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- References:
- 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
 - 2) U.S. Nuclear Regulatory Commission, "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 (ML12053A340)
 - 3) Nuclear Energy Institute, "Guidelines for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0, May 2012 (ML12125A412)
 - 4) U.S. Nuclear Regulatory Commission Letter to Ms. Susan Perkins-Grew, Emergency Preparedness Director, Nuclear Energy Institute, "U.S. Nuclear Regulatory Commission Review of NEI 12-01, 'Guidelines for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,' Revision 0, Dated May 2012," May 15, 2012 (ML12131A043)

Subject: Emergency Preparedness Phase 2 Staffing Assessment

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued "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). Enclosure 5 of Reference 2 contained specific requested actions and information associated with Recommendation 9.3 for Emergency Preparedness Programs, including a Staffing Assessment.

The enclosure to this letter provides the Phase 2 Staffing Assessment Report for DTE Electric Company's Fermi 2 Nuclear Power Plant. The report follows the assessment process provided in the Nuclear Energy Institute report 12-01, "Guidelines for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0, dated May 2012 (Reference 3), which was endorsed by NRC staff on May 15, 2012 (Reference 4). This letter contains no new regulatory commitments.

Should you have any questions or require additional information, please contact Mr. Christopher Robinson, Licensing Manager at (734) 586-5076.

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

Executed on April 17, 2015



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Enclosure: Staffing Assessment Report

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Enclosure to NRC-15-0040

Staffing Assessment Report

Enrico Fermi Unit 2 Nuclear Power Plant



FUKUSHIMA RESPONSE

NEI 12-01 PHASE 2

STAFFING ASSESSMENT REPORT

FEBRUARY 12, 2015

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Introduction and Definitions

This report documents the analysis performed by DTE Electric Company (DTE) to meet the commitments for conducting a staffing assessment for a Beyond Design Basis External Event (BDBEE) affecting the Fermi 2 Nuclear Power Plant to determine the response of on-shift and augmented resources to an Extended Loss of AC Power (ELAP) incident impacting a site. This report uses the terms, definitions, and acronyms commonly used in the U.S. Nuclear Regulatory Commission (NRC) report, “The Near-term Task Force Review of Insights from Fukushima Dai-ichi Accident,” and NRC and Nuclear Energy Institute (NEI) guidance documents. The following is provided as a reference to the terms, definitions, and acronyms used throughout this report.

Beyond Design Basis External Event (BDBEE) – Events initiated by natural phenomena that either exceeds the protections provided by the design basis features or involves natural phenomena within the design basis in combination with beyond design basis failures leading to an extended loss of alternating current (AC) power and/or loss of the ultimate heat sink.

Extended Loss of AC Power (ELAP) – The occurrence of a prolonged loss of all offsite power and a prolonged loss of all onsite AC power occurs with no foreseeable restoration time for either source.

FLEX capability equipment - Coping capability to prevent damage to the fuel in the reactor and spent fuel pools and to maintain the containment function by using installed equipment (referred to as the Initial Phase or Phase 1), using on-site portable equipment (referred to as the Transition Phase or Phase 2), and pre-staged off-site equipment that will be available after 24 hours (referred to as the Final Phase or Phase 3).

FLEX Support Guideline (FSG) – Procedures that provide to the extent possible, pre-planned strategies for accomplishing specific tasks in support of Emergency Operating Procedures (EOP) functions to improve the capability to cope with a BDBEE.

Staffing Assessment – A two (2) phased approach to assess the tasks and responsibilities assigned to the Emergency Response Organization (ERO) to evaluate any potential to overburden them with assigned duties. For a single unit like Fermi 2, Phase 1 applied only to the on-shift organization and was completed as directed by recent emergency preparedness rules, Interim Staff Guidance (ISG-01), “Emergency Planning for Nuclear Power Plants,” and NEI 10-05, “Assessment of On-shift Emergency Response Organization Staffing and Capabilities.” The Fermi Phase 1 Staffing Assessment was completed December 19, 2012. The Phase 2 Staffing Assessment (this report) is related to Near-Term Task Force (NTTF) Recommendation 4.2 and includes the on-shift organization and augmenting ERO for the period up to 24 hours following an ELAP using diverse and flexible coping strategies (FLEX) capability equipment for the Initial and Transition Phases. The Phase 2 assessment is directed by NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communication Capabilities,” and NEI 12-06, “Diverse and Flexible Coping Strategies (FLEX) Implementation Guide.” For purpose of clarification this study will be referred to in this document as the “NEI (Phase 2) Staffing Assessment.”

Strategic Alliance for FLEX Emergency Response (SAFER) – The Pooled Equipment Inventory Company (PEICo) and AREVA NP, Inc. created the SAFER Team to develop and manage a FLEX regional response center program as part of the PEICo’s existing Pooled Inventory Management (PIM) Program for the U.S. nuclear industry.

NEI (Phase 2) Staffing Assessment Process Overview

The assessment was conducted by a multi-disciplined team using draft FLEX Support Guidelines (FSGs) and Emergency Operating Procedure (EOP) revisions. Use of these procedures is acceptable in accordance with NEI 12-01, section 1.3.1.2. The staffing assessment also addressed the ability of the on-shift staff to perform required emergency response functions prior to the delayed arrival of up to six hours from the augmented Emergency Response Organization (ERO).

The NEI (Phase 2) Staffing Assessment requires that the response to the ELAP scenario be evaluated based on the minimum staffing in the Emergency Plan (NEI 12-01, section 2.3.1) and the supplemental staff allowed by administrative staffing procedures (NEI 12-06, section 11.7). Fermi 2 Radiological Emergency Response Preparedness Plan, Rev 44, Table B-1, documents the approved minimum staff. Operations procedure, MOP03, revision 37, documents the administrative staff supporting the on-shift operating crew. The table below summarizes the available personnel used for performance of the NEI 12-01 (Phase 2) staffing assessment.

Enrico Fermi Atomic Power Plant Unit 2 Radiological Emergency Response Preparedness Plan, Revision 44		Supplemental Administrative Staff MOP03, Revision 37
Position	On-shift	
Shift Manager (SM)	1	
Control Room Supervisor (CRS) – Senior Reactor Operator (SRO)	1	
Nuclear Supervising Operator (NSO) - RO or SRO	3	
Nuclear Operator (NO)	5	
Shift Technical Advisor (STA)	1	
Chemistry Technician	1	
RP Technician	2	
Maintenance Technician	2	
RERP Communicator (NO)	^d	1 ^c
Fire Brigade	^b	
Security	^a	
Total:	16	1
Overall Total		17

- (a) As required by the Fermi Security Plan. Not included in the 16 total.
- (b) UFSAR 9A.1.3.3 requires a minimum of 5 plant personnel. MOP10, Fire Brigade, specifies a total of five dedicated members of the fire brigade, plus a communicator. Fire brigade is normally filled by personnel filling another position having functional qualifications, and is not included in the 16 total.
- (c) Per MOP03, revision 37, the position Communicator (normally an NO) is a mandatory position and is administratively required to be on-shift.
- (d) May be provided by personnel assigned other functions and is not in the total.

