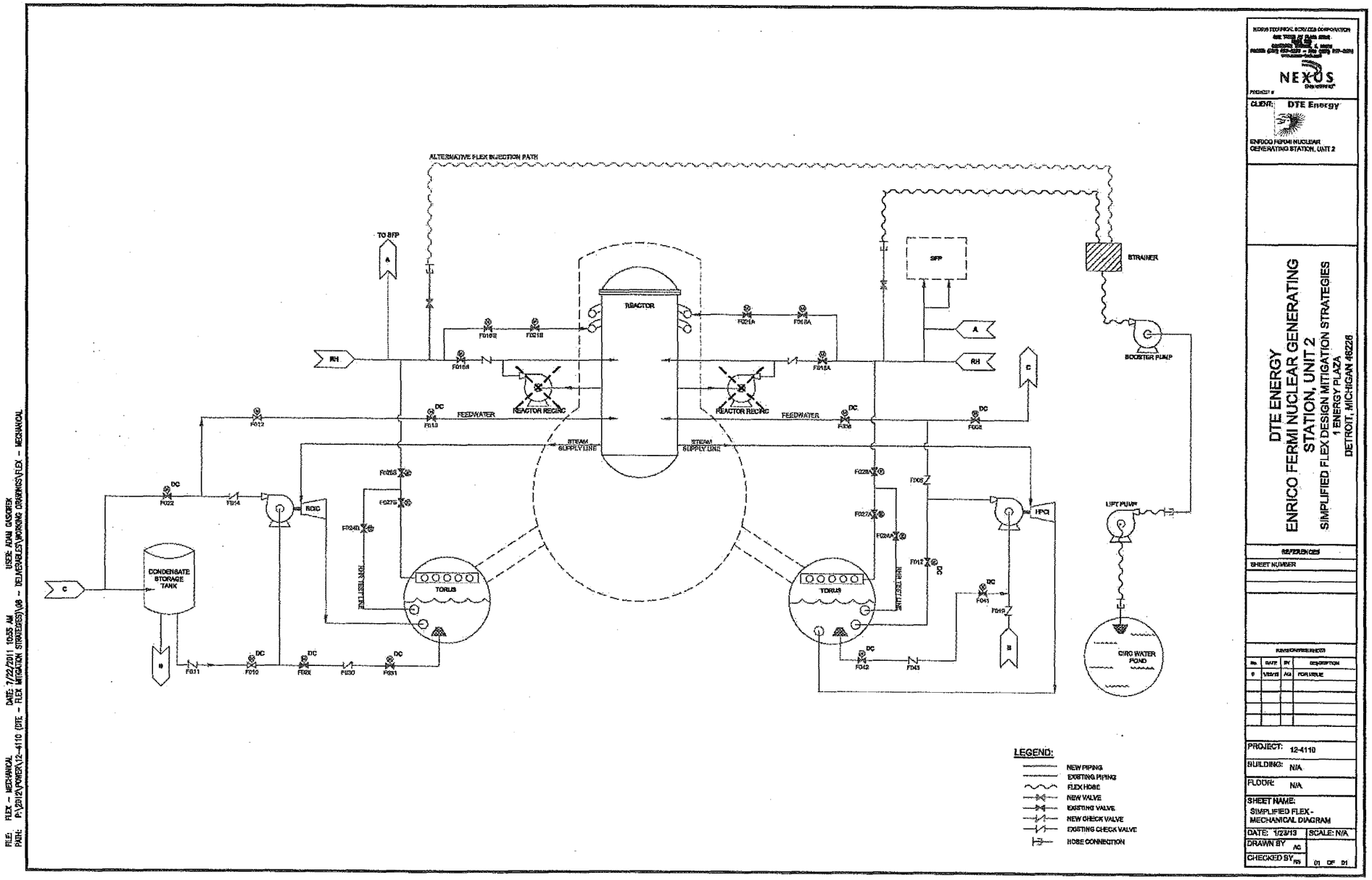


Figure 2 – FLEX Mechanical Conceptual Drawing



