ATTACHMENT 5

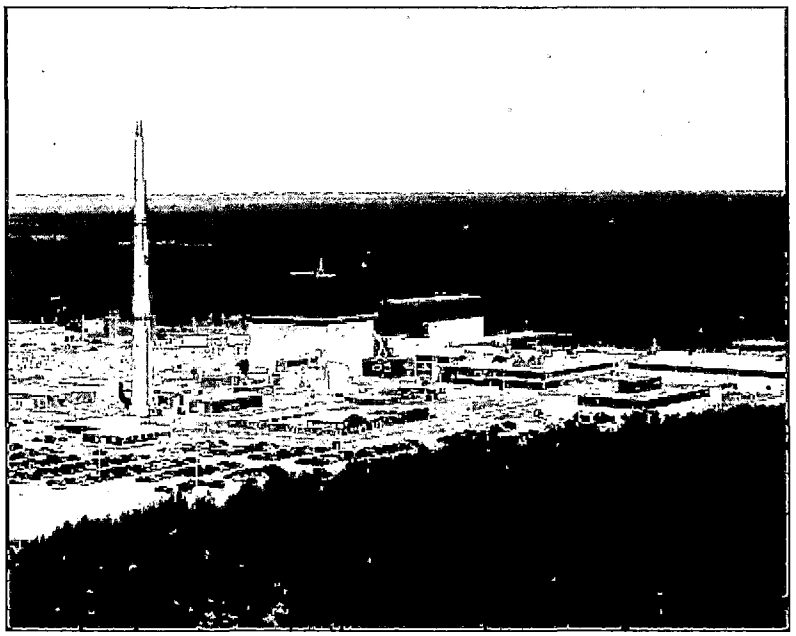
Radiological Emergency Plan Addendum Revision

EP-AA-1014, Addendum 1, Revision 0, *"On-Shift Staffing Analysis Report for James A. FitzPatrick Nuclear Power Plant"*

Exelon Generation®

EP-AA-1014 Addendum 1 Rev 0

James A FitzPatrick Nuclear Power Plant



On-Shift Staffing Analysis Report

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I. INTRODUCTION

This document is a revision to the James A. Fitzpatrick Nuclear Power Plant On-Shift Staffing Analysis Report added to the JAF Emergency Plan on December 20, 2012. This revision incorporates the use of a dual-role individual to perform the function and task of the Shift Technical Advisor (STA) as allowed by NEI 10-05. The NEI 10-05 Tables in Sections VII of this report were also updated to reflect the corrective actions taken for task overlaps listed in Section IX of the original report (Revision 0). Additionally, Section VII. D. of this report was revised to reflect plant mode requirements for STA staffing as required by station Technical Specifications.

This revision continues to satisfy the requirement of 10 CFR 50 Appendix E Section IV.A.9, which states that nuclear power licensees shall perform "*a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.*" A structured approach was utilized to perform this analysis using the guidance found in NEI 10-05, Rev. 0, *Assessment of On-Shift Emergency Response Organization Staffing and Capabilities.* This analysis examined the capability of the minimum staff listed in Table 5-1 of the JAF Emergency Plan (E-Plan) to perform the actions for the key functional areas of events described in NSIR/DPR-ISG-01, *Interim Staff Guidance – Emergency Planning for Nuclear Power Plants*, until augmenting Emergency Response Organization (ERO) staff arrives in accordance with the E-Plan.

II. ANALYSIS SUMMARY

The OSA team determined that an on-shift staff of fourteen (14) is required to respond to the most limiting accident scenario reviewed, main control room fire and shutdown at the remote shutdown panel. The on-shift staff consists of individuals necessary to support each of the emergency plan functional areas or tasks:

- Emergency Direction and Control
- Plant Operations and Safe Shutdown (SSD)
- Fire Fighting (FB)
- Accident Assessment
- Radiation Protection and Chemistry
- Notification/Communication
- Technical Support
- Accountability

NEI 10-05 states it is acceptable for certain function to be assigned to personnel already assigned other functions/tasks. These include Repair and Corrective Action, Rescue Operations and First Aid.

A. Emergency Plan Minimum Staffing

Per 10 CFR 50.54 (q)(1)(iii), *Emergency planning function* means a capability or resource necessary to prepare for and respond to a radiological emergency, as set forth in the elements of section IV of Appendix E and, for nuclear power reactor licensees, the planning standards of § 50.47(b).

The following table indicates the result of the NEI 10-05 staffing analysis of on-shift personnel to perform the required emergency planning functions and the licensing basis requirement for each on-shift position. These positions are included on Table 1 of each accident analysis.

Position	Licensing Basis Requirement	E-Plan Functional Area	On-Shift Staffing Analysis Results
Shift Manager (SM)	50.54m E-Plan Table 5-1	Emergency Direction and Control	1
Control Room Supervisor (CRS)	50.54m E-Plan Table 5-1	SSD	1
Shift Technical Advisor (STA) / Field Support Supv. (FSS)[2]	E-Plan Table 5-1	Technical Support	1
Senior Nuclear Operator (RO #1)	50.54m E-Plan Table 5-1	SSD	1
Senior Nuclear Operator (RO #2)	50.54m E-Plan Table 5-1	SSD	1
Senior Nuclear Operator (RO #3)	50.54m E-Plan Table 5-1	FB	1
Nuclear Plant Operator (NPO #1)	E-Plan Table 5-1	SSD	1
Nuclear Plant Operator (NPO #2)	E-Plan Table 5-1	FB	1
Nuclear Plant Operator (NPO #3)	E-Plan Table 5-1	FB	1
Nuclear Plant Operator (NPO #4)	E-Plan Table 5-1	FB	1
Nuclear Plant Operator (NPO #5)	E-Plan Table 5-1	Communications Notifications	1
Fire Brigade #5[1]	E-Plan Table 5-1	FB	1
RP / Chemistry Technician	E-Plan Table 5-1	Accident Assessment/Chemistry	1
Radiation Protection (RP) Technician	E-Plan Table 5-1	Radiation Protection	1
Security	Security Contingency Plan/E-Plan Table 5-1	Accountability	Per Security Contingency Plan
TOTAL			**14**

[1]May be filled by Fire Brigade qualified staff from Operations or other departments such as Security.
[2]STA function may be filled by SM, CRS or FSS qualified as STA.

B. Other Commitments to Shift Staffing

None

C. Staffing Exceptions and Time Motion Studies (TMS)

1. The primary responsibility for the on-shift Chemistry Technician is chemistry/radiochemistry sampling; however no chemistry job tasks were noted as being required within the first 90 minutes of any of the analyzed events. The task of dose assessment is implemented when directed by the Shift Manager and therefore will not overlap. It is therefore acceptable to assign the Chemistry Technician the E-Plan function of dose assessment. No further analysis or TMS is required.

2. The Shift Manager is assigned the responsibility to make some site specific event notifications such as to the Duty Plant Manager, Operations Manager, and Resident Inspector. These notifications by phone are considered communications that are approximately one minute in length and are acceptable tasks for the Shift Manager. No further analysis or TMS is required.

3. Station staff are required to maintain continuous communications with the notification source during an aircraft threat in accordance with 10CFR50.54(hh) and Reg. Guide 1.214. There are no specific qualifications required to perform this task and the function is not required to be assigned in advance. The analysis of this event identified there are sufficient personnel on-shift to perform this task during the event. Specifically, a Nuclear Plant Operator or the RP/Chemistry Technician can be made available to fill this function. No further analysis or TMS is required.

