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U. S. Nuclear Regulatory Commission
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Edwin I. Hatch Nuclear Plant – Units 1 and 2
Response to Request for Information Pursuant to Title 10 CFR 50.54(f)
Regarding Recommendations 2.1, 2.3, and 9.3, of the NTTF Review of
Insights from the Fukushima Daiichi Accident, dated March 12, 2012

References:

1. NRC Letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Daiichi Accident*, dated March 12, 2012. (ML12053A340).
2. Southern Nuclear Operating Company Letter, *60-Day Response to NRC Letter, Request for Information Pursuant to Title 10 CFR 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the NTTF Review of Insights from the Fukushima Daiichi Accident*, dated May 9, 2012. (NL-12-0797)

Ladies and Gentlemen:

On March 12, 2012, the NRC staff issued a letter entitled, *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 Daiichi Accident*. Enclosure 5 of the letter contains specific Requested Actions and Requested Information associated with Recommendation 9.3 for Emergency Preparedness (EP) programs.

In accordance with Reference 1, on May 9, 2012, Southern Nuclear Operating Company (SNC) submitted Reference 2, an alternative course of action for providing the requested information. The alternative course of action included revised information due dates and the basis for those dates. Enclosed is the Edwin I. Hatch (HNP) Phase 2 On-Shift Staffing Analysis associated with NTTF Recommendation 4.2 as described in Reference 2.

The HNP Phase 2 On-Shift Staffing Analysis was conducted using the guidance of NEI 10-05, NEI 12-01, and NEI 12-06. No conflicts or overlaps in functions or tasks required to be performed by on-shift operations and support personnel were identified during this analysis.

This letter contains no new NRC commitments. If you have any questions, please contact John Giddens at 205.992.7924.

Mr. C. R. Pierce states he is the Regulatory Affairs Director of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and, to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,



C. R. Pierce
Regulatory Affairs Director

CRP/JMG/TWS

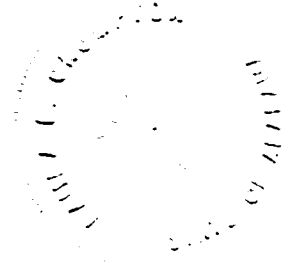
Sworn to and subscribed before me this 9 day of October, 2014.



Notary Public

My commission expires: 10-8-2017

Enclosure: HNP On-Shift Staffing Analysis Phase 2 Report



U. S. Nuclear Regulatory Commission

NL-14-0889

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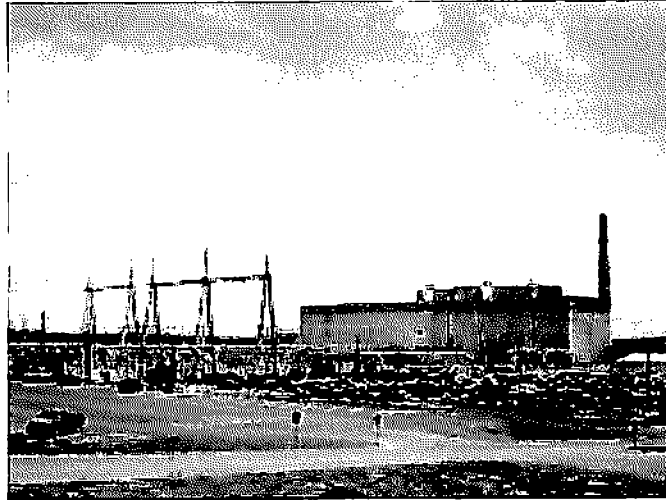
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**Edwin I. Hatch Nuclear Plant – Units 1 and 2
Response to Request for Information Pursuant to 10 CFR 50.54(f)
Regarding Recommendations 2.1, 2.3, and 9.3, of the NTF Review of
Insights from the Fukushima Daiichi Accident, dated March 12, 2012**

HNP On-Shift Staffing Analysis Phase 2 Report

EDWIN I. HATCH NUCLEAR PLANT



FUKUSHIMA RESPONSE

NEI 12-01 ON-SHIFT STAFFING ANALYSIS

PHASE 2 REPORT

JULY 17, 2014

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Introduction

This report documents the analysis performed to meet the commitments for the conduct of a staffing assessment for a Beyond Design Basis External Event (BDBEE) for a multi-unit site affecting all units. This study was directed by NEI 12-01 and 12-06 to assess the current response to an Extended Loss of Power (ELAP) incident impacting the site. This report addresses Phase 2 of the study applicable to implementation of existing and FLEX strategies for prolonged loss of offsite power applicable to multi-unit sites during the initial and transition phases of the event. This analysis was performed to support the Hatch Nuclear Plant (HNP) Units 1 and 2 response.

This analysis was conducted using draft FLEX Strategy Implementation Guidelines and EOP revisions. Use of these procedures is acceptable in accordance with NEI 12-01, page 4, Section 1.3.1.2:

“In accordance with the Order, each licensee must develop new strategies for mitigating the effects of beyond-design-basis external events. To ensure accurate results, the staffing assessment for response functions related to NTTF Recommendation 4.2 must be based on actions delineated in the procedures and guidelines developed in response to the Order. Once the site-specific actions associated with the new response strategies are defined (e.g., down to the procedure or guideline step level), the staffing needed to perform these actions can be assessed with the necessary level of accuracy.”