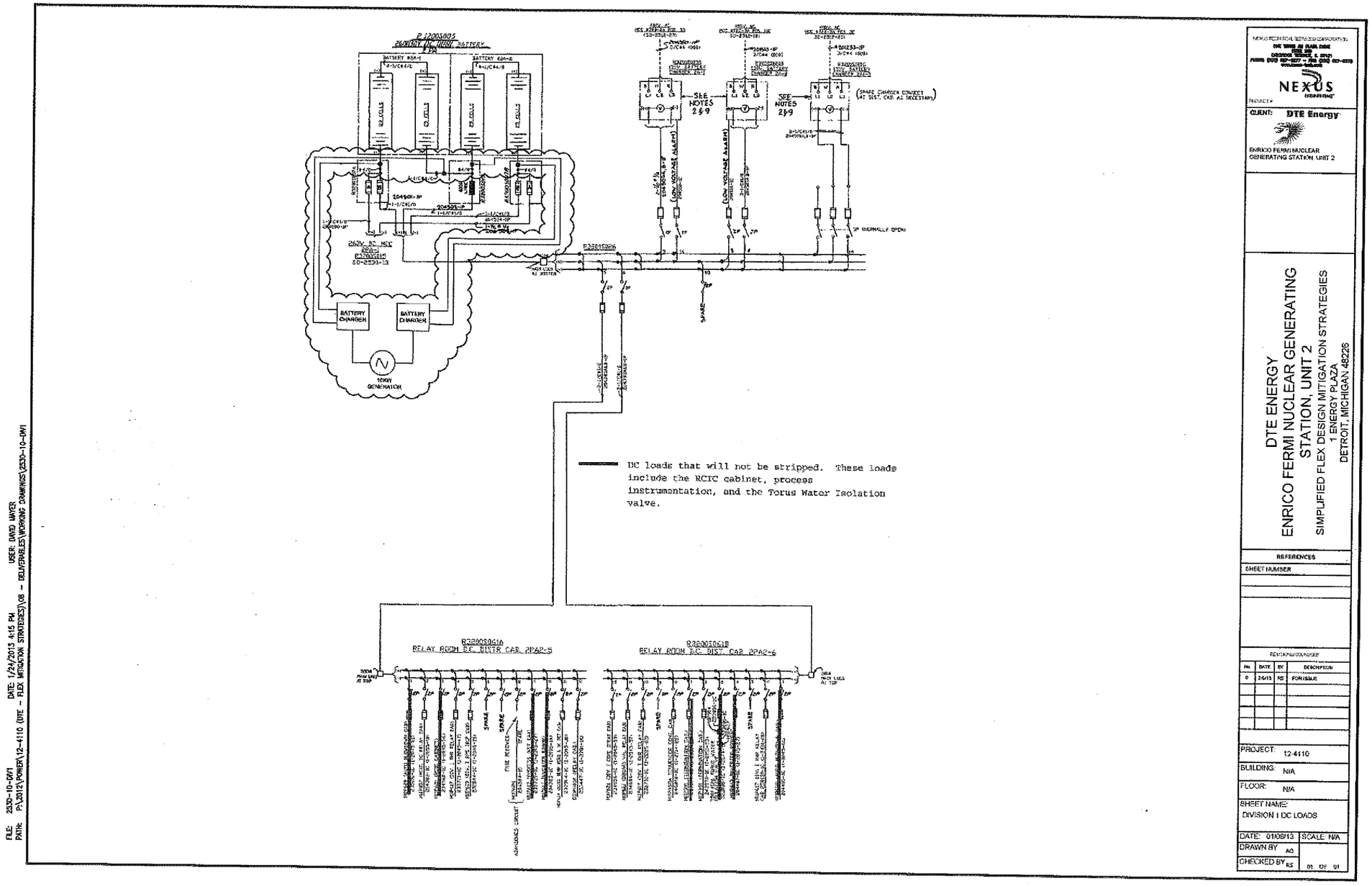


Figure 3 – Division 1 DC (Dwg. D-2530-10 Rev. AK)