4. The STA position at JAF is normally filled by an individual with the title STA/FSS as noted in the staffing table located in Section II.A. of this report. The JAF Emergency Plan Table 5-1, "Plant Personnel – Emergency Activity Assignments", states the STA position may also be filled by the SM or CRS. This allowance is in-line with NRC Generic Letter 86-04, "Policy Statement on Engineering Expertise On-Shift", and NEI 10-05 that states it is acceptable for the STA position to be filled by an STA qualified individual already serving in another on-shift role (dual-role individual). Additionally, the ability of the on-shift staff to implement emergency response functions while serving in the dual-role capacity is periodically observed and evaluated during Operations Training. This analysis was conducted assuming the STA role was filled by the SM, but as noted above, the role may also be filled by the CRS or FSS. As stated in NEI 10-05, this is an acceptable collateral duty assignment that does not require a TMS.

5. Security or the Shift Manager may perform the task of notifying the off-shift ERO of the emergency. A TMS was conducted to ensure the Shift Manager could perform the concurrent tasks of maintaining emergency direction and control while notifying the ERO of the event using Everbridge. The TMS found in Appendix C demonstrated the Shift Manager was able to maintain Emergency Direction and Control during the approximate 1 minute and 55 seconds it took to notify the ERO using Everbridge. The TMS shows that notifying the ERO is an acceptable task for the Shift Manager and no further analysis or additional TMS are required.

D. Emergency Plan Tasks Not Analyzed

1. Repair and Corrective Action - Per the guidance of NUREG-0654, Table B-1, repair and corrective action tasks may be performed by shift personnel assigned other functions. Repair and corrective action is defined as:

   - An action that can be performed promptly to restore a non-functional component to functional status (e.g., resetting a breaker), or to place a component in a desired configuration (e.g., open a valve), and which does not require work planning or implementation of lockout/tagout controls to complete.

   In accordance with NEI 10-05 section 2.5, the analysis included a review of repair and corrective action tasks. For the purpose of this analysis, the tasks were considered to fall into two broad categories:

   - Unplanned/unexpected actions that address equipment failures. These actions are contingent in nature and cannot be specified in advance.
   - Planned/expected actions performed in support of operating procedure implementation, including severe accident management guidelines.

   At JAF, Nuclear Plant Operators are trained to perform the actions associated with this functional area. Actions (e.g., reset breakers, valve manipulation) directed by the Control Room Supervisor to mitigate the event per procedures were performed by the Nuclear Plant Operators in this analysis. Repair and Corrective Action is an acceptable collateral duty per the guidance of NEI 10-05 and was not analyzed

2. Rescue Operations and First Aid: In accordance with NEI 10-05 section 2.6, the analysis also included a review of rescue operations and first aid response although neither task was required during the evaluated scenarios. Per the guidance of NUREG-0654, Table B-1, rescue operations and first aid may be performed by shift personnel assigned other functions. Two staff members per shift (Operations and/or RP/Chemistry Technician are trained and assigned to perform first aid duties. The station fire brigade staff is trained in rescue operations and is available if required. Rescue operations and first aid response are acceptable collateral duties per the guidance of NEI 10-05.

III. ANALYSIS PROCESS

This analysis was conducted by a joint team of corporate Emergency Preparedness (EP) personnel and station personnel from the Operations, Training, Radiation Protection, Chemistry and Emergency Preparedness (EP) departments. Additionally, members of the Security staff provided input to the analysis. The team members are identified in Section XI of this report.

The emergency response to each event was determined by conducting a tabletop of the event using the emergency plan and procedures and the applicable department procedures such as Operations emergency and abnormal operating procedures.

Each scenario was reviewed by the cross disciplinary team to determine what plant actions and emergency plan implementation actions were required based on plant procedures prior to staff augmentation. These actions were then compared to the minimum staffing for Emergency Plan implementation as described in the Emergency Plan Table 5-1, ensuring that no actions were assigned to staff members that conflicted with either their dedicated

emergency plan role or their dedicated operational role as appropriate. In cases where multiple tasks were assigned to an individual in their role, the team evaluated timing of the tasks to ensure that they could be performed by the individual in series within any specified time requirements.

The results of the analysis for each of the scenarios are included in Section VII, APPENDIX B – ON-SHIFT STAFFING ANALYSIS. Note that NSIR DPR-ISG-01 states that only DBA accidents "which would result in an emergency declaration" should be evaluated in the staffing assessment. Each of JAF DBA's were evaluated and classified according to its FSAR Chapter 14 description. If the accident description alone did not result in a classification, the projected accident EAB dose found in the FSAR was utilized to determine if an EAL threshold would be exceeded within the first 90 minutes using the Abnormal Radiation Level EAL thresholds. In cases where several projected dose rates were provided or release data was not detailed significantly to determine an EAL, the assessment used the radiological consequences associated with the realistic case in accordance with NEI 10-05.

IV. ACCIDENT SCENARIOS

A. Accident Selection

1. The OSA scenarios were chosen using the guidance of NEI 10-05 and NSIR/DPR-ISG-01, "Interim Staff Guidance – Emergency Planning for Nuclear Power Plants." The evaluation considered the station Design Basis Accidents (DBA) described in the USAR along with additional scenarios specified by the guidance documents. The scenarios considered were:
   - Design Basis Threat (DBT) ground assault as described in NEI 10-05
   - DBA Control Rod Drop Accident as described in FSAR 14.6.1.2.
   - DBA Loss of Coolant Accident, (LOCA) as described in FSAR 14.6.1.3.
   - DBA Fuel Handling Accident (FHA) as described in FSAR 14.6.1.4.
   - DBA Main Steam Line Break (MSLB) Accident as described in FSAR 14.6.1.5.
   - Aircraft Probable Threat as described in NEI 10-05
   - Fire requiring evacuation of the Control Room and plant shutdown from remote location, (Appendix R Fire) as described in NEI 10-05.
   - Station Blackout (SBO) as described in NEI 10-05.
   - General Emergency with radioactive release and PAR as described in NEI 10-05.
   - General Emergency with entry into Severe Accident Management Guidelines
   - Appendix R Fire That Results in a Reactor Trip

B. Accident Scenarios included in the Analysis

1. Design Basis Threat
   - The event evaluated for this analysis assumes a land based threat that is neutralized immediately when inside the protected area fence, no significant damage to equipment or systems that require corrective actions before the ERO is staffed, no radiological release, and no fire that requires firefighting response before the ERO is staffed.
2. Control Rod Drop Accident
   - The control rod drop event results in fuel damage and radioactivity that is retained within the turbine, condensers, and the offgas system. Release to the environment is due to leakage from the various contaminated systems into the turbine building. The FSAR does not contain detailed radiological conditions or release rates to determine an EAL classification. Since the shift staffing analysis is reviewing tasks for the ERO augmentation period, this review starts at an assumed ALERT declared on Turbine Building Vent radiation levels.
3. Loss of Coolant Accident
   - The event results in a release of radioactive material from the reactor coolant system to the primary containment from a complete circumferential break of one of the recirculation loop lines. This accident is established as the Design Basis of Loss of Coolant Accidents.

4. Fuel Handling Accident (FHA)
   - The FHA is assumed to occur when the primary containment is open and the reactor vessel head has been removed. The DBA for this case involves the dropping of a fuel bundle on top of the core. The FSAR does not contain detailed radiological conditions or release rates to determine an EAL classification. This analysis assumed an ALERT declaration based on Refuel Floor Vent Duct Radiation Monitor level.