Staffing Assessment Process Overview

The NEI 12-01 On-shift Staffing Analysis (OSA) Phase 2 was conducted by a multi-disciplined team using site procedures to determine if tasks have been sufficiently analyzed for performance by the minimum on-shift staff. Task areas analyzed include:

- Event Mitigation (Event Flowcharts, Emergency Operating Procedures, Abnormal Operating Procedures (AOP), other site procedures specific to the extended loss of AC power)
- Health Physics (HP) and Chemistry Technician Functions (as specified in site response procedures)
- Emergency Preparedness Functions (NUREG-0654 Table B-1/ISG -01)

Existing strategies for responding to an extended loss of AC power affecting all on-site units and draft Flex Support Guidelines (FSGs) were evaluated in the On-shift Staffing Analysis. The staffing assessment also addressed the ability of the on-shift staff to perform any required emergency response functions that would be degraded or lost prior to the delayed arrival of the augmented Emergency Response Organization (ERO).

The NEI 12-01 Phase 2 analysis requires that the extended loss of AC power scenario be evaluated using the minimum staffing in the Emergency Plan along with the supplemental staff allowed by the minimum administrative staffing. The table below summarizes the available personnel, including shared resources for a two unit event, used for performance of the NEI 12-01 Phase 2 staffing assessment.

Table 1 – HNP On-Shift Staffing Table

Based on the On-Shift Staffing Plan of Record (Performed for NEI 10-05)		Supplemental Administrative Staff (NEI 12-06 assumption)
Position	On-shift	On-shift
Shift Manager	1	
Shift Supervisor (SRO)	2	
Shift Technical Advisor (STA)	1	
Nuclear Plant Operators (RO)	4	
Shift Support Supervisor (FBL) ^{Note 1}	1	
System Operators ^{Note 1}	7	
Mechanical Maintenance	1	
Electrical Maintenance	2	
I&C Technician	1	
HP Technicians ^{Note 2}	3	
Chemistry Technicians	1	
Offsite surveys (onsite) ^{Note 3}	2	
Security ^{Note 2}	Sec plan	
Total:	26	
System Operator		1
HP Supervisor		1
Maintenance Supervisor		1
Total:		3

Note 1 Fire Brigade is a collateral duty of Shift Support Supervisor and four (4) System Operators

Note 2 Rescue Operations/First Aid is a collateral duty of HP and Security Personnel and consists of two (2) designated personnel

Note 3 Offsite surveys onsite function provided by another Chemistry Technician or HP Technician and a Warehouseman

NEI 12-01 Phase 2 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 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 Strategy Implementation Guidelines (SIG), were successfully implemented, using on-shift resources during the first six (6) hours and augmented responders from six (6) to twenty-four (24) hours.

The analysis identified the two most personnel resource asset limiting FLEX strategies as:

- SIG-2, 600V Alt Power, NMP-OS-019-262/282
- SIG-3, Core Cooling, NMP-OS-019-263/283

Program Development Follow-up Actions

1. Revise procedure 34AB-R22 to dispatch Security with the System Operator dispatched to the emergency diesel generators or verify if Operations has key for emergency diesel generator room.
2. Assess the capacity of the Security batteries to enable operation of CAD key doors during an ELAP event.
3. Determine method to verify Turbine Zero speed during an ELAP condition.
4. Evaluate Security officer availability for dispatch with system operators to open doors for access while performing response actions during an ELAP BDBEE.
5. Resequence the steps in 31EO-TSG-003 to ensure steps are performed as needed to respond appropriately to the event.
6. Add guidance to defeat RCIC Suction Swap earlier in the Station Blackout (SBO) procedure after step 4.7.3.2 (≤ 30 min).
7. Add guidance to 31EO-TSG-003 to swap RCIC suction to the Torus at 6.5 hours.
8. Refuel floor Tornado Vents are not adequately covered.
9. Re-sequence steps to ensure that the 60 kW generator and Control Building ventilation fans are on by $t=10.0$ hours.
10. Add guidance to 31EO-TSG-003 to repower the GAI-Tronics[®] with the 600 kW generator at $t=12.0$ hours.
11. Provide appropriate guidance to align cooling water to MCREC chillers after FLEX pump installation at $t=12.0$ hours.
12. The following items need to be included in the OIP:
 - a. FLEX Pump is time sensitive for MCREC (10 hours) vice CST makeup (20 hours)
 - b. FLEX 600 v generator
13. Identify power supply for RapidCom connected equipment
 - a. Power supply for VOIP CISCO phones in the TSC and main Control Room
 - b. Use of vital AC outlets at the Operator desk
14. Determine the feasibility of qualifying system operators to perform ENN/ENS communications.
15. Validate the Phase 2 staffing assessment results against the final approved procedures/guidelines. If necessary, include any identified discrepancies in the HNP corrective action program.

SNC will address these actions as part of the FLEX Project such that Staffing Study conclusions are not impacted.

Phase 2 Staffing Assessment Details

The Phase 2 On-shift Staffing Analysis (OSA) for HNP was conducted on July 16 and 17, 2014, using the guidance of NEI 12-01, NEI 12-06 and NEI 10-05.

The following personnel were present to complete the assessment:

Table 2 – Staffing Analysis Team

Personnel (Position/Title)	Number	Organization/Department	Experience
Shift Manager (Senior Reactor Operator)	1	Operations	SRO/ERO
System Operator (SO)	2	Operations	SO/ERO
SAM Corporate Manager	1	Severe Accident Management	Management
SAM Program Manager	1	Severe Accident Management	SRO
SAM Site Project Lead Supervisor	1	Severe Accident Management	Engineering
HP Supervisor	1	Health Physics	HP/ERO
Maintenance Supervisor (OSC Manager)	2	Maintenance	Maintenance/ERO
Security Supervisor	1	Security	Security/ERO
EP Specialist	1	Emergency Planning	EP
FLEX Training	1	Fukushima Response Team	SRO
FLEX Procedure Writer	2	Fukushima Response Team	SRO
EP Specialist	3	EP Consulting, LLC	EP

SAM – Severe Accident Management

Assumptions

The extended loss of AC power event was evaluated using the following assumptions, consistent with NEI 12-01, NEI 12-06 and applicable assumptions from NEI 10-05.