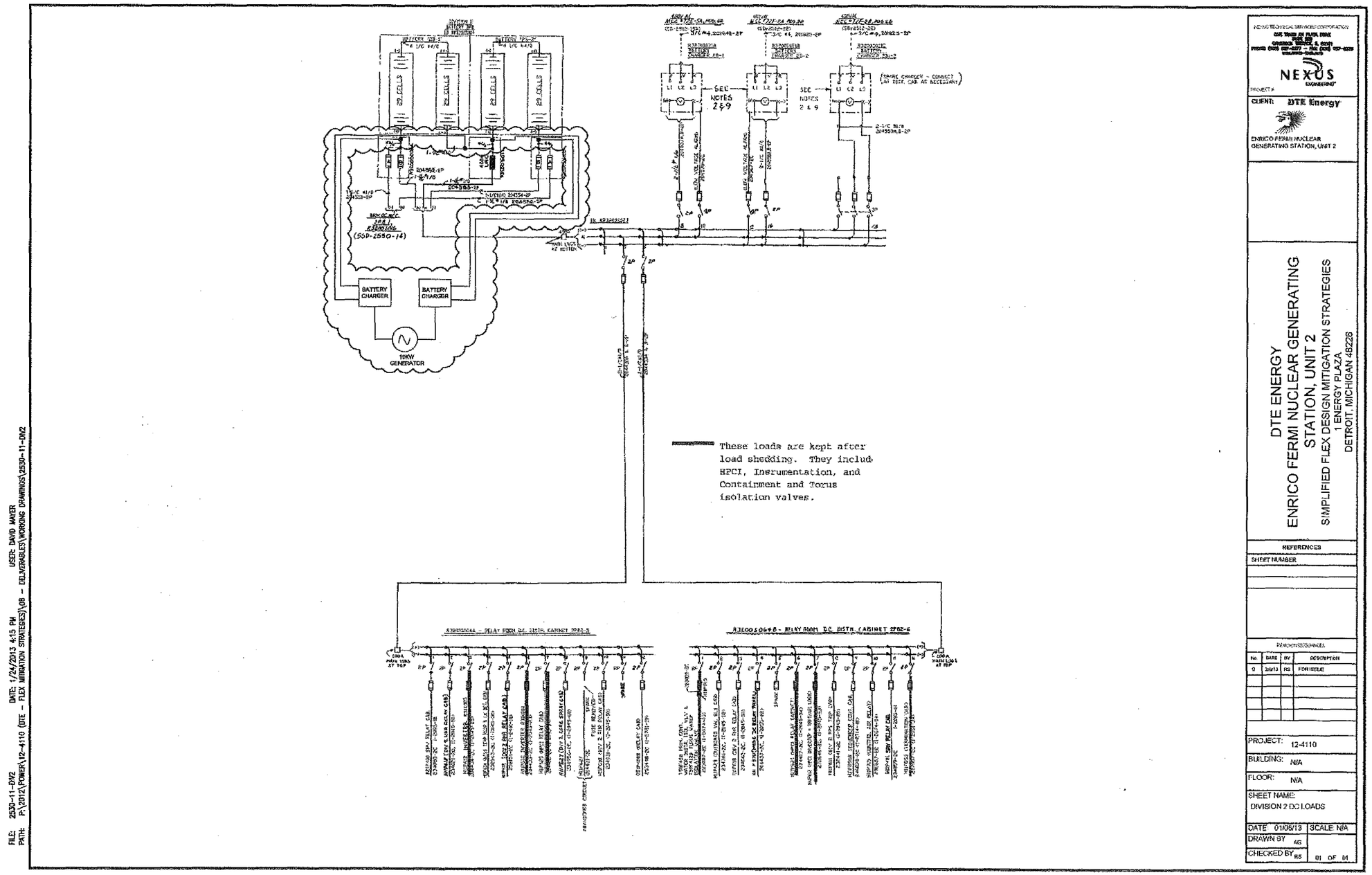


Figure 4 – Division 2 DC (D-2350-11 Rev. AJ)