5. Main Steam Line Break Accident
   - This event results in radioactive material releases outside secondary containment and was due to a complete severance of a 16" line leading to the turbine bypass steam chest. The FSAR does not provide adequate guidance to determine the EAL expected for this event. For the purpose of this analysis, an Alert level classification on EAL was assumed.

6. Aircraft Probable Threat (50.54hh)
   - Notification is received from the NRC that a probable aircraft threat exists (>5 minutes, <30 minutes).

7. Fire requiring evacuation of the Control Room and plant shutdown from remote location, (Appendix R Fire)
   - A fire occurs in the main control room requiring the evacuation of the control room and procedures implemented to remotely shutdown the reactor.

8. Station Blackout
   - A loss of all offsite AC power occurs and the failure of the emergency diesel generators to start. The SM determines power cannot be restored and declares a SAE due to the loss of off-site power.

9. General Emergency (GE) with radioactive release and PAR
   - This event is based on the same initial conditions of the LOCA but assumes system failures meet the GE conditions of a loss of 2 fission product boundaries with the potential loss of the third.

C. Accident Scenarios not included in the Analysis

1. Appendix R Fire That Results in a Reactor Trip
   - The team concluded the Control Room fire to be the most limiting for resources and therefore a staffing analysis for an additional fire scenario is not required. The emergency plan and fire brigade responsibilities are the same for both events.

2. General Emergency with entry into Severe Accident Management Guidelines (SAMG).
   - This event assumes an accident occurs and adequate core cooling cannot be maintained, requiring entry into SAMGs. Reactor level is assumed to be below the top of active fuel but is above the bottom of active fuel. A review of the SAMGs associated with the initial site-specific Candidate High Level Actions concluded that no actions would require on-shift personnel other than licensed and non-licensed operators. No analysis required.

V. GENERAL ASSUMPTIONS AND LIMITATIONS

A. Notes and Assumptions applicable to all accidents in JAF Staffing Analysis:

1. The RP and Chemistry tasks reviewed were those directed by the Shift Manager to support actions in Abnormal Operating Procedures (AOP), Emergency Operating Procedures (EOP), Emergency Plan Implementing Procedures (EAP), and Emergency Plan Implementation Checklists (IAP). Any additional tasks directed by the Technical Support Center (TSC), Operations Support Center (OSC), or Emergency Operations Facility (EOF) procedures were not reviewed.

2. JAF has 60 minute emergency responders when augmented while the ERO is offsite. This analysis was conducted assuming a 90 minute response of the augmented ERO to allow the use of this analysis for a possible future extension in ERO augmentation times. The only specific emergency response task assigned to the augmented ERO prior to a 90 minute response is the activation of ERDS by the on-call IT staff member. The task of ERDS activation by the SM was also analyzed to ensure the task could be assigned without impacting the SMs ability to perform the SMs primary emergency functions and tasks.

3. The OSA team determined there are no time critical RP or Chemistry tasks and that task performance is directed and prioritized by the Shift Manager. The time RP or Chemistry is directed to perform a task and the amount of time taken to complete tasks are estimated. No Chemistry samples are required by Tech Specs within the 90 minute period after a declaration. Since the Shift Manager directs when the tasks are performed, there are no overlapping RP or chemistry tasks.

B. NEI 10-05 Rev 0 Assumptions

1. Response time used for this analysis was the maximum acceptable number of minutes elapsed between emergency declaration and the augmented ERO position holder at a location necessary to relieve an on-shift position of the emergency response task. As noted above, this analysis assumed a 90 minute augmentation time although the times noted in the Table 1 accident analysis tables reflects the E-plan required staffing times of 60 minutes.

2. On-shift personnel complement was limited to the minimum required number and composition as described in the site emergency plan. If the plan commitments allow for different minimum staffing levels (e.g., a variance between a normal dayshift and a backshift), the staffing with the smallest total number of personnel was used for the analysis.

3. Although the temporary absence of a position may be allowed by Tech Specs, the analysis was performed assuming that all required on-shift positions are filled.

4. Each analyzed event occurred during off-normal work hours where the ERO was offsite and all required minimum on-shift positions were filled.

5. On-shift personnel reported to their assigned response locations within timeframes sufficient to allow for performance of assigned actions.

6. On-shift staff had necessary Radiation Worker qualification to obtain normal dosimetry and enter the radiological control area (RCA) (but not locked high or very high radiation areas) without the aid of an RP technician.

7. Personnel assigned plant operations and SSD met the requirements and guidance (analyzed through other programs such as operator training) and were not evaluated as part of this assessment unless a role/function/task from another major response area was assigned as a collateral duty.

8. In-plant (manual) safety related operator actions to manipulate components and equipment from locations outside the control room to achieve and maintain safe shutdown was done by a member of the on-shift staff as defined in the unit's Tech Specs.

9. Fire brigade (FB) staff performance is analyzed through other station programs (e.g., fire drills) and was not evaluated as part of this assessment unless a role/function/task from another major response area was assigned as a collateral duty.

10. Individuals holding the position of RP technician or Chemistry technician are qualified to perform the range of tasks expected of their position.

11. Security was not evaluated unless a role or function from another major response area was assigned as a collateral duty.

12. Communications, briefings, and peer checks are acceptable collateral duties.

13. All on-shift staff positions were evaluated, even if they had no known collateral duties, to ensure they can perform the tasks assigned to them. [Ref NSIR/DPR-ISG-01]

14. The Staffing Analysis specified the resources available to perform "Repair and Corrective Actions" and "Rescue Operations and First Aid" but these may be assigned as collateral duty to a designated on-shift responder.

15. For assessment purposes, NRC notifications were treated as a continuous action per 10CFR50.72(c)(3) and 73.71(b)(1). This means once the initial NRC communications are established, the NRC will request an open line be maintained with the NRC Operations Center.

16. DBA (postulated accident, Condition IV event, or limiting fault) is considered as "Unanticipated occurrences that are postulated for accident analysis purposes but not expected to occur during the life of the plant. A postulated accident could result in sufficient damage to preclude resumption of plant operation. As a result, a greater number and variety of actions would need to be implemented by plant personnel."

17. Unless otherwise specified in NSIR/DPR-ISG-01, Interim Staff Guidance – Emergency Planning for Nuclear Power Plants, or by the USAR initial conditions of a DBA analysis, it was assumed that the unit was in Mode 1, Power.

18. DBT assumed a hostile force breached the protected area fence but was neutralized with no adverse consequences to plant safety. Damage inflicted on plant systems, structures and components was not sufficient to prevent safe shutdown or cause a radiological release. There was no fire significant enough to warrant firefighting efforts prior to arrival of offsite resources and/or the augmented ERO.

19. The Staffing Analysis used DBA analysis assumptions, inputs, timing of events, plant protective response, and specified manual operator actions and their timing, as documented in the FSAR.

20. In cases where a DBA analysis included a radiological release, and the starting point of the release was not clearly defined, the staffing analysis assumed that the release began 15-minutes after the initiating event.

21. Severe Accident Management Guideline (SAMG) - this analysis assumed the accident progressed to conditions requiring a severe accident response; it did not include determining specific failures and the accident sequence.

22. SAMG - The actions analyzed included those that implement the initial site-specific actions assuming the core is not ex-vessel (i.e., no reactor vessel failure), and there is no actual or imminent challenge to containment integrity.