NEI (Phase 2) Staffing Assessment Results

No conflicts or overlaps in functions or tasks required to be performed by on-shift operations and support personnel were identified during this analysis. Transition Phase actions were required within the first six hours of the event.

Using NEI 12-01 guidance, the minimum on-shift staff as defined in Emergency Plan and the supplemental staff allowed by MOP03, performed all actions required by operating and emergency plan procedures in the first hour period relying only on installed structures, systems and components remaining in the initial phase of the response. Once the General Emergency and the ELAP condition were declared, functional draft FLEX Support Guidelines (FSG) were successfully implemented, using on-shift resources during the first six (6) hours and augmented responders from six (6) to twenty-four (24) hours.

An evaluation (tabletop analysis) of each FSG was conducted, whether or not the strategy was required to be implemented. The evaluation was completed in order to determine the resources needed and estimated duration of each task associated with the strategy. The total number of resources identified and task duration, including travel times, were then used to identify the two most resource limiting FLEX strategies (Refer to Table 8 in Appendix 1).

This analysis identified that the two most resource limiting FSG coping strategies are:

- 29.FSG.01, FLEX DC
- 29.FSG.02, FLEX WATER

The assessment also validated:

- Equipment will be deployed to clear obstructions from the pathway between FLEX equipment's storage location and its deployment locations(s) [NEI 12-06, 11.3 (9)].
- Deployment of FLEX equipment or debris removal equipment from storage locations does not depend on off-site or on-site power capability. [NEI 12-06, 11.3(10)].
- Alternate transportation resources and access enhancing measures are available for site access (NEI 12-01, 3.9).
- Ability to maintain critical communication and includes the number of units needed to implement any two strategies. (NEI 12-01, 4.1.6.2).

Follow-up actions were identified during the tabletop analysis. The follow-up actions were entered into the Fermi 2 Corrective Action Program.

Follow-up Actions

During the tabletop procedural analysis, follow-up actions related to existing procedures and processes were identified:

1. Clarify Operations Conduct Manual MOP03, revision 37, section 3.4.1 so that it is clear that the Fire Brigade Leader is the same position as NSO 3/Patrol. Currently, a count of the “Numbers” in column four (4) is 18 positions. Discussion during the assessment revealed that there are only 17-positions (16 required by the emergency plan and one administratively controlled). The difference is based on interpretation of the table included in the manual.
2. Include guidance that any change to the minimum on-shift staff as defined in Emergency Plan or the supplemental administrative staff required by MOP03 will require an evaluation for impact to the NEI (Phase 2) Staffing Assessment.
3. There is currently limited guidance to assemble “off duty” Licensed Operators, Non-licensed Operators, Radiation Protection (RP), Chemistry, Maintenance, or Security personnel following an ELAP. Include guidance in appropriate procedure(s) that directs these personnel to report to the station or assemble at the AEOF, if the station is not accessible and provide training based on the procedure changes.
4. LP-ER-828-0001 requires a revision. Page 19 directs that, “the ERO members should immediately report to their Emergency Response Facilities and if the site or roads leading to the site are not accessible, then they should immediately assemble at the Dixie Warehouse.” Dixie Warehouse should be changed to the Alternate Emergency Operations Facility (AEOF).
5. There are four documents that have conflicting information pertaining to Satellite Phones (phones numbers, number of units available, Gateway vs docking station etc.). Review and align the documents. The four documents are:
 - The Communication Bases, Revision 2, January 2015
 - EP-585, EMERGENCY SATELLITE PHONES, Revision 1, 10/24/14
 - 29.FSG.06, Communications, Draft Revision 0
 - Emergency Telephone Directory, Revision 95, 12/4/14
6. Determine the tool and storage location required to breach the exterior Protected Area Fence. If other than hand tool(s), determine if training is required.
7. Add the uninterruptible power supply (UPS) “throw over” for the Satellite phones and Turbine Building (TB) Radio Repeaters to 20.300.SBO Loss of Offsite and Onsite Power so that the satellite phones Gateways and TB Radio Repeaters are operable immediately. Currently not completed until entry into ELAP procedures.
8. Determine task sequencing, the number of steam suits required and the training and qualification requirements needed to support 29.FSG.14, HPCI/RCIC Oil Cooling. Also determine if RP job coverage is required.
9. The capability to perform dose assessment is impacted by ELAP. Evaluate if training or process changes are required to address the limited availability of data to support dose assessment.
10. Chemistry was not assigned any FSG tasks, evaluate if the Chemistry group should receive FSG training so that they could support a FSG task, if needed.
11. Determine the number and positions of the additional supplemental staff that should be procedurally brought on site in advance of a flooding event and the means to bring them in, house and feed them, and safely assemble them.
12. The diesel at the AEOF does not provide power to the four installed satellite phone gateways. Install a UPS(s) to meet the communication capability requirements for a facility within the 25 mile affected area surrounding the station.
13. Place in location the two satellite phones to the Control Room Conference Room as alternate hand held units.
14. After receipt of the final DTE Modular Accident Analysis Program (MAAP) Analysis, verify that there is no impact from that used from the preliminary analysis.
15. Validate the NEI (Phase 2) Staffing Assessment results against the final approved procedures/guidelines. Include any identified discrepancies in the Fermi corrective action program.

NEI (Phase 2) Staffing Assessment Details for Fermi 2

The NEI (Phase 2) Staffing Assessment for Fermi 2 was conducted on February 10-11, 2015, using the guidance of NEI 12-01, NEI 12-06 and NEI 10-05.

The following personnel were present to complete the assessment:

Personnel (Position/Title)	Number	Organization/Department
Shift Manager	1	Operations
Control Room Supervisor/STA/Fire Patrol	1	Operations
Nuclear Supervising Operator	1	Operations
Nuclear Operator	5	Operations
Radiation Protection Technician	2	Radiation Protection
RP Supervisor	1	Radiation Protection
Chemistry Technician	1	Chemistry
Chemistry Supervisor	1	Chemistry
Maintenance Superintendent	1	Maintenance
Radiological Emergency Response Preparedness (RERP) Manager	1	RERP
Emergency Preparedness (EP) Staff	3	RERP
Instrumentation and Controls (I&C) Maintenance	1	Maintenance
Electrical Maintenance	1	Maintenance
Mechanical Maintenance	1	Maintenance
Operations Training	3	Training
Manager Industry Interface	1	Engineering
Probabilistic Safety Analysis (PSA) Engineer	1	Performance Engineering
Security Alarm Station Operator (ASO)	1	Security
Security Superintendent	1	Security
Security Response Force Leader	1	Security
Supervisor (procedures)	1	Operations Support
Fukushima Project	1	I&C Engineering Associates (contractor)
Fukushima Project	1	Delta Engineering Service (contractor)
Director Organization Effectiveness	1	Organization Effectiveness
Director Nuclear Production	1	Production
EP Specialist	2	EC2 (contractor)
EP Specialist	1	Bartech (contractor)

NEI (Phase 2) Staffing Assessment Assumptions

The ELAP event was evaluated using assumptions consistent with NEI 12-01 and NEI 12-06 and applicable assumptions from NEI 10-05. The following assumptions were applied.