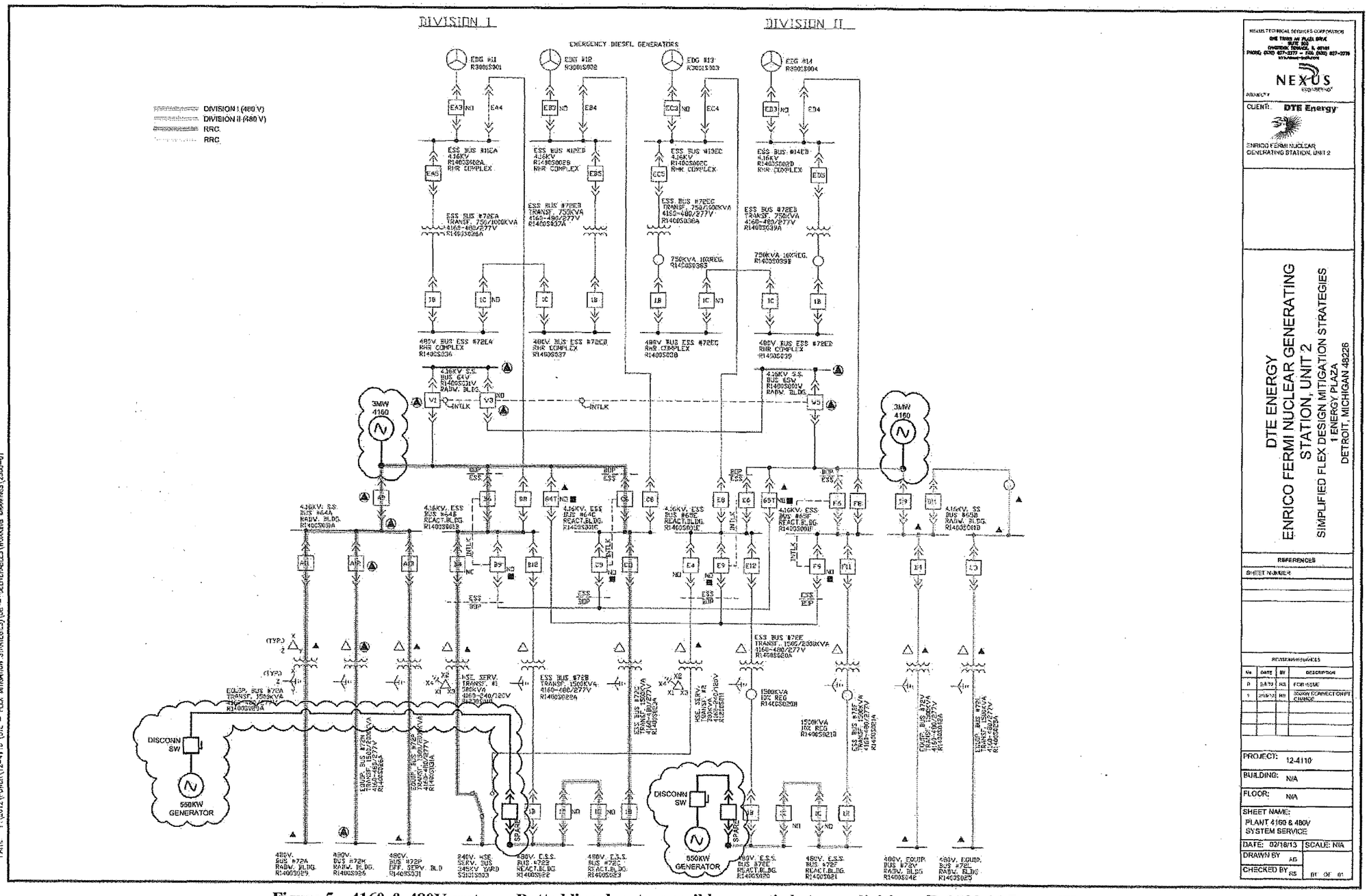


Figure 5 – 4160 & 480V systems. Dotted line denotes possible cross-tie between divisions.(D-2500-01 Rev. AW)