NEI 12-01 - Assumptions for Staffing Assessment:

1. A large-scale external event occurs (earthquake) that results in:
 - all on-site units affected
 - extended loss of AC power
 - impeded access to the units
2. Initially, all on-site reactors are operating at full power and are successfully shut down.
3. A Hostile Action directed at the affected site does not occur during the period that the site is responding to the event.
4. The event impedes site access as follows:
 - A. Post-event time: 6 hours – No site access. This duration reflects the time necessary to clear roadway obstructions, use different travel routes, mobilize alternate transportation capabilities (e.g., private resource providers or public sector support), etc.
 - B. Post-event time: 6 to 24 hours – Limited site access. Individuals may access the site by walking, personal vehicle or via alternate transportation capabilities (e.g., private resource providers or public sector support).
 - C. Post-event time: 24+ hours – Improved site access. Site access is restored to a near-normal status and/or augmented transportation resources are available to deliver equipment, supplies and large numbers of personnel.
5. On-shift personnel are limited to the minimum complement allowed by the site emergency plan. Additional administrative staff is designated as supplemental to the emergency plan minimum staff (see Assumption 28).

6. The staffing assessment uses the applicable actions from the Station Blackout (SBO) coping strategies in place at the time of the assessment.
7. The staffing assessment includes the INPO IER improvement actions already implemented at the time of the assessment.
8. All equipment credited in current coping strategies remains available for use.

NEI 10-05 - Applicable Assumptions:

9. On-shift personnel can report to their assigned response locations within timeframes sufficient to allow for performance of assigned actions.
10. The on-shift staff possesses the necessary Radiation Worker qualifications to obtain normal 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.
11. 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.
12. On-site security organization: Performance of this function 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.
13. Individuals holding the position of Radiation Protection Technician or Chemistry Technician are qualified to perform the range of tasks expected of their position.
14. 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 emergency notification to an Offsite Response Organization (ORO) or the NRC.
15. 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.
16. The analyzed events occur 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). For purposes of this analysis, and consistent with NEI 12-01 assumption #4, 360 minutes (6 hours) will be used as the time period for the conduct of on-shift ERO response actions.

NEI 12-06 Assumptions

17. Prior to the event the reactor has been operating at 100 percent rated thermal power for at least 100 days or has just been shut down from such a power history as required by plant procedures in advance of the impending event.
18. 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.
19. No specific initiating event is used. The initial condition is assumed to be a loss of off-site power (LOOP) at a 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. The LOOP is assumed to affect all units at a plant site.
20. All installed sources of emergency on-site ac power and SBO Alternate ac power sources are assumed to be not available and not imminently recoverable.
21. Cooling and makeup water inventories contained in systems or structures with designs that are robust with respect to seismic events, floods, and high winds, and associated missiles are available.

22. Normal access to the ultimate heat sink 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.
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. Permanent plant equipment that is contained in structures with designs that are robust with respect to seismic events, floods, and high winds, and associated missiles, are available.
25. Other equipment, such as portable ac power sources, portable back up dc power supplies, spare batteries, and equipment for 50.54(hh)(2), may be used provided it is reasonably protected from the applicable external hazards per Sections 5 through 9 and Section 11.3 of this guidance and has predetermined hookup strategies with appropriate procedures/guidance and the equipment is stored in a relative close vicinity to the site
26. Installed electrical distribution system, including inverters and battery chargers, remain available provided they are protected consistent with current station design.
27. No additional events or failures are assumed to occur immediately prior to or during the event, including security events and fires.
28. On-site staff is at site administrative minimum shift staffing levels. All personnel on-site are available to support site response.
29. Reliance on the fire protection system ring header as a water source is acceptable only if the header meets the criteria to be considered robust with respect to seismic events, floods, and high winds, and associated missiles.

Plant Specific Assumptions

30. Plant Instrument Air Compressors are lost at initiation of event.
31. Station Service batteries 1A and 2A - 125/250V DC. These DC busses have an expected capacity of 13.4 hours for Unit 1 with RCIC operation from the control room and 13.3 hours for Unit 2 with RCIC operation from the control room (Reference Table 1-7, Battery Discharge Time Summary Results, SNCH084-PR-002, Rev 2).
32. Station Service batteries 1B and 2B - 125/250V DC. These DC busses have an expected capacity of 17.5 hours for Unit 1 and 16.4 hours for Unit 2 when non-critical loads are secured (Reference Table 1-7, Battery Discharge Time Summary Results, SNCH084-PR-002, Rev 2).
33. Installed communication batteries for site phones have a capability of approximately one (1) hour under anticipated load.
34. Sound powered phones are available for communications with the control room.
35. Hand-held radio batteries have a capability of approximately four (4) hours under anticipated load. However, use of the radios is limited to line of sight communication within three-four (3-4) hours after the loss of vital AC.
36. Plant public address system, GAI-Tronics[®], is available for 12 hours on a dedicated UPS. GAI-Tronics[®] is powered by a FLEX portable generator within 12 hours, ensuring availability of the plant public address system throughout the event.
37. Initial communication will be made via one of the two (2) satellite phones that are maintained in the Control Room. Fourteen (14) telephones will be available in both the main control room and TSC through the RapidCase and RapidComm as the event progresses.
38. CST will provide 100,000 gallons of reactor water makeup for approximately 6.05-7.5 hours (Reference Table 1-12, Onsite Make-up Water Sources and MAAP analysis run (Reference 191), SNCH084-PR-002, Rev 2).
39. Makeup to the Spent Fuel Pool (SFP) is required at the 12 hour point based on calculation, SMNH-98-019.