1. No specific initiating event is used. The initial condition is assumed to be a loss of off-site power (LOOP) at the plant site resulting from an external event that affects the off-site power system either throughout the grid or at the plant with no prospect for recovery of off-site power for an extended period. Plant initial response is the same as station blackout (SBO) (20.300.SBO procedure). Entry to Extended Loss of AC Power (ELAP) will be within 45 minutes.
2. The analyzed event occurs during off-normal work hours at a time when augmented ERO responders are not at the site (e.g., during a backshift, weekend or holiday).
3. No additional events or failures are assumed to occur immediately prior to or during the event. A hostile action directed at the affected site does not occur during the period that the site is responding to the event.
4. Prior to the event the reactor has been operating at 100 percent rated thermal power for at least 100 days and is successfully shutdown or has just been successfully shut down from such a power history as required by plant procedures in advance of the impending event. Decay heat is based on ANSI/ANS 5.1 "Decay Heat Power in Light Water Reactors," (1979) evaluation methods.
5. Modular Accident Analysis Program, Version 4, analysis for decay heat is used to establish maximum operator response timelines and actions.
6. 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.
7. Flood and seismic walk downs and associated analysis reports are completed and have confirmed there is no impact to the Systems, Structures or Components (SSCs) relied upon for implementing the proposed FLEX strategies.
8. 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.
9. Instrumentation for key parameters is powered from Engineered Safety Feature (ESF) Direct Current (DC). This ESF DC is available in Phase 1 and restored in Phase 2 electrical actions.
10. All equipment credited in current coping strategies remains available for use.
11. Other equipment, such as portable AC power sources, portable back up DC power supplies, spare batteries, and equipment for Title 10 *Code of Federal Regulations* (10 CFR) 50.54(hh)(2), may be used provided it is reasonably protected from the applicable external hazard and has predetermined hookup strategies with appropriate procedures/guidance and the equipment is stored in a relative close vicinity to the site.
12. The fire protection system ring header is not expected to survive, however, the fire protection piping in the reactor building and auxiliary building is isolable and is expected to survive to support FLEX coping strategies.
13. 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).
 - 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.
14. On-site staff is at site administrative minimum shift staffing levels as allowed by NEI 12-06, section 11.7.
15. All personnel on-site are available to support site response.
16. On-shift personnel can report to their assigned response locations within timeframes sufficient to allow for performance of assigned actions. Following are the typical locations of personnel:

- Shift Manager Control Room
 - Control Room Supervisor..... Control Room
 - STA Tagging Center
 - NSO (1st and 2nd) Control Room
 - 3rd NSO (Also Fire Brigade Leader)..... Tagging Center
 - Nuclear Operator (1st, 2nd, 3rd and 4th NO)..... Tagging Center
 - Radwaste Operator (5th NO).....Radwaste Control Room
 - RP Technician (1st and 2nd).....RP Office
 - Chemistry Technician..... Chemistry Lab
 - Maintenance Technicians (1st and 2nd) Maintenance Shop
 - Communicator (6th NO) Tagging Center
17. The on-shift staff possesses the necessary Radiation Worker qualifications to obtain required dosimetry and to enter Radiologically Controlled Areas (but not high, locked high or very high radiation areas) without the aid of a Radiation Protection Technician.
 18. Personnel assigned to the major response area of Plant Operations & Safe Shutdown meet the requirements and guidance established by NRC regulations and are able to satisfactorily perform the functions and tasks necessary to achieve and maintain safe shutdown. Staff performance within this area is not evaluated as part of this assessment, unless a role/function/task from another major response area is assigned as a collateral duty.
 19. On-site security organization performance is regularly analyzed through other station programs and will not be evaluated here, unless a role or function from another major response area is assigned as a collateral duty.
 20. Individuals holding the position of Radiation Protection Technician or Chemistry Technician are qualified to perform the range of tasks expected of their position.
 21. The task of making a simple and brief communication has minimal impact on the ability to perform other assigned functions/tasks, and is therefore an acceptable collateral duty for all positions. This assumption does not apply to the job specific duties for emergency notification to an Offsite Response Organization (ORO) or the NRC.
 22. The task of performing a peer check has minimal impact on the ability to perform other assigned functions/tasks, and is therefore an acceptable collateral duty for all positions.
 23. Fuel for FLEX equipment stored in structures with designs which are robust with respect to seismic events, floods and high winds and associated missiles, remains available.
 24. The FLEX connections will either be hardened or in diverse locations to ensure connections are available following the event.
 25. Implementation strategies were assessed for hazards impact.
 26. All Transition Phase components are stored on site and available for FLEX.
 27. The FLEX equipment in the Transition Phase will be capable of coping for an indefinite period.
 28. The emergency telephone communication network Direct-Inward-Dialing (DID) and Private Branch Exchange (PBX) for the site is unavailable.
 29. Plant public address system (HiComs) is unavailable.
 30. The Turbine Building radio repeaters are powered from a 10 kilovolt-amps (KVA) UPS located in the Rad-Waste Switchgear Room. It requires a manual action to position a transfer switch located in the Turbine Building. The Residual Heat Removal (RHR) building radio repeater is backed by 24 hour UPS that requires no manual action.
 31. There are 16 dedicated hand-held radios, with 4 batteries for each radio.
 32. There are additional plant handheld radios throughout the station. These radios may survive but are not credited during the BDBEE.
 33. If the BDBEE would impact the radio repeater, portable radios will function with line of sight.
 34. Installed Satellite phones with Uninterrupted Power Supply (UPS) or a diesel generator and external antenna are available for use by emergency response personnel for onsite and offsite communications. This system is expected to support the first 24 hours of a Station Blackout. The location of the installed satellite phones, including spare batteries, are as follows:

- Control Room – 3 (Gateway) – UPS (H4000S002), with manual transfer switch (H4000M004). This is the same UPS and switch for the TB radio repeaters and Operations Support Center (OSC).
 - OSC – 1 (Gateway) – UPS (H4000S002), with manual transfer switch (H4000M004). This is the same UPS and switch for the TB radio repeaters and Control Room.
 - Technical Support Center (TSC) – 4 (Gateway) – UPS (H4000S003)
 - Emergency Operations Facility (EOF) – 4 (Gateway) – Installed Diesel
 - AEOF – 4 (Gateway) – Refer to Follow-up Actions
 - Central Alarm Station (CAS) – 1 (Docking Station) – UPS (H4000S004)
 - Secondary Alarm Station (SAS) – 1 (Docking Station) – UPS (H4000S005)
 - Alternate Operations Support Center (AOSC) – 1 (Docking Station) – UPS (H4000S006)
35. If the BDBEE would impact a satellite phone antenna or power supply, the satellite phone can be altered and function as a handheld model. This requires removal of the SIM card from the installed system and placed into the handheld satellite phone.
36. Handheld satellite phones are available at:
- OSC - 2
 - TSC – 1
 - EOF – 3
 - AEOF – 3
 - Joint Information Center (JIC) – 1
 - Control Room conference room – 2 - Refer to Follow-up Actions
 - FLEX Support Facility (FSF) 1 (FLEX Building) – 1 (currently a spare until building is completed)
 - FSF 2 (FLEX Building) – 1 (currently a spare until building is completed)
37. The Alternate Emergency Operation Facility is located approximately 22 miles from the site and is available as a staging location.
38. Site access methods are arranged via land, air, or water as discussed in letter NRC-12-0039.
39. 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). Flood duration will be 17 hours (UFSAR Section 2.4.5.4.2.3). Select personnel would be activated in advance of the flood.