VI. APPENDIX A - ANALYZED EVENTS AND ACCIDENTS

Event #	Event Type	Summary Description of Event	Plant Mode[1]	Reference Document(s)	Event ECL	Analysis Required?
1	DBT	Land and/or waterborne HOSTILE ACTION directed against the Protected Area by a HOSTILE FORCE. Assume adversary characteristics defined by the Design Basis Threat (DBT).	1	NEI 10-05	Site Area Emergency	Yes
2	DBA	Control Rod Drop Accident	1	FSAR 14.6.1.2	Alert	Yes
3	DBA	Loss of Coolant Accident	1	FSAR 14.6.1.3	Site Area Emergency	Yes
4	DBA	Fuel Handling Accident	5	FSAR 14.6.1.4	Alert	Yes
5	DBA	Main Steam Line Break outside secondary containment	1	FSAR 14.6.1.5	Alert	Yes
6	Assumed for analysis purpose	Aircraft Probable Threat	1	10CFR50.54hh(1) RG 1.214	Alert	Yes
7	Assumed for Analysis Purpose	Control Room Evacuation and Remote Shutdown (fire in main control room)	1	10CFR50 Appendix R Procedure AOP-43	Alert	Yes
8	Assumed for analysis purpose	Station Blackout	1	10CFR50.63	Site Area Emergency	Yes
9	Assumed for Analysis Purpose	LOCA - General Emergency with radiological release and PAR	1	ISG IV.C	General Emergency	Yes
10	Assumed for Analysis Purpose	Appendix R Fire	1	ISG IV.C	Alert	No[2]
11	Assumed for Analysis Purpose	LOCA – General Emergency and entry into severe accident procedures.	1	ISG IV.C	General Emergency	No[3]

[1] Plant mode per FSAR or assumed for analysis purpose

[2] Appendix R Fire is bound by the Control Room Fire and Remote Shutdown.

[3] JAF does not meet the NEI 10-05 intent for the analysis of implementing SAMG. NEI 10-05 Section 2.11 states that the analysis of the ability to implement SAMG focuses on the reasonably expected initial mitigation action that would be performed by on-shift personnel other than licensed and non-licensed operators. The actions taken by on-shift personnel to mitigate an event at JAF are performed by licensed and non-licensed operators.

VII. APPENDIX B – ON-SHIFT STAFFING ANALYSIS

A. Accident Analysis #1 – Design Basis Threat (DBT)

1. Accident Summary

   - Land and/or waterborne HOSTILE ACTION directed against the Protected Area by a HOSTILE FORCE. Assume adversary characteristics defined by the Design Basis Threat.

2. Accident Specific Assumptions Made

   - This event assumes the threat is neutralized immediately when inside the protected area fence, no significant damage to equipment or systems that require corrective actions before the ERO is staffed, no radiological release, and no fire that requires firefighting response before the ERO is staffed.
   - Assume at power in Mode 1
   - Security notifies the Shift Manager of condition of hostile action occurring within the protected area (Security code RED)
   - Assume all non-security staff is located inside the protected area at their normal work station when the event occurs.
   - Assume all systems function and the core remains covered. No fuel damage and no release.

3. Procedures for Accident Response

   - AOP -70, Security Threat
   - AOP-1, Reactor Scram (if shutdown due to the event)
   - EOP – 2, RPV Control (if shutdown due to the event)
   - IAP-1, Emergency Plan Implementation Checklist
   - IAP-2, Classification of Emergency Conditions
   - EAP- 1, Offsite Notifications
   - EAP-8, Personnel Accountability
   - EAP-10, Protected area evacuation

4. Tables

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis # 1 DBT Security Threat						
Line #	On-shift Position	Basis Document	Augmentation Elapsed Time (min)*	Role in Table # / Line #	Unanalyzed Task?	TMS Required?
1	Shift Manager / STA	Emergency Plan Table 5-1	60	T2/L1 T2/L3 T5/L1 T5/L3 T5/L5 T5/L6 T5/L7 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	N/A	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	N/A	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	N/A	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	N/A	No	No
14	RP Technician	Emergency Plan Table 5-1	60	N/A	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	T5/L15	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN One Unit – One Control Room ANALYSIS # 1 DBT Security Threat Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable			
Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	Shift Manager	Licensed Operator Training Program
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A
11	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING ANALYSIS # 1 DBT Security Threat		
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

This accident does not include the need for firefighting, first aid or search & rescue.

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY
Analysis # 1 DBT Security Threat

LINE	Position Performing Function / Task	Performance Time Period After Emergency Declaration (minutes)																
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: N/A																		
2	On-site Survey: N/A																		
3	Personnel Monitoring: N/A																		
4	Job Coverage: N/A																		
5	Offsite Rad Assessment: N/A																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) N/A																		
8	Chemistry Function task #2 (describe) N/A																		

No chemistry or RP job function tasks for the conditions described in the DBT assumptions. RP and Chemistry take cover as directed.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis # 1 DBT Security Threat			
Line#	**Function / Task**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	N/A	N/A
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Shift Manager	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	Shift Manager	Licensed Operator Training Program
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	(Note 1)	Emergency Planning Training Program
12	Offsite radiological assessment	N/A	N/A
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	Security	Security Training Program / EP Drills

Note 1: See Section V.A.2

B. Design Basis Accident Analysis #2 – Control Rod Drop Accident

1. Accident Summary
   - The control rod drop accident (CRDA) results in fuel damage and radioactivity that is retained within the turbine, condensers, and the offgas system. Release to the environment is due to leakage from the various contaminated systems into the turbine building. The FSAR does not contain detailed radiological conditions or release rates to determine an EAL classification. Since the shift staffing analysis is reviewing tasks for the ERO augmentation period, this review starts at an assumed ALERT based on Turbine Building Vent radiation levels.

2. Accident Specific Assumptions Made
   - As a result of elimination of the MSIV-closure and reactor-shutdown functions of the main steam line radiation monitors, the MSIVs stay open and the release is to the condenser and offgas system.
   - The released radioactivity is retained within the turbine, condensers and the offgas system. Release to the environs is due to leakage from the various contaminated systems into the turbine building.
   - The leakage rate from contaminated systems into the turbine building amounts to 1% per day and lasts for 24 hours. The release to the atmosphere is at ground level and there is no holdup or mixing within the turbine building.

3. Procedures for Accident Response
   - IAP-1, Emergency Plan Implementation Checklist
   - IAP-2, Classification of Emergencies
   - EAP-1, Offsite Notification
   - EAP-4 Dose Assessment Calculations
   - EAP-5.3, Onsite/Offsite Downwind Surveys and Environmental Monitoring
   - EAP-17, Emergency Organization Staffing
   - EOP – 2, RPV Control (Low power so probably no entry)
   - EOP-5/6, Secondary Containment Control / Radioactivity Releases
   - AOP-1, Reactor Scram
   - AOP-3, High Activity in Offgas or Reactor Coolant
   - Coolant sample
   - AOP-15 Isolation Verification and Recovery
   - AOP-32, Unexplained/ Unanticipated Reactivity Change
   - RPSO-03, RP Scram Actions
   - SP-01.02, Chemistry Reactor Water Sampling & Analysis
   - CHSO-03, Chemistry Guidelines for Scram

4. Tables

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis # 2 Control Rod Drop Accident						
Line #	On-shift Position	Basis Document	Augmentation Elapsed Time (min)*	Role in Table # / Line #	Unanalyzed Task?	TMS Required?
1	Shift Manager / STA	Emergency Plan Table 5-1	60	T2/L1 T2/L3 T5/L1 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	N/A	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	N/A	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	N/A	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	T5/L12	No	No
14	RP Technician	Emergency Plan Table 5-1	60	T4/L1 T4/L2	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	T5/L15	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN
One Unit – One Control Room
ANALYSIS # 2 Control Rod Drop Accident

Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	Shift Manager	Licensed Operator Training Program
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A
11	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING ANALYSIS # 2 Control Rod Drop Accident		
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

This accident does not include the need for firefighting, first aid or search & rescue.