40. Control Room habitability is assumed to require action at one (1) hour.
41. Fire Protection System is unavailable throughout the 24 hour assessment period.
42. Five (5) battery-operated satellite phones, including extra batteries and chargers are available for use by emergency response personnel for onsite and offsite communications. These units will also be used to contact the Emergency Operations Facility (EOF). Two (2) additional satellite phones, including extra batteries and chargers are available for emergency response in the EOF.
43. All equipment credited in current coping strategies (e.g., B.5.b) remains available for use.
44. The Joint Information Center (JIC)/State Forward Emergency Operations Center (FEOC) is located approximately 22 miles from the site and is available as a staging facility (currently the Hostile Action Based (HAB) event staging location). The JIC is provided with a back-up generator.
45. The EOF is located in Birmingham, Alabama, which is > 250 miles from the site and is available to provide required support.

Methodology

The on-shift staffing assessment was performed using NEI 12-01, NEI 12-06 and NEI 10-05. Subject matter experts and consultants were assembled to provide analysis support. The assessment was conducted via a tabletop procedural analysis using HNP 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. The following provides a summary of the process that was used.

Each on-shift position from Emergency Plan, Table B-1, Rev 34, and any additional administrative on-shift position was entered in Attachment 1, Table 1. For position titles with more than one position holder, a unique sequential number was assigned to each position. The site emergency plan reference that describes the requirement for the position to be on-shift was then entered into column 3 of Appendix 1, NEI 10-05 Table 1. Using only the on-shift positions entered in the table, the following Appendix 1 tables were completed by entering the shift position that fills a described role, or performs a specific function or tasks:

- NEI 10-05 Table 2 - Minimum Operations Crew Necessary to Implement AOPs and EOPs, FSGs or SAMGs if applicable
- Table 2A – Procedural Implementation Timeline of activities corresponding to Table 2
- NEI 10-05 Table 3 – Firefighting (not applicable for this event analysis)
- NEI 10-05 Table 4 – Radiation Protection & Chemistry Time Line of Activities
- NEI 10-5 Table 5 - Emergency Plan Implementation
- Table 5A – E-Plan Implementation Timeline

Following completion of each of the above tables, each on-shift position assigned to the associated table was located on Appendix 1, NEI 10-05 Table 1. For each position, the table number and associated line number was then entered in column 4, "Role in Table#/Line#". If the associated task required additional actions, a Yes was placed in the last column and the additional action recorded in the results section of this report.

The OSA was conducted using the following process:

1. Selection of the multi-disciplined work group
2. Scheduling the tabletop for HNP to allow free access to required procedures and administrative documents
3. Conduct of a pre-job briefing outlining the requirements of NEI 12-01, NEI 12-06 and NEI 10-05
4. Review of the event initial conditions and assumptions
5. Performance of the tabletop procedural analysis
6. Documentation of the results of the tabletop by EP Consulting using the NEI 10-05 forms modified to extend to 24 hours.

This review provided the team with a basic understanding of the event and resulting emergency classifications. The SRO reviewed EOP, AOP and FSG actions and identified them to the team. Specific site procedures referenced during assessment of this postulated event are provided in Table 2A. Resources needed to perform initial and transition phase response actions were identified from the EOP, AOP, or FSG procedures and documented. The team determined when other on-shift resources, such as the RP or Chemistry Technician, would be required and identified the time required to perform expected emergency plan functions. This information was documented on the applicable tables in Appendix 1 of this report. Finally, the on-shift resources and their actions were summarized in the tables using the NEI 10-05 documentation process in Appendix 1, NEI 10-05 Table 1.

Security Considerations

Existing coping strategies do not anticipate 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/protected area access and providing compensating measures for any vital area doors that may need to remain open to facilitate room environmental conditions.

Strategy Resource Loading

An evaluation of each FSG was conducted to determine the resources needed to accomplish the tasks associated with the strategy and the estimated duration of the task.

Table 3 – HNP FLEX Strategy Resource Loading

SIG	Description	Resources	Duration	Notes
SIG-1	4160V ALT POWER NMP-OS-019-261/281	N/A	N/A	Not required during initial or transition phases.
SIG 2	600V ALT POWER NMP-OS-019-262/282	9	4 hours	Time sensitive – DC bus maintenance. Resource limiting
SIG 3	CORE COOLING NMP-OS-019-263/283	7	4 hours	Time Sensitive – Core cooling. Resource limiting
SIG 4	ALT RPV MAKEUP NMP-OS-019-264/284	2	1 hour	Not required during initial or transition phases.
SIG 5	CST TANK MAKEUP NMP-OS-019-265/285	5	2 hours	Time sensitive - core cooling.
SIG 6	CONTAINMENT INTEGRITY NMP-OS-019-266/286	2	1 hour	Time sensitive – hardened vent open.
SIG 7	DIESEL FUEL TANKER NMP-OS-019-257	1 1 1	12 hours 6 hours 3 hours	Periodic after T=10 hrs.
SIG 8	SPENT FUEL POOL MAKEUP NMP-OS-019-268/288	8	2 hours	Dependent upon SIG 3 completion
SIG 9	COMMUNICATIONS NMP-OS-019-259	2	2 hours	
SIG 10	VENTILATION NMP-OS-019-270/290	5 5 3	3 hours 2 hours 0.2 hours	Dependent upon 019-258 completion
	INITIAL DAMAGE ASSESSMENT NMP-OS-019-255	2	1.2 hours	Contains debris removal
	MISC FLEX EQUIPMENT NMP-OS-019-258	5	3 hours	20/60 KW generators
	MAIN CONTROL ROOM VENTILATION NMP-OS-019-256	6 2	2 hours 1 hours	Dependent upon SIG 2&3 Completion