Site Specific References:

1. AOP 20.300.SBO, Rev 18, “Loss of Offsite and Onsite Power”
2. AOP 20.000.01, Acts of Nature, Revision 48
3. DC-6585 VOL I, Loss of HVAC - Room Environment Analysis in Support of FLEX: RB/AB/TB Temperature Profile Analysis, Revision 0, 10/21/2014
4. DC-6586 VOL I, Loss of HVAC - Room Environment Analysis in Support of FLEX: Battery Room Temperature and Hydrogen Concentration, Revision 0, 10/21/2014
5. DC-6587 VOL I, Loss of HVAC - Room Environment Analysis in Support of FLEX: HPCI, RCIC Room Temperature and Water Level Analysis
6. Preliminary DTE MAAP Analysis Runs, “Fermi 2 FLEX Coping Time Evaluation”, and “Series 600 Cases for Fermi 2 FLEX MAAP Scoping Time Analysis,” Reference letter NJPR-13-0028, dated March 27, 2013, as supplemented by “MAAP Drafts”
7. NRC-12-0039, Request Regarding Emergency Preparedness Communications and Staffing, June 8, 2012
8. NRC-12-0064, Request for Assessment of Emergency Preparedness Communications, October 29, 2012
9. NRC-12-0032, 60 Day Response to March 12, 2012 Information Request, May 8, 2012
10. NRC-13-0010, Near-Term Task Force Recommendation 9.3, February 22, 2013
11. Emergency Communication Bases, Revision 2, January, 2015
12. Draft FSGs listed in Table 8

Methodology

An assessment of on-shift staffing was performed using NEI 12-01, NEI 12-06, and NEI 10-05 guidance. Subject matter experts and consultants were assembled to provide analysis support. The assessment was conducted via a tabletop procedural analysis using DTE procedures to determine if tasks have been sufficiently analyzed for performance by the minimum on-shift staff as designated in the Emergency Plan and supplemental administrative staff as allowed by NEI 12-06. A pre-job brief was conducted outlining the assessment process and to familiarize personnel with the type of event. Copies of draft FSGs were provided. The Shift Manager and CRS participants reviewed FSG actions and identified them to the team.

The following provides the summary of the assessment process that was used to document the analysis. An evaluation (tabletop analysis) of each FSG was conducted, whether or not the strategy was required to be implemented. A team representing the minimum on-shift staff augmented with other staff personnel participated as the assessment team. The tabletop analysis was completed in order to determine the resources needed and estimated duration of each task associated with the strategy. The total number of resources identified and task duration, including travel times, were then used to identify the two most resource limiting FLEX strategies. Forms from NEI 10-05 were modified to meet the timelines described by the assessment team during the tabletop analysis. For the first 6 hour period, each on-shift position from the Emergency Plan and the one additional on-shift position were entered in Table 1. For position titles with more than one position holder, a unique sequential number was assigned to each position. Security was entered as group (the Security Plan defines minimum staffing). Additional tables were completed by entering the shift position and a described role, specific function, or tasks and the communication equipment used during the described task. The on-shift resources and their actions were then summarized (Table 1).

For the period after 6 hours, Table 10 was completed to validate that there are sufficient resources available to implement the Emergency Plan and support FLEX Transition Phase strategies.

The following is a list of tables used during the assessment.

- Table 1 – On-shift Positions Roles
- Table 2 – Personnel Necessary to Implement AOPs and EOPs, or FSGs
- Table 2A – Procedure Task Timing to Implement ELAP (First 6 Hours)
- Table 2B – Procedure Task Timing to Implement ELAP (Hours 7-24)
- Table 3 – Firefighting (not applicable for this event analysis)
- Table 4 – Radiation Protection & Chemistry Timeline of Activities
- Table 5 – Emergency Plan Implementation
- Table 6 – Emergency Plan Implementation Timeline
- Table 7 – On-shift Staff Usage
- Table 7A – On-shift Usage Table for First 6 Hours
- Table 8 – Strategy Resource Loading
- Table 9 – Communication
- Table 10 – Augmenting Emergency Response Organization

Security Considerations

Existing coping and planned mitigation strategies do not require the use of Security Officers to perform duties unrelated to their assigned roles. Tasks assigned for FLEX response are consistent with their normal duties and assigned as non-routine collateral duties. Security Officers will perform functions within their current roles such as monitoring and controlling site access, providing for ease of access to emergency equipment and pathways, and providing compensating measures for any vital area doors that may need to remain open to facilitate room environmental conditions.

Appendix 1 - Tables

Table 1 – On-shift Positions Roles

Line	On-shift Position	Reference	Role in Table#/Line#	Action Required?
1.	Shift Manager (OPS1)	Fermi Emergency Plan, Rev 44	T2L1 T5L1 T5L2 T5L3 T5L6 T5L9	Yes – Note 2
2.	Control Room Supervisor (OPS2)	Fermi Emergency Plan, Rev 44	T2L2	Yes – Note 2
3.	Control Room NSO1 –RO (OPS3)	Fermi Emergency Plan, Rev 44	T2L3	Yes – Note 2
4.	H11P603 NSO2 – (OPS4)	Fermi Emergency Plan, Rev 44	T2L4	Yes – Note 2
5.	Shift Technical Advisor (OPS11)	Fermi Emergency Plan, Rev 44	T2L5	Yes – Note 2
6.	Patrol NSO/Fire Brigade Leader – NSO3 (OPS5)	Fermi Emergency Plan, Rev 44	T2L6	Yes – Note 2
7.	Reactor Building/Fire Brigade 1 – NO (OPS6)	Fermi Emergency Plan, Rev 44	T2L7	Yes – Note 2
8.	Turbine Building/Fire Brigade 2 – NO (OPS7)	Fermi Emergency Plan, Rev 44	T2L8	Yes – Note 2
9.	Additional Operator 1/Fire Brigade 3 – NO (OPS8)	Fermi Emergency Plan, Rev 44	T2L9	Yes – Note 2
10.	Additional Operator 2/Fire Brigade 4 – NO (OPS9)	Fermi Emergency Plan, Rev 44	T2L10	Yes – Note 2
11.	Radwaste/Safe Shutdown Operator – NO (OPS10)	Fermi Emergency Plan, Rev 44	T2L11	Yes – Note 2
12.	Radiation Protection Technician (RP1)	Fermi Emergency Plan, Rev 44	T2L13	Yes – Note 2
13.	Radiation Protection Technician (RP2)	Fermi Emergency Plan, Rev 44	T2L14	Yes – Note 2
14.	Chemistry Technician (Chem1)	Fermi Emergency Plan, Rev 44	T2L15 T5L11	No – Note 3
15.	Scheduled Maintenance Technician (M1)	Fermi Emergency Plan, Rev 44	T2L16	Yes – Note 2
16.	Scheduled Maintenance Technician (M2)	Fermi Emergency Plan, Rev 44	T2L17	Yes – Note 2
17.	Communicator Outside Rounds – NO (OPS12)	Operations Conduct Manual MOP03, Rev 37	T2L12 T5L7 T5L8 T5L12	No – Note 1
18.	Security	Fermi Emergency Plan, Rev 44 and Security Plan	T5L14	No – Note 3