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY Analysis # 2 Control Rod Drop Accident																		
LINE	Position Performing Function / Task	Performance Time Period After Emergency Declaration (minutes)*																
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: RP#1		X	X	X	X	X												
2	On-site Survey: RP#1							X	X	X	X	X	X	X					
3	Personnel Monitoring: N/A																		
4	Job Coverage: N/A																		
5	Offsite Rad Assessment: Chemistry *(Included in Table 5)*																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) - N/A																		
8	Chemistry Function task #2 (describe) – N/A																		

RP will perform the above task as directed by the Shift Manager. Tasks are not time critical.
The time* to commence and complete the tasks are estimated.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis # 2 Control Rod Drop Accident			
Line #	**Function / Task**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	N/A	N/A
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Shift Manager	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	Licensed Operator Training Program
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	(Note 1)	Emergency Planning Training Program
12	Offsite radiological assessment	RP/Chemistry Technician	Emergency Planning Training Program
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	Security	Security Training Program / EP Drills

Note 1: See Section V.A.2

C. Design Basis Accident Analysis #3 – Loss of Coolant Accident

1. Accident Summary
   - This event results in a release of radioactive material from the reactor coolant system to the primary containment from a complete circumferential break of one of the recirculation loop lines with a concurrent loss of offsite power. This accident is established as the Design Basis of Loss of Coolant Accidents.

2. Accident Specific Assumptions Made
   - .Leak isolation time assumed to be 1 hour.
   - .Assume release starts 15 minutes after the event.
   - Release pathways:
     - Drywell leakage
     - MSIV leakage
     - ESF component leakage in secondary containment (reactor building)
     - All leakage to the environment is through SGT with assumed charcoal filter efficiency of 90% for all radionuclides, except noble gases.
     - Leakage from the DW (includes MSIV leakage) is at the rate of 1.5% per day

3. Procedures for Accident Response
   - IAP-1, Emergency Plan Implementation Checklist
   - IAP-2, Classification of Emergencies
   - EAP-1, Offsite Notification
   - EAP-4 Dose Assessment Calculations
   - EOP – 2, RPV Control
   - EOP-4, Primary Containment
   - EOP 5/6 Secondary Containment / Radiological Release
   - AOP-1, Reactor Scram
   - AOP-15, Isolation Verification and Recovery
   - AOP-39, Loss of Coolant
   - AOPs – Loss of Offsite Power
   - EAP-5.3, Onsite/Offsite Downwind Surveys and Environmental Monitoring
   - CHSO-03, Chemistry Department Guidelines for Start-up, Shutdown, and Scram (if requested by SM, not required until 4 hours after transient)
   - SP-01.02, Reactor Water Sampling and Analysis (If sample is requested)

4. **Tables**

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis # 3 Loss of Coolant Accident						
Line #	**On-shift Position**	**Basis Document**	**Augmentation Elapsed Time (min)***	**Role in Table # / Line #**	**Unanalyzed Task?**	**TMS Required?**
1	Shift Manager / STA	Emergency Plan Table 5-1	60	T2/L1 T2/L3 T5/L1 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	N/A	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	N/A	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	N/A	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	T5/L12	No	No
14	RP Technician	Emergency Plan Table 5-1	60	T4/L2	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	T5/L15	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN
One Unit – One Control Room
ANALYSIS # 3 Loss of Coolant Accident

Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	Shift Manager	Licensed Operator Training Program
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A
11	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING ANALYSIS # 3 Loss of Coolant Accident		
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

This accident does not include the need for firefighting, first aid or search & rescue.

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY Analysis # 3 Loss of Coolant Accident																			
LINE	Position Performing Function / Task	Performance Time Period After Emergency Declaration (minutes)*																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: N/A																		
2	On-site Survey: RP#1						X	X	X	X	X	X	X	X	X	X	X	X	X
3	Personnel Monitoring: N/A																		
4	Job Coverage: N/A																		
5	Offsite Rad Assessment: *(Included in Table 5)*																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) - N/A																		
8	Chemistry Function task #2 (describe) – N/A																		

Task is not time critical. The time* to perform the task and the time to complete the task is estimated.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis # 3 Loss of Coolant Accident			
Line #	**Function / Task**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	N/A	N/A
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Shift Manager	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	(Note 1)	Emergency Planning Training Program
12	Offsite radiological assessment	RP/Chemistry Technician	Emergency Planning Training Program
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	Security	Security Training Program / EP Drills

Note 1: See Section V.A.2

D. Design Basis Accident Analysis #4 – Fuel Handling Accident

1. Accident Summary
   - The FHA is assumed to occur when the primary containment is open and the reactor vessel head has been removed. The DBA for this case involves the dropping of a fuel bundle on top of the core.

2. Accident Specific Assumptions Made
   - The FSAR does not contain detailed radiological conditions or release rates to determine an EAL classification. This analysis, therefore, assumed an ALERT declaration based on Refuel Floor Vent Duct Radiation.
   - Additional station personnel, including Operations and Health Physics Technicians, would be on-site during refueling activities. Additional station personnel were not required, however, to support initial response actions.
   - JAF Technical Specifications Section 5.2.2. (f) requires an STA qualified individual be available to provide advisory technical support to the operations shift crew in modes 1,2, or 3. The Fuel Handling Accident is assumed to occur while in Mode 5, therefore the STA was not considered available for this accident.

3. Procedures for Accident Response
   - IAP-1, Emergency Plan Implementation Checklist
   - IAP-2, Classification of Emergencies
   - EAP-1, Offsite Notification
   - EAP-4 Dose Assessment Calculations
   - AOP-44 R8, Dropped Fuel Assembly
   - EAP-5.3, Onsite/Offsite Downwind Surveys and Environmental Monitoring
   - SP-01.02, Reactor Water Sampling and Analysis (If sample is requested)

4. Tables

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis #4 – Fuel Handling Accident						
Line #	On-shift Position	E-Plan Reference	Augmentation Elapsed Time (min)	Role in Table # / Line #	Unanalyzed Task?	TMS Required?
1	Shift Manager	Emergency Plan Table 5-1	60	T2/L1 T5/L1 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	N/A	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	N/A	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	N/A	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	T5/L12	No	No
14	RP Technician	Emergency Plan Table 5-1	60	T4/L2	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	T5/L15	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN One Unit – One Control Room ANALYSIS # 4 – Fuel Handling Accident			
Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable			
Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	N/A	N/A
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A
11	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING ANALYSIS # 4 – Fuel Handling Accident		
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

This accident does not include the need for firefighting, first aid or search & rescue.

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY
Analysis #4 – Fuel Handling Accident

LINE	Position Performing Function / Task	Performance Time Period After Emergency Declaration (minutes)*																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In- lant Survey: N/A																		
2	On-Site Survey: RP#1						X	X	X	X	X	X	X	X	X	X	X	X	X
3	Personnel Monitoring: N/A																		
4	Job Coverage: N/A																		
5	Offsite Rad Assessment: *(Included in Table 5*																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) N/A																		
8	Chemistry Function task #2 (describe) N/A																		

The time* to commence and complete the task is estimated.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis #4 – Fuel Handling Accident			
Line #	**Function / Task**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	N/A	N/A
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Shift Manager	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	(Note 1)	Emergency Planning Training Program
12	Offsite radiological assessment	RP/Chemistry Technician	Emergency Planning Training Program
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	Security Officer	Security Training Program

Note 1: See Section V.A.2

E. **Design Basis Accident Analysis #5 – Main Steam Line Break**

1. Accident Summary
   - This event results in radioactive material releases outside secondary containment and was due to a complete severance of a 16" line leading to the turbine bypass steam chest.