Time Sensitive Task
Resource Limiting Task

Appendix 1 - Staffing Tables

Table 4 - HNP On-Shift Personnel Assignments Used During Phase 2 Staffing Analysis

Operations Assignments

Position	Designation	Assignment
Shift Manager	SM	Shift Manager/Emergency Director
Unit Supervisor	SRO1	Unit 1 Shift Supervisor (SSD)
Unit Supervisor	SRO2	Unit 2 Shift Supervisor (SSD)
Unit Supervisor	SRO3	Support Shift Supervisor (FBL)
Shift Technical Advisor	STA	Shift Technical Advisor (SSD)
Nuclear Plant Operator	NPO1	Unit 1 Licensed Operator (SSD)
Nuclear Plant Operator	NPO2	Unit 1 Operator At Controls (SSD)
Nuclear Plant Operator	NPO3	Unit 2 Licensed Operator (Shift Communicator)
Nuclear Plant Operator	NPO4	Unit 2 Operator At Controls (SSD)
System Operator	SO1	Unit 1 NLO – R/W (SSD)
System Operator	SO2	Unit 2 NLO – R/W (FBM #1)
System Operator	SO3	Unit 1 Inside SO (FBM #2)
System Operator	SO4	Unit 2 Inside SO (FBM #3)
System Operator	SO5	Unit 1 Outside SO (FBM #4)
System Operator	SO6	Maintenance SO (SSD)
System Operator	SO7	Maintenance SO (SSD)
System Operator	SO8	Spare SO

Other On-Shift Assignments Used During Analysis

Position	Designation	Assignment
HP Technician	HP1	HP Support
HP Technician	HP2	HP Support
HP Technician	HP3	HP Support
HP Supervisor	HP4	HP Supervisor
Chemistry Technician	CT1	Chemistry Sampling Support
Electrician	EM1	Electrical Maintenance
Electrician	EM2	Electrical Maintenance
Mechanical Maintenance	MM1	Mechanical Maintenance
Maintenance Supervisor	MM2	Maintenance
I&C	IC1	I&C Maintenance
Chemistry/HP Technician	FMT1	Field Monitoring
Warehouseman	FMT2	Field Monitoring
SAS Operator	SEC1	Accountability
Security Officer	SEC2	Security Support
Security Officer	SEC3	Security Support
Security Officer	SEC4	Security Support (Roving Patrol, Outside PA)
Security Officer	SEC5	Security Support (Roving Patrol, Inside PA)
Security Officer	SEC6	Security Support

Administrative on-shift staffing supplemental to the Emergency Plan minimum staff

Extended Loss of all AC Power (ELAP)

NEI 10-05 TABLE 1 – On-shift Positions E. I. Hatch Nuclear Plant

Line	On-shift Position	Emergency Plan Reference	Role in Table#/Line#	Action Required?
1.	Shift Manager/Emergency Director (SM)	HNP Emergency Plan Table B-1, Rev. 34	T2/L1 T5/L1 T5/L2 T5/L3 T5/L7 T5/L9	No
2.	Shift Supervisor – U1 (SRO1)	HNP Emergency Plan Table B-1, Rev. 34	T2/L2	No
3.	Shift Supervisor – U2 (SRO2)	HNP Emergency Plan Table B-1, Rev. 34	T2/L3	No
4.	Shift Support Supervisor/FBL (SRO3)	HNP Emergency Plan Table B-1, Rev. 34	T2/L4 T5/L6 T5/L8 T5/L12	No ^{Note 1}
5.	Shift Technical Advisor (STA)	HNP Emergency Plan Table B-1, Rev. 34	T2/L5	No
6.	Nuclear Plant Operator – U1 OATC (NPO2)	HNP Emergency Plan Table B-1, Rev. 34	T2/L6	No
7.	Nuclear Plant Operator – U1 BOP (NPO1)	HNP Emergency Plan Table B-1, Rev. 34	T2/L7	No
8.	Nuclear Plant Operator – U2 OATC (NPO4)	HNP Emergency Plan Table B-1, Rev. 34	T2/L8	No
9.	Nuclear Plant Operator – U2 BOP (NPO3)	HNP Emergency Plan Table B-1, Rev. 34	T2/L9 T5/L5 T5/L8	No
10.	System Operator (SO1)	HNP Emergency Plan Table B-1, Rev. 34	T2/L10	Yes ^{Note 2}
11.	System Operator (SO2)	HNP Emergency Plan Table B-1, Rev. 34	T2/L11	Yes ^{Note 2}
12.	System Operator (SO3)	HNP Emergency Plan Table B-1, Rev. 34	T2/L12	Yes ^{Note 2}
13.	System Operator (SO4)	HNP Emergency Plan Table B-1, Rev. 34	T2/L13	Yes ^{Note 2}
14.	System Operator (SO5)	HNP Emergency Plan Table B-1, Rev. 34	T2/L14	Yes ^{Note 2}
15.	System Operator (SO6)	HNP Emergency Plan Table B-1, Rev. 34	T2/L15	Yes ^{Note 2}