Notes:

- 1) Line 17 NO Is an administratively controlled position and not part of RERP minimum staff
- 2) Training required for FSG support actions (see Table 2A).
- 3) Not assigned any FSG duties

**Table 2 - Plant Operations & Safe Shutdown
Minimum Operations Crew Necessary to
Implement AOPs and EOPs, or FSGs if applicable**

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
1.	Shift Manager	Shift Manager (SM)(OPS1)	Licensed Operator Training
2.	Unit Supervisor	Control Room Supervisor (CRS)(OPS2)	Licensed Operator Training
3.	Reactor Operator 1	Control Room NSO – (NSO1) (OPS3)	Licensed Operator Training
4.	Reactor Operator 2	H11P603 NSO-RO – (NSO2) (OPS4)	Licensed Operator Training
5.	Shift Technical Advisor	Shift Technical Advisor (STA) (OPS11)	Licensed Operator Training
6.	Reactor Operator 3	Patrol NSO/Fire Brigade Leader – (NSO3) (OPS5)	Licensed Operator Training
7.	Auxiliary Operator 1	Reactor Building/Fire Brigade 1 – NO (OPS6)	Non-licensed Operator Training
8.	Auxiliary Operator 2	Turbine Building/Fire Brigade 2 – NO (OPS7)	Non-licensed Operator Training
9.	Auxiliary Operator 3	Additional Operator 1/Fire Brigade 3 – NO (OPS8)	Non-licensed Operator Training
10.	Auxiliary Operator 4	Additional Operator 2/Fire Brigade 4 – NO (OPS9)	Non-licensed Operator Training
11.	Auxiliary Operator 5	Radwaste/Safe Shutdown Operator – NO (OPS10)	Non-licensed Operator Training
12.	Auxiliary Operator 6	Communicator – NO (OPS12)	Non-licensed Operator Training

**Other (non-Operations) Personnel Necessary to Implement
AOPs and EOPs, or FSGs if applicable**

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
13.	Radiation Protection Technician	Radiation Protection Technician (RP1)	RP Training
14.	Radiation Protection Technician	Radiation Protection Technician (RP2)	RP Training
15.	Chemistry Technician	Chemistry Technician (Chem1)	Chemistry Training
16.	Maintenance Technician	Scheduled Maintenance Technician (M1)	Maintenance Training
17.	Maintenance Technician	Scheduled Maintenance Technician (M2)	Maintenance Training

Table 2A – Procedure Task Timing to Implement ELAP (First 6 Hours)

Action & Resources				Performance Time 360 Minutes (6 Hours) Period Post-event time: No site access												Color Coding: SAE Site Area Emergency Declaration and Notification – SS1 GE General Emergency Declaration and Notification – SG1 Task-performance time											
Line	Task	Sect.	Resource	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-120	120-140	140-160	160-180	180-200	200-220	220-240	240-260	260-280	280-300	300-320	320-340	340-360	
1	20.300.SBO Loss of Offsite and Onsite Power – assemble at Control Room and Ops dispatched to attempt CTG and diesel manual starts		17 Minimum shift	Green																							
2	Emergency Classification and Notification Process – Dedicated Emergency Plan Functions and Communication		SM (OPS1) OPS12	SAE – SS1				GE – SG1		Green																	
3	Dedicated Plant Operations		CRS (OPS2) NSO (OPS3) STA (OPS11)	Green																							
4	29.FSG.01:FLEX DC DC Load Shedding - Strip Control Room (CR) DC loads per 29.400.01 Att. 1 Strip Switchgear Room DC loads per 29.FSG.01 Att. 1/2 (path is through Div. 2 Switchgear room down to Relay Room (RR))	Att. 1 and 2	OPS4 OPS7 OPS8					Green																			
5	29.FSG.08: HPCI Defeats HPCI/RCIC Protection - Preserve HPCI minimum flow logic, Barometric Condenser logic and defeat all other HPCI trips and isolations per 29.FSG.08	3.1 -3.5 4.1.1; & 4.2.2.	OPS7 OPS8							Green																	
6	29.FSG.01:FLEX DC DC Restoration- In Div. 1 Switchgear room, remove MCC 72B-2A positions for electrical protection for BID.	6.1 - 6.3	OPS7 OPS8													Green											
7	29.FSG.01:FLEX DC DC Restoration - In Div. 2 Switchgear room, remove MCC 72F-2A positions for electrical protection for BID.	6.4- 6.6	OPS7 OPS8																								
8	29.FSG.01:FLEX DC DC Restoration - Hook up FLEX Generator N cables to FSF #1 switchgear (K1101S002A). Report hookup to P603 via Satellite Phone.	4	OPS6 OPS5 M2					Green																			
9	29.FSG.02:FLEX Water Debris Removal - When debris cleared, drive FLEX Truck to south end of VBS section.	3.5	M1						Green																		
10	29.FSG.01:FLEX DC DC Restoration - Hook up FLEX Generator N cables to FSF #1 switchgear (K1101S002A). Report hookup to P603 via Satellite Phone.	5	OPS9 OPS10						Green																		
11	29.FSG.01:FLEX DC DC Restoration-Hook up FLEX Generator N cables to FSF #1 switchgear (K1101S002A). Report hookup to P603 via Satellite Phone.	7	OPS4 OPS8																								
12	29.FSG.04:FLEX AC AC Load Restoration Div. 1 - Work with H11P603 to establish protection for inserting BID in 72B position 2C. H11P603 controls power at FSF#1. Protection established per 29.FSG.04.	3.1	OPS4 OPS7 OPS8														Green										

Table 2A – Procedure Task Timing to Implement ELAP (First 6 Hours)

Action & Resources				Performance Time 360 Minutes (6 Hours) Period Post-event time: No site access													Color Coding:										
Line	Task	Sect.	Resource	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-120	120-140	140-160	160-180	180-200	200-220	220-240	240-260	260-280	280-300	300-320	320-340	340-360	
23	29.FSG.05: Containment Cooling Containment Cooling: FLEX Water Shift HPCI from minimum Flow mode to Bleed mode by opening E4150F008.	4.1.5 – 4.1.8	OPS5																								
24	29.FSG.04: FLEX AC Restore 72E Positions 5B (Battery Fans/RPS) and 5A (Div. 1 RHR valves).	3.2	OPS4 OPS7																								
25	29.FSG.02: FLEX Water Relieves OPS 10 monitoring DG and Pumps	N/A	RP1																								
26	29.FSG.10: Diesel Air Compressor CONNECTION AND STARTUP OF FLEX AIR COMPRESSOR & SUPPLING FLEX AIR TO NIAS	3	M1 M2																								
27	29.FSG.10: Diesel Air Compressor CONNECTION AND STARTUP OF FLEX AIR COMPRESSOR & SUPPLING FLEX AIR TO NIAS	4	OPS10																								

Table 2B – Procedure Task Timing to Implement ELAP (Hours 7-24)

Action & Resources				Performance Time 7-24 Period Post-Event Time: Limited Site Access										Color Coding:										
Line	Task	Sect.	Resource	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
28	AEOF is functional and coordination of movement of select personnel to the site begins. Note 1			Task performance time																				
29	Emergency Classification and Notification Process – Dedicated Emergency Plan Functions and Communication		SM (OPS1) OPS12	Task performance time																				
30	Dedicated Plant Operations		CRS (OPS2) NSO (OPS3) STA (OPS11)	Task performance time																				
31	Replacement On-Shift Staff (17) and Security personnel transported to site and turnover and assume duties.			Task performance time																				
32	Extra Maintenance and Operations and Security personnel transported to Site				Task performance time																			
33	29.FSG.02:FLEX Water Monitoring DG and Pumps		RP1	Task performance time																				
34	Monitoring DG and Pumps – alternating personnel		ERO-1 ERO-2		Task performance time																			
35	29.FSG.17:FLEX FUEL MANAGEMENT Refueling operations		ERO-3 ERO-4 ERO-5 ERO-6		Task performance time																			
36	ERO EP/BDB Procedures ERO assist with Emergency Plan Duties & ORO and NRC Communications from AEOF/TSC and EOF		TSC Emergency Director TSC Communicator	Task performance time																				
37	ERO EP/BDB Procedures SAFER Site Point Of Contact (SPOC) Coordination at AEOF/TSC and EOF		EOF Communicator	Task performance time																				
38	ERO EP/BDB Procedures Engineering staff reviewing plant data and strategies at AEOF/TSC and EOF		Technical Engineer Operations Liaison Support Engineers	Task performance time																				
39	ERO EP/BDB Procedures Coordination of the Corporate Response Plan AEOF/TSC and EOF		Emergency Officer and staff	Task performance time																				
40	Additional ERO transported to site																							
41	29.FSG.15 Preparation for connection of SAFER 4160 VAC generators at Fermi 2		ERO-7 ERO-8 ERO-9 ERO-10																					
42	29.FSG.15 Coordination and set up of the Onsite and Offsite Staging for Phase 3 equipment at AEOF, Airport, and Fermi 2		TSC & EOF Security Advisor ERO Support Personnel																					

Note 1 - The AEOF will assemble the offsite responders and activate. ERO members will be transported to the Fermi site based on the priority of support needed. The TSC and EOF will activate as soon as possible and activities will transfer from the AEOF to the site.


Table 3 – Firefighting

Line	Performed By	Task Analysis Controlling Method
1.	Not required by scenario	N/A
2.	Not required by scenario	N/A
3.	Not required by scenario	N/A
4.	Not required by scenario	N/A
5.	Not required by scenario	N/A

Notes: Fire Brigade response not required for this event.

Table 4 – Radiation Protection & Chemistry

Line	Position Performing Function/Task	Performance Time Period After Event Initiation																											
		Minutes – Hour 1					Hour																						
		0-10	10-20	20-30	30-40	40-50	50-60	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1.	In-Plant Survey None Identified																												
2.	Out of Plant Survey None Identified																												
3.	Personnel Monitoring None Identified:																												
4.	Job Coverage None Identified																												
5.	Offsite Radiological Assessment																												
6.	Other Site-Specific RP – None Identified:																												
7.	Chemistry function/task #1 – Describe: None Identified																												
8.	Chemistry function/task #2 – Describe: None Identified																												

 Task performance time

No RP or Chemistry functions were performed during the initial or transition phase response of the first 6 hours.

- No surveys were required.
- Based on the location entered to perform actions during the initial and transition phase, no special RP briefs or coverage was required.
- There is no release. Field Teams were not dispatched until after the 6 hour period. Restricted site access prohibited team dispatch. Field Teams were dispatched from the AEOF after the 6 hour period.

Table 5 – Emergency Plan Implementation

Line	Function/Task	On-Shift Position
1.	Declare the Emergency Classification Level (ECL)	Shift Manager
2.	Approve Offsite Protective Action Recommendations	Shift Manager
3.	Approve content of State/local notifications	Shift Manager
4.	Approve extension to allowable dose limits	N/A
5.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	N/A (Note 5)
6.	ERO notification	SM (Note 1)
7.	Complete State/local notification form	Communicator–NO (OPS12)
8.	Perform State/local notifications	Communicator–NO (OPS12) (Note 3)
9.	Complete NRC event notification form	Shift Manager
10.	Activate Emergency Response Data System (ERDS)	N/A (Note 4)
11.	Offsite radiological assessment	Chem1 (Note 2)
12.	Perform NRC notifications	Communicator–NO (OPS12) (Note 3)
13.	Perform other site-specific event notifications (e.g., Institute of Nuclear Power Operations (INPO), American Nuclear Insurers (ANI), etc.)	N/A (Note 6)
14.	Personnel accountability	Security

Note 1 – Emergency Callout System (ECOS) will be activated, however, self-activation of ERO based on event (wide spread loss of grid)

Note 2 – Dose Assessment capability is impacted by ELAP – limited data available to perform dose assessment. In addition, no radiological release exists – dose assessment not required. Automatic protective action recommendations (PARs) implemented at General Emergency (GE).

Note 3 – State/local and NRC notifications are completed using satellite phones


Note 4 – ERDS is unavailable as a result of loss of Communication Building

Note 5 – Public address (PA) system is unavailable due to BDBEE

Note 6 – INPO notified via ECOS. Other organizations notified after ERO augmentation.

Table 6 – Emergency Plan Implementation Timeline

Function/Task	On-shift Position	Time from Event Initiation (Minutes)																						
		3	6	9	12	15	18	21	24	27	30	35	40	45	50	55	60	65	70	75	80	85	90	
Evaluate & Declare the Emergency	SM	Site Area Emergency											General Emergency											
Approve Offsite PARs	SM																							
Approve extension to allowable dose limits	N/A																							
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.) (Note 5)	N/A																							
ERO notification	SM																							
Complete State/local notification form	NO (OPS12)						SAE																	
Approve State/local notifications	SM																							
Perform State/local notifications	NO (OPS12)																							
Complete NRC event notification form	SM																							
Activate ERDS	N/A																							
Offsite radiological assessment (Note 2)	N/A																							
Perform NRC notifications	NO (OPS12)																							
Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	N/A (Note 6)																							
Personnel accountability	Security																							

 Task performance time

- Notes:**
 Note 1 – ECOS will be activated, however, self-activation of ERO based on event (wide spread loss of grid)
 Note 2 – No radiological release. Dose Assessment capability is impacted by ELAP – limited data available to perform dose assessment. Initial PARs implemented at GE.
 Note 3 - State/local and NRC notifications are completed using satellite phones
 Note 4 – ERDS is unavailable as a result of loss of Communication Building
 Note 5 - PA system is unavailable due to BDBEE
 Note 6 – INPO notified via ECOS. Other organizations notified after ERO augmentation.