2. Accident Specific Assumptions Made
   - The FSAR does not provide adequate guidance to determine the EAL. It is assumed that the steam line break release for the 2 µCi/gm I-131 DE would cause the following instruments to alarm: MSL radiation monitors, Off Gas radiation monitors, Turbine Building area monitors. For the purpose of this analysis, an Alert level classification on is assumed

3. Procedures for Accident Response
   - IAP-1, Emergency Plan Implementation Checklist
   - IAP-2, Classification of Emergencies
   - EAP-1, Offsite Notification
   - EAP-4, Dose Assessment Calculations
   - EOP – 2, RPV Control .
   - EOP 5/6 Secondary Containment / Radiological Release
   - AOP-1, Reactor Scram
   - AOP-3, High Activity in OFG
   - AOP-40, Main Steam Line Break
   - EAP-6, In-Plant Emergency Surveys
   - EAP-5.3, Onsite/Offsite Downwind Surveys and Environmental Monitoring
   - CHSO-03, Chemistry Department Guidelines for Start-up, Shutdown, and Scram (if requested by SM, not required until 4 hours after transient)
   - SP-01.02, Reactor Water Sampling and Analysis (If sample is requested)

4. **Tables**

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis # 5 - Main Steam Line Break						
Line #	**On-shift Position**	**E-Plan Reference**	**Augmentation Elapsed Time (min)**	**Role in Table # / Line #**	**Unanalyzed Task?**	**TMS Required?**
1	Shift Manager / STA	Emergency Plan Table 5-1	60	T2/L1 T2/L3 T5/L1 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	N/A	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	N/A	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	N/A	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	T5/L12	No	No
14	RP Technician	Emergency Plan Table 5-1	60	T4/L1 T4/L2	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	T5/L15	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN One Unit – One Control Room ANALYSIS # 5 - Main Steam Line Break			
Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable			
Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	Shift Manager	Licensed Operator Training Program
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING ANALYSIS # 5 - Main Steam Line Break		
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

This accident does not include the need for firefighting, first aid or search & rescue.

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY
Analysis # 5 - Main Steam Line Break

LINE	Position Performing Function / Task	Performance Time Period After Emergency Declaration (minutes)*																
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: RP#1			X	X	X	X	X											
2	On-site Survey: RP#1								X	X	X	X	X	X	X				
3	Personnel Monitoring: N/A																		
4	Job Coverage: N/A																		
5	Offsite Rad Assessment: (refer to Table 5)																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) N/A																		
8	Chemistry Function task #2 (describe) N/A																		

Tasks are not time critical. The time* to commence and complete the tasks are estimated.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis # 5 - Main Steam Line Break			
Line #	**Function / Task**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	N/A	N/A
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Shift Manager	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	(Note 1)	Emergency Planning Training Program
12	Offsite radiological assessment	RP/Chemistry Technician	Emergency Planning Training Program
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	Security Officer	Security Training Program / EP Drills

Note 1: See Section V.A.2

F. Accident Analysis #6 – Aircraft Probable Threat

1. Accident Summary

   - The analysis includes all emergency response actions taken prior to an aircraft impact in accordance with RG 1.214 for an aircraft threat that is greater than 5 minutes, but less than 30 minutes from the site, and considers the dispersal of the site fire brigade away from target areas for firefighting.
   - The analysis does not include a scenario or response actions taken during or after a crash.

2. Accident Specific Assumptions Made

   - The Shift Manager receives the call from the NRC of probable aircraft threat.
   - All non-security on-shift personnel are inside the protected area fence at their normal workstation.

3. Procedures for Accident Response

   - AOP-70A, Security Threat
   - EOP –2, RPV Control (if shutdown due to the event)
   - IAP-1, , Emergency Plan Implementation Checklist
   - IAP-2, Classifications
   - EAP-1.1, Notifications
   - EAP-8, Personnel Accountability
   - EAP-10, PA Evacuation

4. **Tables**

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis #6 – Aircraft Probable Threat						
Line #	**On-shift Position**	**Basis Document**	**Augmentation Elapsed Time (min)**	**Role in Table # / Line #**	**Unanalyzed Task?**	**TMS Required?**
1	Shift Manager / STA	Emergency Plan Table 5-1	60	T2/L1 T2/L3 T5/L1 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	N/A	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	N/A	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	N/A	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	N/A	No	No
14	RP Technician	Emergency Plan Table 5-1	60	N/A	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	T5/L15	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN One Unit – One Control Room Analysis #6 – Aircraft Probable Threat			
Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable			
Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	Shift Manager	Licensed Operator Training Program
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	Generic Title/Role	On-Shift Position	Task Analysis Controlling Method
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A
11	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING Analysis #6 – Aircraft Probable Threat		
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

This accident does not include the need for firefighting, first aid or search & rescue.

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY
Analysis #6 – Aircraft Probable Threat

LINE	Position Performing FuN/Anction / Task	Performance Time Period After Emergency Declaration (minutes)*																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: N/A																		
2	On-site Survey: N/A																		
3	Personnel Monitoring: N/A																		
4	Job Coverage: N/A																		
5	Offsite Rad Assessment: *(Included in Table 5 – N/A*																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) – N/A																		
8	Chemistry Function task #2 (describe) – N/A																		

*Times are estimated

The RP Technician is available to perform Job Coverage for Fuel Pool Cooling and Reactor Water Clean-up isolations. The RP Technician will then relocate with survey vehicle to outside the protected area. No specific Chemistry tasks are performed for this event. The Chemistry Technician is available to support NRC communications if needed.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis #6 – Aircraft Probable Threat			
Line #	**Function / Task***	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	N/A	N/A
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Shift Manager	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	(Note 1)	Emergency Planning Training Program
12	Offsite radiological assessment	N/A	N/A
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	Security	Security Training Program

Note 1: See Section V.A.2

G. Accident Analysis #7 – Control Room Fire Requiring Evacuation and Remote Shutdown

1. Accident Summary

   - This event involves a large transient fire requiring evacuation of the Control Room. The event has the potential to include shorts and/or spurious signals producing potential LOCA pathways and/or incorrect system lineup for shutdown.

2. Accident Specific Assumptions Made

   - The Senior Nuclear Operator will initiate a manual reactor trip prior to evacuating the control room.
   - The Shift Manager will make the plant announcement prior to evacuating the control room.