NEI 10-05 TABLE 1 – On-shift Positions E. I. Hatch Nuclear Plant

Line	On-shift Position	Emergency Plan Reference	Role in Table#/Line#	Action Required?
16.	System Operator (SO7)	HNP Emergency Plan Table B-1, Rev. 34	T2/L16	Yes ^{Note 2}
17.	HP Technician (HP1)	HNP Emergency Plan Table B-1, Rev. 34	T2/L17 T4/L1	No ^{Note 3}
18.	HP Technician (HP2)	HNP Emergency Plan Table B-1, Rev. 34	T4/L2 T4/L7	No
19.	HP Technician (HP3)	HNP Emergency Plan, Table B-1, Rev 34	T4/L3	No
20.	HP Supervisor (HP4)	N/A	T4/L11	No
21.	Field Monitoring Team/Chem Technician (FMT1)	HNP Emergency Plan, Table B-1, Rev 34	T4/L5	No
22.	Field Monitoring Team/Warehouseman (FMT2)	HNP Emergency Plan, Table B-1, Rev 34	T4/L6	No
23.	Electrician (EM1)	HNP Emergency Plan, Table B-1, Rev 34	T2/L23	Yes ^{Note 2}
24.	Electrician (EM2)	HNP Emergency Plan, Table B-1, Rev 34	T2/L24	Yes ^{Note 2}
25.	Mechanical Maintenance (MM1)	HNP Emergency Plan, Table B-1, Rev 34	T2/L25	Yes ^{Note 2}
26.	I&C Technician (IC1)	HNP Emergency Plan, Table B-1, Rev 34	T2/L26	Yes ^{Note 2}
27.	SAS Operator (SEC1)	HNP Emergency Plan, Table B-1, Rev 34	T5/L14	No
28.	Security Officer (SEC2)	HNP Emergency Plan, Table B-1, Rev 34	T2/L27	No
29.	SAS Operator – Roving Patrol inside PA (SEC3)	HNP Emergency Plan, Table B-1, Rev 34	T2/L28	No
30.	SAS Operator – Roving Patrol outside PA (SEC4)	HNP Emergency Plan, Table B-1, Rev 34	T2/L29	No
31.	SAS Operator – Sally Port (SEC5)	HNP Emergency Plan, Table B-1, Rev 34	T2/L30	No
32.	SAS Operator – Sally Port (SEC6)	HNP Emergency Plan, Table B-1, Rev 34	T2/L31	No

Notes: OATC – Operator At The Controls
BOP – Balance Of Plant; Licensed Operator
FMT – Field Monitoring
Note 1 – No conflict; Table 2 and Table 5 functions are the same. See Table 2A.
Note 2 – Training required for assigned tasks (see Table 2A)
Note 3 – No conflict; Table 2 and Table 4 functions are the same. See Table 2A.

Supplemental Administrative On-Shift Staffing

NEI 10-05 TABLE 2 - Plant Operations & Safe Shutdown

Two Units - One Control Room

**Minimum Operations Crew Necessary to Implement
AOPs and EOPs, or SAMGs if applicable**

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
1.	Shift Manager	Shift Manager	Operator Training
2.	Shift Supervisor	Unit Supervisor – U1 (SRO1)	Operator Training
3.	Shift Supervisor	Unit Supervisor – U2 (SRO2)	Operator Training
4.	Shift Support Supervisor	Field Unit Supervisor/FBL (SRO3)	Operator Training
5.	Shift Technical Advisor	Shift Technical Advisor (STA)	Operator Training
6.	Reactor Operator (BOP)	Nuclear Plant Operator – U1 (NPO1)	Operator Training
7.	Reactor Operator (OATC)	Nuclear Plant Operator – U1 (NPO2)	Operator Training
8.	Reactor Operator (BOP)	Nuclear Plant Operator – U2 (NPO3)	Operator Training
9.	Reactor Operator (OATC)	Nuclear Plant Operator – U2 (NPO4)	Operator Training
10.	Auxiliary Operator	System Operator (SO1)	Operator Training
11.	Auxiliary Operator	System Operator (SO2)	Operator Training
12.	Auxiliary Operator	System Operator (SO3)	Operator Training
13.	Auxiliary Operator	System Operator (SO4)	Operator Training
14.	Auxiliary Operator	System Operator (SO5)	Operator Training
15.	Auxiliary Operator	System Operator (SO6)	Operator Training
16.	Auxiliary Operator	System Operator (SO7)	Operator Training

Notes: See Table 2A for AB/EOP/FLEX actions

NEI 10-05 TABLE 2 - Plant Operations & Safe Shutdown (cont.)

Two Units - One Control Room

**Other (non-Operations) Personnel Necessary to Implement
ABs and EOPs, FLEX or SAMGs if applicable**

Line	Generic Title/Role	On-Shift Position	Task Performance Validation
17.	HP Technician	HP Technician (HP1)	HP/EP Training
18.	HP Technician	HP Technician (HP2)	HP/EP Training
19.	HP Technician	HP Technician (HP3)	HP/EP Training
20.	Chemistry Technician	Chemistry Technician (CT1)	Chem Training
21.	Field Monitoring Team	Chemistry Technician (CT2)	Chem Training
22.	Field Monitoring Team	Warehouseman	Mnt Training
23.	Electrician	Electrician (EM1)	Elec Mnt Training
24.	Electrician	Electrician (EM2)	Elec Mnt Training
25.	Maintenance Technician	Mechanical Maintenance (MM1)	Mnt Training
26.	I&C	I&C Maintenance (IC1)	I&C Mnt Training
27.	Security Officer	Security Officer (SEC2)	Security Training
28.	Security Officer	Security Officer (SEC3)	Security Training
29.	Security Officer	Security Officer – Roving Patrol inside PA (SEC4)	Security Training
30.	Security Officer	Security Officer – Roving Patrol outside PA (SEC5)	Security Training
31.	Security Officer	Security Officer – Sally Port (SEC6)	Security Training
32.	CAS Operator	CAS Operator (SEC1)	Security Training