Table 7 - On-shift Staff Usage

		Staff Usage (Emergency Plan Minimum Staffing is the 1 st 16people)																																			
Line	Position	Minutes																Hour						2 Hour													
		0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-120	120-140	140-160	160-180	180-200	200-220	220-240	240-260	260-280	280-300	300-320	320-340	340-360	4	5	6	7	8	9	10	12	14	16	18	20	22
1	OPS1 SM	Emergency Director - Emergency Plan - Periodic Duty																								Relieved By Next Shift/TSC Director											
2	OPS2. CRS	Control Room Oversight																								Relieved By Next Shift											
3	OPS3 NSO	Plant Monitoring and Manipulation From Control Room																								Relieved By Next Shift											
4	OPS4 H11P60 3	SBO Response		FSG.01									FSG.01	FSG.04		FSG.05		FSG.04																			
5	OPS5 Patrol	SBO Response		FSG.01														FSG.05																			
6	OPS6 NO	SBO Response		FSG.01																																	
7	OPS7 NO	SBO Response		FSG.01		FSG.08		FSG.01						FSG.04		FSG.05		FSG.04																			
8	OPS8 NO	SBO Response		FSG.01		FSG.08		FSG.01						FSG.04		FSG.05																					
9	OPS9 NO	SBO Response				FSG.01				FSG.02																											
10	OPS10 NO	SBO Response				FSG.01				FSG.02						FSG.10																					
11	OPS11 STA	STA assigned Duties and Emergency Plan – Periodic Duty																								Relieved By Next Shift											
12	RP1	Assemble at Control Room											FSG.02				Equipment Monitoring Outside						Relieved By Next Shift														
13	RP2	Assemble at Control Room										FSG.02																									
14	Chem1	Assemble at Control Room																																			
15	M1	Assemble at Control Room				Debris Removal				FSG.02						FSG.10																					
16	M2	Assemble at Control Room		FSG.01								FSG.10																									
17	OPS12 Comm.	Communications - Emergency Plan - Periodic Duty																								Relieved By Next Shift/TSC Communicator											

 Task performance time – includes travel time.

Table 7A – On-shift Usage Table for First 6 hours

Resource	Total Min of 360	Utilization	Comments
OPS1 (Shift Mgr.)	360	100.00%	Emergency Plan - Periodic Duty
OPS2 (Control Room Sup. CRS)	360	100.00%	Control Room Oversight
OPS3 (CR NSO/RO)	360	100.00%	Plant Monitoring and Manipulation From Control Room
OPS4 (H11P603 NSO/RO)	195	54.17%	
OPS5 (Patrol NSO/RO)	41	11.39%	
OPS6 (NO)	135	37.50%	
OPS7 (NO)	294	81.67%	
OPS8 (NO)	249	69.17%	
OPS9 (NO)	194	53.89%	
OPS10 (NO)	277	76.94%	
OPS11 (STA)	360	100.00%	STA assigned Duties and Emergency Plan – Periodic Duty
OPS12 RERP Communicator (NO)	360	100.00%	Communications - Emergency Plan - Periodic Duty
M1	153	42.50%	
M2	68	18.89%	
Chem1	0	0.00%	
RP1	170	47.22%	
RP2	80	22.22%	

Table 8 - Strategy Resource Loading

Strategy	Description	Resources	Duration (Minutes)	Notes
29.400.01	FLEX			
	Attachment 1-DC Load Shedding	OPS4	10	
29.FSG.01	FLEX DC			
	Attachment 1 & 2-DC Load Shedding	OPS7 (NO) OPS8 (NO)	15	
	Sec 6.1 - 6.3 and Sec 6.4- 6.6 - DC Restoration	OPS7 (NO) OPS8 (NO)	34	
	Sec 4 - DC Restoration	OPS5 (NO) OPS6 (NSO) M2	110	
	Sec 5 - DC Restoration	OPS9 (NO) OPS10 (NO)	52	
	Sec 7 - DC Restoration	OPS7 (NO) OPS8 (NO)	20	
	Sec 7 - DC Restoration	OPS4 (NSO)	15	
	Total	7 positions		
29.FSG.02	FLEX Water			
	Attachment 1 & 2 - DC Load	OPS7 (NO) OPS8 (NO)	15	
	3.5 – Debris Removal	M1	40	
	3.6.1 & 3.6.2 - FLEX Water Deployment (Inside PA)	M1	15	Security opens gates and access hole
	3.6.3- FLEX Water Deployment (Inside PA)	RP2 M1	15	
	3.6.4 & 3.6.4 - FLEX Water Deployment (Inside PA)	RP2 M1	35	
	3.7.1 - 3.7.5 - FLEX Water Deployment (Outside PA)	OPS9 (NO) OPS10 (NO)	33	
	3.7.6 - 3.7.10 - FLEX Water Deployment (Outside PA)	OPS9 (NO) OPS10 (NO) RP-01	20	
	3.7.11 - 3.7.14 - FLEX Water Deployment (Outside PA)	OPS9 (NO) OPS10 (NO) RP1	35	
	3.7.11 - 3.7.14 - FLEX Water Deployment (Outside PA)	RP2	50	
	3.7.15 - 3.7.17 - FLEX Water Deployment (Outside PA)	OPS9 (NO) OPS10 (NO)	10	
	3.7.18 - 3.7.22 - FLEX Water Deployment (Outside PA)	OPS9 (NO) OPS10 (NO)	15	
	4 - FLEX Water Filling Hose and pump operation	OPS10 (NO)	20	
	Monitoring pump and DG	RP1	Ongoing until ERO	Relieved OPS 10
	Total	7 positions		
29.FSG.03	RPV PRESSURE CONTROL			
		OPS3 (NSO)	As needed	Completed as part of AOP
		OPS2 (CRS)	As needed	Completed as part of AOP
29.FSG.04	FLEX AC			
	3 - AC Load Restoration Div. 1	OPS4 (NSO)	78	
	3 - AC Load Restoration Div. 1	OPS7 (NO) OPS8 (NO)	71	
	3.2 - AC Load Restoration Div. 2	OPS4 (NSO) OPS7 (NO)	62	

Table 8 - Strategy Resource Loading

Strategy	Description	Resources	Duration (Minutes)	Notes
29.FSG.12	FLEX FP INJECTION			Completed at same time
29.FSG.05	CONTAINMENT COOLING			
	3.1- FLEX Water/Bleed Path Alignment	OPS7 (NO)	15	
	4.1- FLEX Water/Bleed Path Alignment	OPS8 (NO)	37	
	3.1 & 4.1- FLEX Water/Bleed Path Alignment	OPS4 (NSO)	28	
	3.3, 4.1.5-4.1.8 - FLEX Water/Bleed Path Alignment	OPS5 (NSO)	8	
29.FSG.07	ARI DEFEAT	OPS7 (NO)	40	Completed at same time
29.FSG.08	HPCI DEFEATS	OPS8 (NO)		
29.FSG.09	RCIC TURBINE TRIP/ISOLATION DEFEATS TO SUPPORT FLEX			
29.FSG.10	DIESEL AIR COMPRESSOR			
	4 – position diesel	OPS10 (NO)	50	
	3 – route hoses	M1 M2	40	
29.FSG.14	HPCI/RCIC OIL COOLING			
	Hook up hose	Unknown - initially assigned to fire brigade qualified persons.	85	This task was assigned after all other tasks were completed. Numerous resources were available. Task was not further evaluated because of undetermined qualifications to wear fire suits and if RP job coverage was needed.



Time Sensitive Task
Resource Limiting Task 29.FSG.01 & 29.FSG.02

29. FSG.06, COMMUNICATION: manages enhanced communication performed as part of other tasks
 29. FSG.11, FLEX RPV INJECTION: Contingency, not evaluated
 29. FSG.13, CONTAINMENT VENTING, Contingency, not evaluated

Table 9 – Communication Table

TASK	METHOD	Assigned Person	Number	Source	Satellite Phone Used (Simulated)
Notify ORO from Control Room	Installed Satellite Phone	RERP Communicator (OPS12)	1	CR Gateway	SAT 28
Notify NRC from Control Room	Installed Satellite Phone	RERP Communicator (OPS12)	1	CR Gateway	SAT 28
Notify SAFER from Control Room and NRC Continuous, when requested	Installed Satellite Phone	SM (OPS01)	1	CR Gateway	SAT 1 CR
Communicate from Control Room with NOs for SBO and FLEX strategies	Installed Satellite Phone Handheld Radio	H11P603 (OPS04)	1	CR Gateway	SAT 2 CR
Communicate with NOs for strategies	Handheld Satellite Phone Handheld Radio	Patrol NSO (OPS05)	1	OSC Cabinet	SAT 35
Communicate with CR and Patrol NSO	Handheld Satellite Phone Handheld Radio	OPS06	1 each	OSC Cabinet	SAT 16
Communicate with CR and Patrol NSO	Handheld Satellite Phone Handheld Radio	OPS09	1 each	OSC Cabinet	SAT 17
FLEX Strategies	Handheld Radio	OPS 07	1	OSC Cabinet	Note 1
FLEX Strategies	Handheld Radio	OPS 08	1	OSC Cabinet	Note 1
FLEX Strategies	Handheld Radio	OPS 10	1	OSC Cabinet	Note 1
FLEX Strategies	Handheld Radio	RP01	1	OSC Cabinet	Note 1
FLEX Strategies	Handheld Radio	M01	1	OSC Cabinet	Note 1
FLEX Strategies	Handheld Radio	RP02	1	OSC Cabinet	Note 1
FLEX Strategies	Handheld Radio	M02	1	OSC Cabinet	Note 1

Note 1 – SAT 34 is at the FLEX Support Facility 1 and SAT 33 is at FLEX Support Facility 2 to allow communication from each building.

Table 10 – Augmenting Emergency Response Organization

ERO Position	Number on Team	Total
TSC Emergency Director	1	4
TSC Technical Engineer	1	4
TSC Operation Liaison	1	4
TSC Tech. Comm.	1	5
TSC NRC Tech. Comm.	1	4
TSC Communicator	1	4
TSC Nuclear Safety Advisor	1	4
TSC Mechanical Engineer ^{Note 1}	1	5
TSC Electrical Engineer ^{Note 1}	1	5
TSC I & C Engineer ^{Note 1}	1	5
TSC Thermal/Hydraulic Engineer ^{Note 1}	1	5
TSC System Engineer ^{Note 1}	1	5
TSC Emergency Status Engineers	1	4
TSC Rad. Protection Advisor	1	4
TSC Asst. Rad. Protection Advisor	1	4
TSC Dose Assessor	1	4
TSC Rad. Chem Advisor	1	4
TSC Administrator	2	8
TSC Administrative Support	1	4
TSC Security Advisor	1	4
OSC Coordinator	1	4
Asst. OSC Coordinator	2	8
OSC Maintenance Coordinator	1	4
OSC Asst. Maintenance Coordinator	2	8
EOF Emergency Officer	1	4
EOF Nuclear Ops Advisor	1	4
EOF Rad. Prot. Coordinator	1	4
EOF Asst. Rad. Prot. Coordinator	1	4
EOF Dose Assessor	1	4
EOF Administrator	2	8
EOF Communicator	2	8
EOF Status Board Clerk	2	8
EOF Public Info. Coordinator	1	4
EOF RET Coordinator	1	4
EOF Administrative Support	1	4
EOF Security Advisor	1	4
RET Drivers	4	16
RET Samplers	2	8
State Liaison	1	4
Monroe County Liaison	1	4
Wayne County Liaison	1	4

Table 10 – Augmenting Emergency Response Organization

Notes

1. Positions make up “Support Engineer” defined in Emergency Plan (1 individual out of pool of positions required to meet plan commitments, typical staffing includes 5).
2. The ERO member total is typical for a 4 team rotation and may vary as a result of retirements, transfers, etc.
3. The ERO reports to the Alternate Emergency Operations Facility in the event of a wide spread communications loss.
4. Available methods of access to the Fermi 2 site from land, air and water include:
 - Land Routes
 - a. The primary access to the Fermi 2 site is via a wide road that is surrounded by open farm fields. There are limited structures that may impact access.
 - b. A separate (over mile distant) access route to an alternate site access point is available.
 - c. The primary and alternate access routes are accessible from the local road network from many directions.
 - d. Two major interstate highways provide near site access to Fermi 2.
 - e. Fermi 2 has coordinated plans with both Monroe and Wayne County and the State of Michigan governments for assistance to maintain site access.
 - Air Access
 - a. Three on-site helicopter pads are located at the Fermi 2 site (Two are required by the Emergency Plan)
 - Water Access
 - a. Access to the Fermi 2 site from Lake Erie is available within the General Service Water intake area and at a construction barge slip.
5. Following a beyond design basis external event, on-site Radiation Protection (RP) Technicians are available in sufficient numbers to support performance of assigned emergency plan functions and the expanded response capability.
6. For ERO augmentation, the emergency plan implementing procedure EP-220 requires a total of 14 Radiation Protection (RP) Technicians. As of February 12, 2015, there are a total of 43 RP qualified personnel (qualification number SAP 42001722) and 36 Radiological Emergency Teams (RET) qualified personnel (qualification number SAP 42001591). The qualified staff varies from month to month and the number of personnel provided here represents only a benchmark that minimum qualified staffing for ERO augmentation is available to support the emergency plan, as well as an ELAP.
7. For ERO augmentation, total number of OSC personnel required for Damage Control and Rescue is five (5) (EP-204-01). On February 12, 2015, there are a total of 212 qualified personnel (qualification number SAP 42001593). The qualified staff varies from month to month and the number of personnel provided here represents only a benchmark that minimum qualified staffing for ERO augmentation is available to support the emergency plan, as well as an ELAP.