3. Procedures for Accident Response

   - AOP 43, Plant SD from Outside CR
   - IAP-2, Classification of Emergencies
   - EAP-1, Offsite Notification

4. Tables

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis #7 – CR Evacuation & Remote SD						
Line #	On-shift Position	Basis Document	Augmentation Elapsed Time (min)	Role in Table # / Line #	Unanalyzed Task?	TMS Required?
1	Shift Manager / STA	Emergency Plan Table 5-1	60	T2/L1 T2/L3 T5/L1 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	T3/L1	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	T3/L2	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	T3/L3	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	T3/L4	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	T3/L5	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	N/A	No	No
14	RP Technician	Emergency Plan Table 5-1	60	N/A	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	N/A	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN One Unit – One Control Room Analysis #7 – CR Evacuation & Remote SD			
Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable			
Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	Shift Manager	Licensed Operator Training Program
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A
11	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING Analysis #7 – CR Evacuation & Remote SD		
Line #	**Performed by**	**Task Analysis Controlling Method**
1	Senior Nuclear Operator #3	Fire Brigade Training
2	Nuclear Plant Operator #2	Fire Brigade Training
3	Nuclear Plant Operator #3	Fire Brigade Training
4	Nuclear Plant Operator #4	Fire Brigade Training
5	Fire Brigade #5	Fire Brigade Training

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY
Analysis #7 – CR Evacuation & Remote SD

LINE	Position Performing Function / Task	Performance Time Period After Emergency Declaration (minutes)*																
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: N/A																		
2	On-site Survey: N/A																		
3	Personnel Monitoring: N/A																		
4	Job Coverage: N/A																		
5	Offsite Rad Assessment: *(Included in Table 5*																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) – N/A																		
8	Chemistry Function task #2 (describe) – N/A																		

No specific RP or Chemistry related emergency tasks were identified for this event.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis #7 – CR Evacuation & Remote SD			
Line #	**Function / Task***	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	N/A	N/A
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Shift Manager	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	(Note 1)	Emergency Planning Training Program
12	Offsite radiological assessment	N/A	N/A
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	N/A	N/A

Note 1: See Section V.A.2

H. Accident Analysis #8 – Station Blackout

1. Accident Summary
   - A loss of all offsite AC power occurs and the failure of the emergency diesel generators to start. The SM determines power cannot be restored and declares a SAE.

2. Accident Specific Assumptions Made
   - Assume all automatic actions occur
   - Assume RCIC is operable and equipment operated per the procedure perform as expected

3. Procedures for Accident Response
   - AOP -49, Station Blackout (Rev 18)
   - AOP-1, Reactor Scram (if shutdown due to the event)
   - EOP – 2, RPV Control (if shutdown due to the event)
   - IAP-1, , Emergency Plan Implementation Checklist
   - IAP-2, Classification (Rev. 30)
   - EAP-1.1, Notifications
   - EAP-8, Personnel Accountability

4. Tables

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis #8 – Station Blackout						
Line #	On-shift Position	Basis Document	Augmentation Elapsed Time (min)	Role in Table # / Line #	Unanalyzed Task?	TMS Required?
1	Shift Manager / STA	Emergency Plan Table 5-1	60	T2/L1 T2/L3 T5/L1 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	N/A	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	N/A	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	N/A	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	N/A	No	No
14	RP Technician	Emergency Plan Table 5-1	60	N/A	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	T5/L15	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN One Unit – One Control Room Analysis #8 – Station Blackout			
Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable			
Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	Shift Manager	Licensed Operator Training Program
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A
11	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING Analysis #8 – Station Blackout		
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

This accident does not include the need for firefighting, first aid or search & rescue.

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY
Analysis #8 – Station Blackout

LINE	Position Performing Function / Task	Performance Time Period After Emergency Declaration (minutes)*																
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: N/A																		
2	On-site Survey: N/A																		
3	Personnel Monitoring: N/A																		
4	Job Coverage: N/A																		
5	Offsite Rad Assessment: *(Included in Table 5*																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) – N/A																		
8	Chemistry Function task #2 (describe) – N/A																		

RP/Chemistry and RP Technician do not have any assigned emergency tasks for this event. RP/Chemistry Technician is available for dose assessment if a release occurs.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis #8 – Station Blackout			
Line #	**Function / Task***	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	N/A	N/A
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Shift Manager	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	(Note 1)	Emergency Planning Training Program
12	Offsite radiological assessment	N/A	N/A
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	Security	Security Training Program

Note 1: See Section V.A.2

I. Accident Analysis #9 – LOCA/General Emergency with Release and PAR

1. Accident Summary (Assumed for Staffing Analysis Purpose)

   - The unit is in a Site Area Emergency when the Shift Manager is given a dose assessment update that projects >1 Rem TEDE dose at the site boundary.

2. Accident Specific Assumptions Made

   - All actions for SAE are complete.
   - No transients other than LOCA are considered.
   - The ERO would be activated at an Alert or SAE. For Staffing Analysis purpose, the T=0 clock is used for the emergency plan actions to evaluate the capability to implement the GE classification, PAR and notification functions before the ERO arrives.

3. Procedures for Accident Response

   - IAP-1, E-Plan Implementation Checklist
   - IAP-2, Classification of Emergencies
   - EAP-1.1 Offsite Notifications
   - EAP-4, Dose Assessment
   - EAP-10 - R-19, PA Evacuation
   - IAP-1, Emergency Plan Implementation Checklist
   - EOP-4, Primary Containment
   - EOP 5/6 Secondary Containment / Radiological Release
   - AOP-15, Isolation Verification and Recovery
   - AOP-39, Loss of Coolant
   - EAP-5.3, Onsite/Offsite Downwind Surveys and Environmental Monitoring

4. Tables

JAF TABLE 1 – ON-SHIFT POSITIONS Analysis #9 – LOCA/GE with PAR						
Line #	On-shift Position	Basis Document	Augmentation Elapsed Time (min)	Role in Table # / Line #	Unanalyzed Task?	TMS Required?
1	Shift Manager / STA	Emergency Plan Table 5-1	60	T2/L1 T2/L3 T5/L1 T5/L2 T5/L3 T5/L4 T5/L5 T5/L8 T5/L10 T5/L14	No	No
2	Control Room Supervisor	Emergency Plan Table 5-1	N/A	T2/L2	No	No
3	Field Support Supv. (FSS)	Emergency Plan Table 5-1	N/A	T2/L7	No	No
4	Senior Nuclear Operator #1	Emergency Plan Table 5-1	N/A	T2/L4	No	No
5	Senior Nuclear Operator #2	Emergency Plan Table 5-1	N/A	T2/L5	No	No
6	Senior Nuclear Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
7	Nuclear Plant Operator #1	Emergency Plan Table 5-1	N/A	T2/L6	No	No
8	Nuclear Plant Operator #2	Emergency Plan Table 5-1	N/A	N/A	No	No
9	Nuclear Plant Operator #3	Emergency Plan Table 5-1	N/A	N/A	No	No
10	Nuclear Plant Operator #4	Emergency Plan Table 5-1	N/A	N/A	No	No
11	Nuclear Plant Operator #5	Emergency Plan Table 5-1	60	T5/L9 T5/L13	No	No
12	Fire Brigade #5	Emergency Plan Table 5-1	N/A	N/A	No	No
13	RP / Chemistry Technician	Emergency Plan Table 5-1	60	T5/L12	No	No
14	RP Technician	Emergency Plan Table 5-1	60	T4/L4	No	No
15	Security	Security Contingency Plan / Emergency Plan Table 5-1	N/A	T5/L15	No	No

JAF TABLE 2 – PLANT OPERATIONS & SAFE SHUTDOWN One Unit – One Control Room Analysis #9 – LOCA/GE with PAR			
Minimum Operations Crew Necessary to Implement AOPs and EOPs or SAMGs if Applicable			
Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
1	Shift Manager	Shift Manager	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor	Shift Manager	Licensed Operator Training Program
4	Reactor Operator #1	Senior Nuclear Operator #1	Licensed Operator Training Program
5	Reactor Operator #2	Senior Nuclear Operator #2	Licensed Operator Training Program
6	Auxiliary Operator #1	Nuclear Plant Operator #1	Non-Licensed Operator Training Program
7	Field Support Supervisor	Field Support Supervisor	Licensed Operator Training Program

Other (non-Operations) Personnel Necessary to Implement AOPs and EOPs or SAMGs if Applicable

Line #	**Generic Title/Role**	**On-Shift Position**	**Task Analysis Controlling Method**
7	Mechanic	N/A	N/A
8	Electrician	N/A	N/A
9	I&C Technician	N/A	N/A
10	Other	N/A	N/A
11	Other	N/A	N/A

Fire Brigade

JAF TABLE 3 – FIREFIGHTING Analysis #9 – LOCA/GE with PAR		
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

This accident does not include the need for firefighting, first aid or search & rescue.