Notes: See Table 2A for AOP/EOP actions

Table 2A – Procedure Task Timing

Procedure Step/Actions			Performance Time After Procedure Implementation																														
			Minutes – Hour 1						Hour																								
Step	Task	Resource	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	24		
34AB-C71-001 SCRAM Abnormal Procedure																																	
RC Flow Chart	RC-1 Actions Power Control	SRO1 SRO2 NPO1 NPO3	X																														
RC Flow Chart	RC-2 Actions Level Control	SRO1 SRO2 NPO2 NPO4	X (periodic)																														
RC Flow Chart	RC-3 Actions Pressure Control	SRO1 SRO2 NPO2 NPO4	X (periodic)																														
	Confirm Group Isolations	STA	X																														
34AB-R22-003 SBO Procedure																																	
4.7.1	Power Restoration to 4160 Emergency Busses (Remote start attempt)	SRO1 SRO2 NPO1 NPO3 SEC2	X																														
4.7.3.2	Secure HPCI	SRO1 SRO2 NPO2 NPO4	X																														
4.7.3.3	Trip Large DC Equipment/Loads	NPO1 NPO3				X																											
PC Chart	Override RCIC/HPCI suction swap interlock on both Units (**Time Sensitive**)	SRO1 SRO2 SO1 SO2			X																												
34AB-R43-001 Local Emergency Diesel Generator Operation																																	
All applicable steps	Local Emergency Diesel Generator Startup (Assume Unsuccessful)	SO6 SO7		X																													

Table 2A – Procedure Task Timing

Procedure Step/Actions			Performance Time After Procedure Implementation																													
			Minutes – Hour 1						Hour																							
Step	Task	Resource	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	24	
34AB-R22-003 SBO Procedure																																
4.1	Declare ELAP	SM					X																									
NMP-EP-110-GL02																																
	Emergency Classification	SM		SS 1				SG 1																								
	ENN Communication (State Notification)	SRO3			X																											
	ENS Communication (NRC)	SRO3						X																								
	ENN Communication (State Notification) (General Emergency only)	NPO3						X																								
N/A	EDG Troubleshooting (Assume 30 Minutes)	EM1 MM1			X																											
31EO-TSG-003 Extended Station Blackout																																
5.6 thru 5.8	Depressurize Main Generator Hydrogen	SO3 SO4 SEC3						X																								
5.11	Block Control Bldg Doors open per NMP-OS-019 SIG 10, Step 4.1.1 (must be complete within t+60)	SO3 SO4 HP1						X																								
5.9 thru 5.12	Deep DC Load Shedding ***Task completed by t+70 mins (time sensitive @ 75 mins)	SO3 SO4						X																								
5.16	Reactor Pressure reduce and maintain to 200-400 psi (time sensitive)	NPO2 NPO4							X																							
5.1	Travel Path Assessment IAW NMP-OS-19-255	SEC4 SEC5						X																								
5.3	Notify SAFER Control Center of ELAP entry	SM (delegate to EOF once activated)							X																							
5.2	Deploy RapidCase (B/U Communications)	IC1							X																							







Table 2A – Procedure Task Timing

Procedure Step/Actions			Performance Time After Procedure Implementation																												
			Minutes – Hour 1						Hour																						
Step	Task	Resource	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	24
5.1	Deploy RapidComm (Comm Trailer)	IC1 SEC6												X																	
5.17	Debris Removal IAW NMP-OS-019-255 (priority to path for pump)	MM1 EM1 SEC6								X	X	X	X	X																	
5.18	Control Room Ventilation IAW NMP-OS-019-256 (Time Sensitive)	EM2 HP1								X																					
PC Chart	Manual Plot Heat Capacity Temperature Limit & Safety Relief Valve Tailpipe Level Limit EOP graphs	STA								X	X	X	X	X																	
5.19	Manually Breach Hardened Vent Rupture Disc IAW NMP-OS-019-286 (SIG 6) (time sensitive @ 7.5hr)	SRO1 SRO2 SO6 SO7								X																					
PC Chart	Swap RCIC suction from CST to Tonus IAW 31EO-TSG-003 step 5.27 (time sensitive @ 6.05 to 7.5)	SRO1 SRO2 NPO2 NPO4												X																	
5.20, 5.23, 5.29	Deployment of portable FLEX portable pump IAW NMP-OS-019-283 (SIG 3) (time sensitive @ 10 hours) Augmented resources used at T=6 hours	SRO1 SRO2 SO4 SO5 MM1 IC1 SEC6 SEC7 ERO(7)													X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.	Pressurize FLEX header	ERO(2)																		X	X										
5.21 and 5.24 thru 5.26	Deployment of Div 1 & Div 2 600V Generators IAW NMP-OS-019-262 & -282 (time sensitive @ 12 hours)	SRO(2) ERO(9)																X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.22	Deployment of 60KW Generator IAW NMP-OS-019-258	SRO(2) ERO(5)															X	X	X	X	X										

Table 2A – Procedure Task Timing

Procedure Step/Actions			Performance Time After Procedure Implementation																																
			Minutes – Hour 1						Hour																										
Step	Task	Resource	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	24				
5.34	Main Control Room Ventilation IAW NMP-OS-019-256 (time sensitive @ 12 hours) Requires a Chiller qualified EM	ERO (6)																	X																
5.43	Establish forced ventilation of Control Building	ERO(5)														X																			
5.28	Containment Venting IAW NMP-OS-019-286	SRO(2) NPO(2) FMT																																	
																		X (periodic monitoring of environs required once venting started)																	
5.30	Establish CST Makeup IAW NMP-OS-019-285	ERO(5)																			X														
5.39	Rx Building ventilation IAW NMP-OS-019-290 (HP will monitor intermittently)	ERO(3)																	X																
5.35	Establish SFP level monitoring	ERO(2)																																	
																		X																	
5.41	Establish SFP Makeup IAW NMP-OS-019-288	ERO(8)																	X																
5.31	Swap RCIC suction from Torus to CST IAW 34SO-E51-001	SRO(2) NPO(2)																																	
																		X																	
N/A	Repower GAI-Tronics® from portable generator	ERO (2)																		X															
5.42	Refuel of FLEX Portable Equipment	ERO(3)																																	
																		X																	
5.37 thru 5.40	Deployment of FLEX Air Compressor for SFP transfer canal seals IAW NMP-OS-019-288	ERO(4) SEC(1)																																	
																		X																	

Notes: Field communications maintained with GAI-Tronics, sound powered phones, and radios.
IAW – In Accordance With

-  Pre-Augmentation
-  Post-Augmentation
-  Site Area Emergency Declaration – SS1
-  General Emergency Declaration – SG1
-  FLEX Strategy (SIG/NMP)
-  Task completion time




NEI 10-05 TABLE 3 – Firefighting

Line	Performed By	Task Analysis Controlling Method
1.	N/A	N/A
2.	N/A	N/A
3.	N/A	N/A
4.	N/A	N/A
5.	N/A	N/A

Notes: Not required by scenario – Fire Brigade members available to support BDBEE response actions.

Line	Position Performing Function/Task	Performance Time Period After Event Initiation															
		Minutes						Hours									
		0-10	10-20	20-30	30-40	40-50	50-60	2	3	4	5	6	7	8	9	10	
1.	In-Plant Survey On-Shift Position: HP1						X										
2.	In-Plant Survey On-Shift Position: HP2				X												
3.	In-Plant Survey On-Shift Position: HP3				X												
4.	Out of Plant Survey On-Shift Position:																
5.	Offsite Monitoring ^{Note 1} On-Shift Position: FMT1						X										
6.	Offsite Monitoring ^{Note 1} On-Shift Position: FMT2						X										
7.	Personnel Monitoring (set up portable friskers) On-Shift Position: HP2	X															
8.	Job Coverage – 60 kW generator Augmented ERO Position: HP(1)														X		
9.	Job Coverage – forced ventilation On-Shift Position: HP(1)														X		
10.	Offsite Radiological Assessment On-Shift Position: HP4																
11.	Personnel Monitoring at Access Control Point On-Shift Position:HP4	X															
12.	Chemistry function/task #1 – Describe: On-Shift Position: CT1																




Notes: Augmented resources available to support actions after T=6 hours
 HP1 posts RCA Boundary @ T=50-60 mins once door is blocked open
 Note 1 – FMT1 and FMT2 dispatched to staging area at initial event classification and stand by for instruction

 Supplemental Administrative On-Shift Staffing
 Post-Augmentation
 Task completion time

NEI 10-05 TABLE 4 (Sheet 2) – Radiation Protection & Chemistry

Line	Position Performing Function/Task	Performance Time Period After Event Initiation (hours)													
		11	12	13	14	15	16	17	18	19	20	21	22	23	24
1.	In-Plant Survey Augmented ERO Position:														
2.	Out of Plant Survey Augmented ERO Position:														
3.	Offsite Monitoring Augmented Position: FMT (ERO)	x													
4.	Personnel Monitoring Augmented ERO Position:														
5.	Job Coverage – CST M/U Augmented ERO Position: HP(1)			x											
6.	Job Coverage – establish SFP M/U Augmented ERO Position: HP(2)	x													
7.	Job Coverage – RxB ventilation Augmented ERO Position: HP(1)	x													
8.	Offsite Radiological Assessment Augmented ERO Position:														
9.	Other Site-Specific HP – Describe: Augmented ERO Position:														
10.	Chemistry function/task #1 – Describe: Augmented ERO Position:														

Notes: Augmented resources available to support actions after T=6 hours

 Supplemental Administrative On-Shift Staffing
 Post-Augmentation
 Task completion time

NEI 10-05 TABLE 5 - Emergency Plan Implementation

Line	Function/Task	On-Shift Position
1.	Declare the Emergency Classification Level (ECL)	SM
2.	Approve Offsite Protective Action Recommendations	SM
3.	Approve content of State/local notifications	SM
4.	Approve extension to allowable dose limits	N/R
5.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	NPO3
6.	ERO notification	SRO3
7.	Complete State/local notification form	SM
8.	Perform State/local notifications	SRO3 NPO3
9.	Complete NRC event notification form	SM
10.	Activate ERDS	N/A
11.	Offsite radiological assessment	N/R
12.	Perform NRC notifications	SRO3
13.	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	N/A
14.	Personnel accountability	SEC1

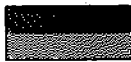


Notes: EAL – SS1, Site Area Emergency; SG1, General Emergency
See Table 5A for E-Plan implementation timeline

N/R – Not required
N/A - Not available

Table 5A - E-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
Declare the Emergency	SM					X										X	
Approve Offsite PARs	SM															X	
Approve State/local notifications	SM							X									X
Approve extension to allowable dose limits	N/R																
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	NPO3							X									
ERO notification	SRO3							X									
Complete State/local notification form	SM							X									X
Perform State/local notifications ^{Note 1}	SRO3								X								
Perform State/local notifications	NPO3																X
Complete NRC event notification form	SM									X							
Activate ERDS ^{Note 2}	N/A																
Offsite radiological assessment ^{Note 3}	N/R																
Perform NRC notifications ^{Note 1,4}	SRO3											X	X	X	X	X	X
Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	N/A																
Personnel accountability	SEC1									X	X	X	X	X	X	X	X

Notes: Note 1 – Notifications to State/local agencies and NRC performed using satellite phones
Note 2 – ERDS capability is not available due to loss of data points provided to the NRC, and BDBEE impact on communications infrastructure
Note 3 – No radiological releases in progress; inputs for MIDAS are not available during ELAP
Note 4 – Initial NRC notification performed on site. Continuous NRC communication and other site specific notifications assumed by EOF personnel once staffed and activated
N/A – Not available
N/R – Not required

 Site Area Emergency declaration action completion time
 General Emergency declaration action completion time
 Task completion time