JAF TABLE 4 – RADIATION PROTECTION AND CHEMISTRY **Analysis #9 – LOCA/GE with PAR**																		
LINE	Position Performing Function / Task	Performance Time Period After Emergency Declaration (minutes)*																
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
1	In-Plant Survey: RP#1																		
2	On-site Survey: RP#2																		
3	Personnel Monitoring:																		
4	Job Coverage: RP#1 support (including in plant and out of plant surveys) as directed by the SM.		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	Offsite Rad Assessment: *See Table 5*																		
6	Other site specific RP (describe): N/A																		
7	Chemistry Function task #1 (describe) N/A																		
8	Chemistry Function task #2 (describe) N/A																		

RP Technician will perform the above task as directed by the Shift Manager. Tasks are not time critical. The time* to commence and complete the tasks are estimated.

RP/Chemistry Technician does not have an assigned chemistry task for LOCA. Chemistry is available for dose assessment.

JAF TABLE 5 – EMERGENCY PLAN IMPLEMENTATION Analysis #9 – LOCA/GE with PAR			
Line #	**Function / Task***	**On-Shift Position**	**Task Analysis Controlling Method**
1	Declare the emergency classification level (ECL)	Shift Manager	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	Shift Manager	Emergency Planning Training Program
3	Approve content of State/local notifications	Shift Manager	Emergency Planning Training Program
4	Approve extension to allowable dose	Shift Manager	Emergency Planning Training Program
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	N/A	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	Licensed Operator Training Program
8	Complete State/local notification form	Shift Manager	Emergency Planning Training Program
9	Perform State/local notifications	NPO#5	Emergency Planning Training Program
10	Complete NRC event notification form	Shift Manager	Licensed Operator Training Program
11	Activate ERDS	N/A	Emergency Planning Training Program
12	Offsite radiological assessment	RP/Chemistry Technician	Emergency Planning Training Program
13	Perform NRC notifications	NPO#5	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	Shift Manager	Licensed Operator Training Program
15	Personnel Accountability	Security	Security Training Program

VIII. APPENDIX C – TIME MOTION STUDIES SUPPORTING THE STAFFING ANALYSIS

A. RP/Chemistry performance of dose assessment

1. See Section II.C.1 for the exception taken for the RP/Chemistry Technician to perform dose assessment. No Time Motion Study or corrective action required

B. ERO Notification (Everbridge Activation)

JAMES A. FITZPATRICK

TIME MOTION STUDY OF OVERLAPPING TASKS

TASK 1: ACTIVATE THE ERO USING EVERBRIDGE JOB:

SHIFT MANAGER

TASK 2: EMERGENCY DIRECTION AND CONTROL

JOB: SHIFT MANAGER

PURPOSE:

Perform a Time Motion Study to evaluate whether assigning the performance of ERO notification using Everbridge to the Shift Manager or STA can be justified as an acceptable overlap to the Shift Manager's primary emergency plan function of direction and control.

NOTE
The Time Motion Study may be completed during simulator training/evaluation or during EP drills

LOCATION:

Simulator (to use the "TRAINING" event code to avoid inadvertent ERO activation for an EMERGENCY event.) Codes are site specific.

REQUIRED TOOLS/EQUIPMENT:

A. Individual performing the procedure actions must be logged on to the computer being used.

B. PC with Internet 7.0 and internet access.

C. Instructions/codes for activating Everbridge in the TRAINING mode. [Staged Instruction sheet for activating Everbridge may be used in lieu of EN-EP-310, *Emergency Response Organization Notification System)]*

Function / Responsibility (Task) Analysis Template

Event: ALL Site: JAF Position: Shift Manager Line #: 1

Function	Responsibility (Task)	Action Step	Duration
1.Notification	1.1 Initiate notification to the ERO via the ERON Program	Retrieve the Everbridge instruction that contains the **[TRAINING]** Access code and Pass code.	15 seconds
		1. (On the PC) Open ERO Notification System by clicking: **Start →Nuclear Corporate Apps (ESM) → Nuclear Emergency Response (ESM) → ERON**	49 seconds
		2. Enter Access code (**XXXXX**) and Pass code (**XXXXX**) and click the SUBMIT button	17 seconds
		3. Select the appropriate classification by clicking on it. **(Select ALERT or scenario ECL)**	34 seconds (step 3-9)
		4. Answer "Yes" or "No" to Security EAL question, "Was the event declared on a Security EAL?" [**Click on "NO"**]	
		5.Select proper response action by clicking on it. **[Select "Activate All ERFs"}**	
		6.Review the message that was generated in the User Message box at the bottom of the screen. Ensure the message contains the information to communicate to the ERO. Additional information can be added to the message by clicking in the User Message box and typing.	
		7.Once satisfied with the message content, click send notification button. **[Click "Send Notification"]**	
		8.Answer "YES" to send verification question, "Are you CERTAIN you want to send this message?" **[Click "YES"]**	
		9.If message was successfully sent, you will see a dialog box. **[Click "Return"]**	
		END OF INITIATE NOTIFICATION TO ERO TASK	
2.Emergency Direction and Control	2.1 Maintain emergency direction and control of the event response.	Oversight of the emergency response.	Maintained throughout
		Initiate any emergency actions.	Maintained throughout
		END OF EMERGENCY DIRECTION AND CONTROL TASK	

Task Performer: John Walkowiak (Name) Position: Shift Manager (Job Title) Date: 11/8/12

Evaluator: Pete Cullinan (Name) Position: Sr. Emergency Planner (Job Title) Date: 11/8/12

IX. OVERLAP OF TASKS ACTIVITIES OR OTHER CONFLICTS IDENTIFIED

A. Overlap Requiring Compensatory Measures

NONE

X. REFERENCES

- NEI 10-05, Rev 0, *Assessment of On-Shift Emergency Response Organization Staffing and Capabilities*
- NSIR DPR-ISG-01, *Interim Staff Guidance – Emergency Planning for Nuclear Power Plants*
- NUREG-0654, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.*
- JAF Emergency Plan, Rev 22
- NRC Generic Letter No. 86-04, "Policy Statement of Engineering Expertise on Shift"

XI. STAFFING ANALYIS TEAM

- Fred Guynn, Entergy ECH Project Manager, EP
- Myra Jones, Contractor CMCG
- Fran, Lukaczyk, Asst. Operations Manager
- Fred Catella, Training Instructor
- William Creego, Training Instructor
- Mark Riffle, Chemistry Specialist
- Mike Slocum, Chief Journeyman Chemistry
- Bernie Landers, Chemistry Supv.
- Adam King, Radiation Protection Supv.
- Ron Owen, Security Supv.
- Pete Cullinan, Emergency Preparedness Planner

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Notes 1:

Notes 2:

Instructions: