

[Site Name]
ERO Augmentation Description

This License Amendment Request revises the current Emergency Response Organization Augmentation Plan for the **[Site Name]**. The on-shift staff will be augmented by both onsite and corporate responders within 90 minutes of a declared event Classified at Alert or Higher. Should the Shift Manager conclude activation of the ERO is needed for other events the ability exists to do so without the specific need for classification.

The justification for the modification of ERO response is supported by a variety of factors. A detailed analysis meeting the requirements of 10 CFR 50 Appendix E.IV.A.9 was conducted using the proposed organization and response times. In addition, the overall response environment has changed considerably since the current response philosophy was developed in response to the issuance of NUREG-0654/FEMA REP-01 Revision 1. On-shift capabilities in terms of training, procedures, and equipment reliability have occurred.

ERO Activation

Revision **[current rev #]** requires staffing of augmented ERO at the Alert or higher classification. ***[Site specific criteria for the number of min staff positions required and the timeframes expected for staffing of the facilities as well as the criteria and time frame for declaring the facility activated]***. The proposed revision to the Plan maintains the requirement to augment on-shift staff with qualified Emergency Response Organization personnel at the Alert or higher classification. The proposed plan describes the minimum number of positions which are required to be filled within 90 minutes of the event declaration in order for the facility to be considered 'activated'. A facility can be declared activated when minimum staffing has been achieved and personnel have been briefed on the situation and are ready to assume command and control functions.

EP Functions that will be Impacted by the Change

The proposed change impacts the Emergency Response Organization as outlined in 10 CFR 50.47(b) Planning Standards 1 and 2. This change addresses the following Planning Standard Functions:

- 10 CFR 50.47(b)(1): The response organization has the staff to respond and augment on a continuing basis (24/7 staffing) in accordance with the E-plan.
- 10 CFR 50.47(b)(2): Process for timely augmentation of on shift staff is established and maintained.

The proposed change has been reviewed and continues to perform the functions required of 10 CFR 50.47(b) and the related requirements of 10 CFR 50 Appendix E.

Assignment of Responsibility/Organizational Control – 10 CFR 50.47(b)(1)

[Site Name] has maintained an on-shift organization as documented in the site Emergency Plan which identifies the authority and responsibilities for emergency response and assigns major functional areas to on-site and offsite response facilities for augmented response. An analysis of the impact of the proposed change in each major functional area has been completed that evaluates the impact of extending the augmentation times on the ability of the on-shift staff to perform the major tasks for the major functional areas of the **[Site Name]** Emergency Plan. The analysis demonstrates that no degradation or loss of function would occur as a result of the change.

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Plant Operations and Assessment of Operational Aspects

NUREG-0654 Revision 1 assumes the on-shift staff will provide these functions throughout the emergency. Compared to the SER Approved plan Revision **[site specific Rev #]**, the current plan has **[site specific delta in on-shift operations positions]** to support this function and any of the major tasks such as repair and corrective actions or operational accident assessments. Also, included in the current plan is the designation of a State/local Communicator that is a dedicated **[site specific position]** who completes initial notifications to offsite agencies. This improves availability of Operations personnel to perform specified functions.

In accordance with the current **[Site Name]** Emergency Plan, the on-shift staffing is in excess of the requirements of NUREG-0654 Revision 1 Table B-1, as well as that prescribed in Revision **[SER approved rev #]**. The additional on-shift staff helps to ensure prompt response to emergency events without requiring immediate augmentation.

Therefore, the proposed increase in augmentation times will not detract from the capability of on-shift personnel to support plant operations or the assessment of operational aspects at the start of an event and until the on-shift staff is properly augmented.

Emergency Direction and Control

NUREG-0654 Revision 1 guidance indicates that the Shift Manager assumes this function as a collateral duty, where responsibility for overall direction of facility response may be transferred when ERFs are fully staffed.

According to the **[SER Approved Revision #]** of the **[Site Name]** Emergency Plan, the **[SER approved Shift Manager or equivalent title]** would be responsible for emergency response efforts until relieved by the **[SER approved TSC Leader position]** who arrives in the TSC within **[SER approved timeframe]** of notification of an event and would assume responsibility for event response upon TSC was activation. The **[SER approved TSC leader title]** in the TSC would maintain that responsibility until relieved by the **[SER approved EOF leader title]** in the Emergency Operations Facility (EOF). Revision **[SER approved rev #]** of the plan **[did/did not]** include facility activation criteria.

In revision **[current revision #]** of the Emergency Plan, the goal is to accomplish augmentation of the **[TSC min staff position list]** within **[site specific value]** minutes.

With the proposed changes, the Shift Manager/ED is relieved within 90 minutes by the ED in the TSC who then assumes overall control of the response efforts. Advances in technology, training and procedures as well as the additional operations personnel on-shift adequately compensate for any additional burden imposed on the Shift Manager by the retention of the ED function for a total of up to 90 minutes. Details on the advances in technology, training and procedures are discussed later in this document.

The EOF is activated at an Alert level to ensure a rapid mobilization of EOF personnel, including the EOF Emergency Director. There is minimal potential impact to the TSC ED because the EOF provides timely relief to the ED by assuming the offsite responsibilities.

Finally, the proposed revision to the Emergency Plan, requires augmentation of the following TSC positions which support activation of the TSC within 90 minutes of event classification:

- TSC Emergency Director
- TSC Manager

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- Operations Supervisor
- Engineering Supervisor
- RP Supervisor
- ERF Communicator
- ENS Communicator

The increased augmentation support in the TSC better supports the transfer of command/control functions from the Control Room within the 90 minute timeframe.

This change is acceptable in that it is supported by the new positions added to the TSC for completion of the command and control functions.

Notification and Communication

NUREG-0654 Revision 1 requires one Communicator to be assigned on-shift. Revision **[SER approved rev #]** **[did/did not]** include this position. Revision **[current Plan rev #]** of the **[Site Name]** Annex specifies **[site specific number]** Communicator to perform this task. As a result of the proposed change, this task would remain with the **[site specific position(s)]** for up to 90 minutes until relieved by augmented personnel. Based on the fact that this on-shift position is dedicated for this purpose, there would be no undue burden on the Control Room staff or impact on the notification function from an increase in initial augmentation time.

This change is acceptable as it maintains the capability of performing the Notification function in the Control Room for 90 minutes without conflict.

Radiological Accident Assessment and Chemistry/Radio-Chemistry

The function of on-site radiological assessment is to review radiological conditions on-site using data from available instrumentation, assess the impact of changing radiological conditions on emergency classification, assist in accident assessment based upon those changing radiological conditions, and recommend appropriate on-site protective measures.

Classification is performed by the Shift Manager using **[site specific procedure number and title]**, which uses readily available and easily recognized plant instrumentation to determine the appropriate emergency classification. Off-site and on-site surveys provide additional sources of information, such as direct radiation measurements that could be directly applied to emergency classification. The on-shift Radiation Protection (RP) Technician takes direction from the Control Room to provide radiological assessment support until the OSC is activated.

The **[site specific CR position]** uses symptom-based emergency operating procedures (EOPs) which minimize the need for specific accident assessment. The operating crew performs actions based on symptoms that are described in the EOPs, not based upon specific accident assessment.

Similarly, the Shift Manager/ED uses flowcharts in **[site specific procedure number and title]**, which prescribes the decision making processes by which on-site protective measures are directed. The information needed to accomplish this is simple and allows for rapid decision making using readily available information by the Shift Manager/ED.

Therefore, the proposed change to the ERO augmentation time continues to meet the intent of the requirements of Appendix E to 10 CFR Part 50 and the standards of 10 CFR 50.47(b).

This Functional Area includes three tasks: EOF Director, Off-Site Dose Assessment and Chemistry/Radiochemistry, and Off-site, On-Site (out of plant) and In-Plant Surveys and Radiation Protection.

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EOF Emergency Director

The EOF Emergency Director (EOF ED) is not assigned to the on-shift complement. The EOF ED currently arrives within 60 minutes of an Alert and relieves the on-shift ED of overall emergency management as well as all off-site responsibilities including Protective Action Recommendations (PARs) and emergency notifications.

Under this proposal, the Shift Manager/ED is relieved within 90 minutes by the Emergency Director in the TSC, who then assumes overall control of the response efforts. The EOF ED arrives and relieves the TSC ED of overall emergency management and off-site responsibilities including PARs, dose assessment and emergency notifications. The EOF is currently activated at an Alert to ensure a rapid mobilization of EOF personnel, including the EOF ED.

The proposed change presents no adverse impact to the TSC staffing when compared to Revision **[SER approved Plan rev#]** or revision **[site specific current rev #]** of the **[Site Name]** Emergency Plan, because the ED will continue to provide timely relief to the on-shift ED from the duties and responsibilities for offsite functions.

Offsite dose assessment/chemistry

On-shift capability for performance of the dose assessment function is currently assigned to an on-shift **[site specific position]**. A review of the EOPs, AOPs, Emergency Plan, and the procedure used by Operations for off-normal plant conditions did not identify any conflicts between completion of dose assessment and other on-shift operations functions within the time frame where the Operator would be required to perform dose assessment. With the improvements in the dose assessment program, as well as plant status, meteorological, and radiation monitoring data, Operations can perform dose assessments during emergency conditions easily and rapidly. Required chemistry samples are collected by the on-shift chemistry technician. As such, both activities could easily be performed simultaneously.

Augmentation by the RP Supervisor TSC will relieve the SRO and assume dose assessment responsibilities. The TSC would retain this task until relieved by the Dose Assessment Supervisor in the EOF. There is no loss of function or impact on the timing for performing either of the tasks of dose assessment or required radiochemistry sampling by the proposed extension in augmentation times.

Offsite/Onsite Surveys, In-Plant surveys and RP

NUREG-0654 Revision 1 identifies only one on-shift "HP Technician" who is responsible for performing in-plant surveys.

In-plant surveys are normally performed in support of the dispatch of in-plant teams. NUREG-0654 further identifies two RP Technicians for the RP task but indicates that they "may be provided by shift personnel assigned other functions."

Revision **[current rev #]** of the **[Site Name]** Emergency Plan identified **[site specific number]** RP Technician who was assigned to the tasks for in-plant and on-site surveys. The current revision maintains this commitment.

Regarding in-plant surveys; personnel accessing the **[site specific term for radiologically controlled areas]** at **[Site Name]** are required by procedure to obtain electronic

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personal dosimetry prior to entry. The same dosimetry is also used as a “key” to unlock turnstiles to gain access to the **[site specific name]**. Radiation work permits (RWPs) **[or site specific term]** establish the necessary preset warnings/alarms associated with the dosimetry.

An emergency reentry process has been developed for use during a declared emergency. Dosimeters have their emergency dose and dose rate alarms set manually. This assures that the teams dispatched to the in-plant areas to perform any function during a declared emergency will be afforded ample warning/alarm prior to exceeding their allowed dose or dose rate. Also, in-plant teams are briefed regarding radiological conditions prior to being dispatched. Thus, under emergency conditions, personnel responding to emergencies in a high radiation area will be knowledgeable of dose rates in the area, and radiation protection personnel may not be required to accompany all teams into the plant areas. Dosimeters can also be programmed at the OSC by RP personnel as needed prior to team dispatch.

On-site, out of plant field teams and off-site field teams are typically used to verify the status of a potential release, but are not relied upon for timely indication. Installed effluent radiation monitors and in-plant radiation monitors would be able to detect any radioactive release quickly and accurately. The enhanced technology provided by the **[site specific computer system]** computer system and the dose assessment model provides reliable visual indication of any radioactive plume and its calculated direction. Quantification of a radioactive release is determined by dose assessment which is performed on-shift. Dose calculations determine the radiological impacts of a release, as well as areas of concern which is used to develop offsite Protective Action Recommendations or onsite protective actions. The dose assessment program can also provide a rapid estimate of core damage based on in-plant radiation monitor readings.

Although off-site survey data is available after the emergency response facilities are activated, monitoring of installed plant radiological instrumentation is sufficient for the first 90 minutes of an accident. Onsite, out of plant surveys can be used for verification of release or downwind monitoring as needed. Offsite survey data may be used to validate dose assessment.

With improved installed instrumentation, dose calculation model, **[site specific]** computer modeling, and the increase of on-shift staffing, there is no more than minimal impact to the performance of these tasks as a result of the proposed changes to augmentation times.

Plant System Engineering

This functional area includes two tasks: Technical Support; Repair and Corrective Actions

Technical Support

The current **[Site Name]** Emergency Plan identifies the **[site specific position]** as the on-shift person assigned this task. Augmentation to support the **[site specific position]** is currently provided by the **[site specific]** in the TSC within **[site specific #]** minutes of an Alert classification. This capability will be extended under the proposed change. [may need some words as to why this is ok]

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Repair and Corrective Actions

NUREG-0654 Revision 1, Table B-1 specifies the functional area of “Repair and Corrective Actions,” is to be fulfilled on shift by a total of two personnel who also “may be provided by shift personnel assigned other functions.” It further identifies that the “position title or expertise” for the “repair and corrective actions” task could be filled by Mechanical Maintenance / Radwaste Operator, Electrical Maintenance or I&C Technician.

Revision **[SER approved rev #]** of the **[Site Name]** Emergency Plan stated that Damage Control & Repair actions for minor emergencies would be completed by plant personnel, including cleanup, repair and damage control. Historically, **[site position title]** on-shift have performed these functions and maintain the necessary training and qualifications to respond to plant events and perform immediate actions to stabilize the plant.

Due to the time needed to stabilize the plant and assess the event, the initial phase of accidents is not expected to involve a significant need for maintenance personnel. Once plant status is understood and the plant is in a stable condition, attention can be focused on corrective maintenance that may be needed to restore plant capabilities.

Typically the initial stages of “corrective actions” will be minor or of limited scope, such as:

- Mechanical – Identification and operation of faulty valves, clogged filters, packing and seal adjustments, or troubleshooting,
- Electrical – Identification and correction of tripped breakers and overloads, and hands off troubleshooting,
- I&C – Identification and correction of controller and set point adjustment, calibration, or hands off troubleshooting.

Until the reactor is stabilized and the causal agents identified, actual repairs or realignment of plant equipment would not require large scale maintenance support. On-shift personnel are capable of performing initial maintenance activities until augmenting personnel arrive. Therefore, the proposed changes to augmentation times will not adversely affect the ability of the on-shift personnel to manage the initial stages of any emergency.

Protective Actions (In-Plant)

NUREG-0654 Revision 1 specifies two personnel on-shift who “may be provided by shift personnel assigned other functions.” The Major Tasks specified are:

- access control,
- HP Coverage for repair, corrective actions, search and rescue, first aid, and firefighting,
- personnel monitoring, and
- dosimetry.

Revision **[SER approved rev #]** of the **[Site Name]** Emergency Plan **[did/did not]** specifically address this functional area. Revision **[current Rev #]** of the **[Site Name]** Emergency Plan, this

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functional area was addressed as part of the Functional Area of Radiological Assessment and Protective Actions and Support of Operational Accident Assessment. **[Site specific number and position title]** was assigned on-shift and responsible for the completion of these tasks including in-plant, on-site surveys.

[insert if applicable - Nuclear (non-licensed) Operators are qualified as Self-Monitors. Self-Monitors can also support these tasks. Self-Monitors are trained in the use of Geiger Mueller and ion chamber radiation meters and contamination handling and survey techniques including count rate instruments used in the field. Training includes proper use of survey equipment and the use of survey maps.]

[Site specific title] Operators are typically dispatched prior to the call-out of augmented personnel. Normally the initial response phase involves search and rescue operations or manual manipulation of equipment. *[If used as Self-Monitors, the operators would be briefed on expected radiological conditions and would be provided survey instruments to monitor radiological conditions in the appropriate area(s). The results they generate are captured during debriefs.]*

[Site specific equipment name] are also used and reviewed prior to dispatch of personnel into the plant. **[Site Name]** has multiple **[equipment name]** throughout the plant. The **[equipment name]** are located in areas where:

- Personnel perform regular duties in areas where radiation is present. These duties are performed once a day or more frequently,
- Personnel perform infrequent duties, but where there is a high probability that significant changes in radiation levels could occur,
- Personnel perform infrequent duties, or where there is a low probability that significant changes in radiation levels could occur, but where surveillance is desired.

As described previously, personnel accessing the **[site specific wording for radiologically controlled areas]** at **[Site Name]** are required by procedure to obtain **[site specific dosimetry]** prior to entry. The same dosimetry is also used as a “key” to unlock turnstiles to gain access to the **[site specific term]**. **[site specific term for Radiation work permits (RWPs)]** establish the necessary preset warnings/alarms associated with the dosimeter. An emergency reentry process has been developed for use during a declared emergency. Dosimeters have their emergency dose and dose rate alarms set manually. This ensures that the person dispatched to the in-plant areas to perform any function during a declared emergency will be afforded ample warning/alarm prior to exceeding his/her allowed dose or dose rate. Also, damage control teams are briefed prior to dispatch regarding radiological conditions. Thus, personnel responding to emergencies in a high radiation area will be knowledgeable of dose rates in the area without the need to send Radiation Personnel into the plant with the teams.

[The flexibility offered by Nuclear Operators as Self-Monitors, the availability of ARM instrumentation (including availability of data via PPCS PI in the OSC) and the use of self-issued electronic alarming dosimetry ensure that the tasks under the Radiation Protection functional area are maintained and not impacted.]

Fire Fighting

There are no proposed changes to this area. The on-shift Fire Brigade is assigned this task throughout the emergency with off-site support provided by local fire departments.

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A staffing analysis meeting the requirements of 10 CFRE 50 Appendix E.IV.A.9 for the proposed organization was performed. The results of that analysis showed that the required response functions could be conducted with parallel activation of the fire brigade for the subject scenarios.

Rescue Operations and First Aid

Per NUREG-0654 Revision 1, this function “may be provided by shift personnel assigned other functions.” The **[Site Name]** Emergency Plan utilizes on-shift **[site position]** as Fire Brigade Team members to fulfill this function. There are no additional personnel augmented for this task. Local off-site support provides for any additional assistance. There are no proposed changes to this area; therefore, there is no impact represented by the change in augmentation times.

Site Access Controls and Personnel Accountability

There are no proposed changes to this area. This function is part of the Security Contingency Plan and is staffed accordingly.

Onsite Emergency Organization – 10 CFR 50.47(b)(2)

The current ERO was developed in response to NUREG-0654/FEMA REP-01 Revision 1. The ERO developed by NUREG-0654 was done essentially without a technical basis. On November 23, 2011 the Emergency Preparedness Enhanced Rulemaking required the capabilities of the on-shift staff to be validated by a formal analysis. This requirement was documented in 10 CFR 50 Appendix E.IV.A.9. In support of this submittal, the proposed Emergency Response Organization for the **[Name]** Site was analyzed and it was determined that the on-shift staff proposed is capable of performing the response functions required of the revised rule. The staffing analysis report is included as an attachment to this submittal.

Included in this submittal is a detailed functional analysis of the existing augmented positions documenting why the proposed augmentation response changes are acceptable and ensure the Emergency Plan can continue to be effectively implemented in accordance with existing requirements and provide the needed support to other Offsite Response Organizations activating in response to a Classified Event.

The Augmentation Staffing Analysis concluded that the ERO organization evaluated by the study is capable of effectively implementing the Emergency Plan and responding to the evaluated events. The on-shift staff is adequate to perform the functions until the staffed augmentation occurs at 90 minutes. The **[site specific number]** minute responder functions currently required by the Emergency Plan can be performed by the on-shift staff without conflicts until augmented in accordance with the proposed organization.

Reason for the Change

The proposed change is needed to address concerns regarding limitations on the number of ERO staff augmentation personnel capable of responding to the site in **[site specific number]** minutes. Some plant personnel live far enough away from the plant that they are precluded from being assigned to the ERO. The proposed changes will increase the number of eligible plant personnel available to fill critical ERO positions and add valuable expertise. The proposed change does not reduce the number of personnel expected to respond and will not be applied as permission to delay response to an event.

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The ERO in Revision **[SER approved Rev #]** of the Emergency Plan consisted of **[site specific #]** positions which were augmented to support site response to an emergency. There were **[site specific #]** individuals qualified to fill each position at that time, making the ERO a total of **[Site specific #]** individuals. Today, the ERO consists of **[site specific #]** positions which are filled by personnel assigned to one of **[site specific #]** ERO teams. This represents a **[site specific #]** % increase in the number of individuals required in order to meet existing Emergency Plan requirements.

Maintaining an appropriate number of on-shift personnel, crediting additional on-shift staff positions, technological advances available for on-shift responders and changing the augmentation timeliness response time to 90 minutes is a practical and prudent alternate method to ensure effective and timely emergency response augmentation.

Details associated with the on-shift ERO, revised augmented ERO and revised key responsibilities and task as identified in NUREG-0654 Rev 1, are included in Attachment **[TBD]** of Enclosure **[#]**.

Planning Basis for Augmented ERO

Positions have been designated as 90 minutes responders in the TSC, OSC, EOF and JIC. These positions perform major functions and supporting functions in each facility. Below are the tables as provided in the proposed Emergency Plan which outline these positions and functions.

TSC 90 Minute Augmentation ERO		
Major Functional Area	Major Task	Position Title
Emergency Direction and Control		Emergency Director
		TSC Manager
		Operations Supervisor
		Security Supervisor
		Support Coordinator
Notification / Communication	Notify licensee, State, local and Federal personnel & maintain communication	ENS Communicator
		ERF Communicator
		HPN Communicator
Radiological Accident Assessment and Support of Operational Accident Assessment	Offsite dose assessment	RP Supervisor
	Offsite surveys	Not applicable for this facility
	Onsite and in-plant surveys	
	Chemistry/Radio Chemistry	Chemistry Support
Plant System Engineering, Repair and Corrective Actions	Technical Support	Engineering Supervisor
		Reactor Engineer
		Electrical Engineer
		Mechanical Engineer
	Repair and corrective actions	Maintenance Supervisor
Protective Actions	Access Control	Not applicable for this facility
	RP coverage for repair, corrective actions, search and rescue first aid & firefighting	
	Personnel monitoring	
	Dosimetry	

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OSC 90 Minute Augmentation ERO		
Major Functional Area	Major Tasks	Position Title
Emergency Direction and Control		OSC Manager
Notification / Communication	Notify licensee, State, local and Federal personnel & maintain communication	Not applicable for this facility
	Intra facility communications	ERF Communicator
Radiological Accident Assessment and Support of Operational Accident Assessment	Offsite dose assessment	Not applicable for this facility
	Offsite surveys	Field Monitoring Team Personnel (2)
	Onsite and in-plant surveys	RP/Chemistry Technicians (3)
	Chemistry/Radio Chemistry	RP/Chemistry Technician
Plant System Engineering, Repair and Corrective Actions	Technical Support	Not applicable for this facility
	Repair and corrective actions	Mechanical Maintenance Group Lead
		Electrical Maintenance Group Lead
		I&C Maintenance Group Lead
Protective Actions	Access Control	RP/Chemistry Group Lead
	<ul style="list-style-type: none"> RP coverage for repair, corrective actions, search and rescue first aid & firefighting Personnel monitoring Dosimetry 	RP/Chemistry Technicians (3)

EOF 90 Minute Augmentation ERO		
Major Functional Area	Major Task	Position Title
Emergency Direction and Control	Emergency Operations Facility (EOF) Director	Emergency Director
		EOF Manager
		Support Coordinator
		Emergency Communication Coordinator
		Security Coordinator
		Offsite Response Coordinator
		Administrative Support Staff
		Liaisons (at EOCs) <ul style="list-style-type: none"> - GA - AL - SC
Notification / Communication	Notify licensee, State, local and Federal personnel & maintain communication	ENN Communicator
		ENS Communicator
		HPN Communicator
	Intra facility Communications	ERF Communicator

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EOF 90 Minute Augmentation ERO		
		Nuclear Spokesperson
		Technical Assistant
		News Writer
		Field Team Communicator
Radiological Accident Assessment and Support of Operational Accident Assessment	Offsite dose assessment	Dose Assessment Supervisor
		Dose Analyst
	Offsite surveys	Field Team Coordinator
	Onsite and in-plant surveys	Not required in this facility
	Chemistry/Radio Chemistry	Not required in this facility
Plant System Engineering, Repair and Corrective Actions	Technical Support	Technical Supervisor
	Repair and corrective actions	Not required in this facility
Protective Actions	Access Control	Not required in this facility
	RP coverage for repair, corrective actions, search and rescue first aid & firefighting	
	Personnel monitoring	
	Dosimetry	

JIC 90 Minute Augmentation ERO		
Functional Area	Major Task	Position Title
Media Response	Media Response	Public Information Director
		ERF Communicator
		JIC Manager
		JIC Assistant
		Facility Coordinator
		Clerical Staff
		Security
		Public Response Coordinator
		Public Response Staff
		Media Relations Representative

Minimum staff position have been identified for each facility. Facility activation may be completed upon filling of minimum staffing positions and completion of a briefing on the event such that personnel in these positions are ready to accept responsibility for their functions.

In addition to the functional analysis provided the key Emergency Response Facilities were analyzed to determine the minimum staffing (both numbers and positions) needed for the facilities to activate the facilities and begin facility operations. Any personnel determined to be required to support the minimum staff activation and initiation of activities were added to the revised ERO supporting the 90 minute augmentation.

Program Enhancements

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The following section discusses technical changes completed in plant systems, dose assessment, procedures and training which have been completed in order to better support on-shift functions and ease operator burden. Additional information regarding on-shift and augmented positions and their responsibilities as identified in NUREG-0654/FEMA REP-1, Revision 1 are outlined in Attachment **[TBD]** to Enclosure **[#]**. An on-shift analysis utilizing NEI 10-05, Assessment of On-Shift Emergency Response Organization Staffing and Capabilities, methodology was completed to determine whether an extension of augmentation staffing times impacted the on-shift staff. The analysis and results are included in Enclosure **[#]** of this submittal.

Plant Computer System

At the time of the original approval of the Revision **[SER approved Rev #]** of the Emergency Plan, the site utilized a **[site specific computer system]**. *The operator interface consisted of a small number of printers located in the control room and computer room.*

In 19xx, the **[site specific]** system was **[site specific system description]**. The design criteria for the **[site specific system]** were based on the requirements of NUREG-0737, Supplement 1, regarding the need for a Safety Parameter Display System (SPDS) and the upgrading of ERFs. The requirements specified for the SPDS were met or exceeded by a system of displays provided by **[site specific system]**. The parameters on the SPDS displays were provided by the **[site specific]** software. *The system upgrade included introduction of automatic updates to plant overview and system displays on the computer monitors, consolidated safety parameter displays and increased frequency of parameter updates.*

In **[year]**, the site installed **[site specific system]**. The number of plant operating parameters available on this system is larger due to **[site specific description]**.

Benefits of the upgraded systems include:

- Programming capability for automated response such as indication of critical parameter alarms,
- Improved plant monitoring capability for Emergency Director functions,
- Fewer keystrokes required to switch between graphical displays,
- Real time plant data available through graphical displays,
- Functions are available to any desktop computer through the plant's site-wide internet.

Computer basic functions are supported by instrument buses with back-up power provided by vital buses.

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Dose Assessment

Specifically designed displays have been developed for obtaining the necessary plant, radiological effluent, area radiation monitor, and meteorological information that is used by operations personnel on-shift through the **[site dose assessment]** program. **[Site specific dose assessment program]** has a rapid dose assessment option provided specifically for use by the on-shift operations personnel and requires minimal data input.

The 19xx dose assessment software, **[site dose assessment software]** used manual entry of basic meteorological data and either manual entry of radiological data or use of internally stored source terms.

In 19xx, an upgrade to the Dose Assessment program was installed on the **[site computer]** to facilitate prompt initial emergency classification by operating personnel. This dose assessment software was replaced by the **[current dose assessment program]** in **[year]**.

Improvements have been made to the dose assessment program resulting in minimal user interface to produce results quickly. Radiological dose assessment has benefited from technological advances that make its use simpler and less time consuming. Dose assessment is currently performed by on-shift Operations personnel using the **[site specific]** program. The **[site specific]** program greatly reduces the data entry needs and the number of program windows the user needs to access to perform a dose projection. It also incorporates a special option which allows CR personnel to perform dose assessments rapidly such that they can accomplish this task in a matter of minutes. With the use of the dose assessment program, as well as plant status, meteorological, and radiation monitoring data, one person can perform dose assessments during emergency conditions easily and rapidly.

Automated Call-Out System

Enhancements in automated call-out and paging systems have resulted in streamlined processes for activation of the ERO. A single phone call initiates rapid notification of ERO members in lieu of individual calls to fill the **[site specific #]** positions included in today's Emergency Plan. The system includes a primary activation location as well as a remotely located back-up capability to ensure uninterrupted operation.

Procedure Improvements

EOPS/AOPs

Since the original emergency plan approval, EOPs have been improved through industry initiatives. EOPs now use a symptom-based approach that demands less assessment and interpretation of plant conditions by the operating crews. EOPs interface well with new technology such as **[site specific computer]**. EOP curves are generated by **[site computer]** to graphically display plant conditions relative to limits or required actions.

EIPs

In **[year]** **[Site Name]** updated the classification methodology to NEI 99-01, Revision 4. EALs now incorporate guidance that has simplified the classification process, including the use of an overview matrix of EAL initiating conditions and threshold values that streamlines the process of evaluating EALs against plant conditions.

Training Improvements

Operations Training

Training is used to strategically drive improved performance at **[Site Name]**. Since NRC approval of the **[Site Name]** Emergency Plan, the application of the Systematic Approach to Training (SAT) has resulted in developing a task list for Operations personnel. The SAT process ensures training is conducted to industry-accepted standards and has led to accreditation of the Operations Training Programs by the National Academy for Nuclear Training.

A dynamic simulator is routinely used during Operations Training. "As found" simulator evaluations that include emergency response scenarios, several of which are 90 minutes in length, are part of the requalification cycle. Simulator scenarios are designed to be realistic and reflect a wide range of plant conditions, including emergency conditions. During evaluated simulator sessions, the control room staff is taken from normal operation to accident conditions resulting in declaration of at least one event, which can range from Unusual Event up to a General Emergency. The crew performs critical tasks, classification, accident mitigation, response prioritization, and communications without augmentation from additional responders. The proficiency of the control room staff to perform these functions while maintaining situational awareness, without additional support is assessed in every training cycle.

The Licensed Operator Requal (LOR) Training Program includes licensed crew performance evaluations that are to consider the scenario guidance attributes of INPO Operations Department Standing Instruction, ODSI-3, "Operations Department Guidance".

Attachment C of ODSI-3 provides guidance on the realistic integration of the emergency response into crew performance evaluations. The purpose is to ensure the additional challenges the emergency plan responsibilities add to the crew's ability to manage an event are realistically represented in the crew performance evaluations. Representing the event as realistically as possible, which includes the additional challenges of emergency plan responsibilities; helps promote the situational awareness necessary during a real event.

STA Training

The Shift Technical Advisor (STA) was originally trained as an advisor to the operating shift per NUREG-0737. In 1990, additional guidelines were developed by INPO for the training of STAs. This is detailed in the document INPO 90-003, Guidelines for Training and Qualifications of Shift Technical Advisors.

The INPO Guidelines describe the role of the STA and is reflected in Operation Department procedure, OM 2.18. The STA performs independent assessments of plant operating concerns, technical support, appropriate corrective actions, analysis of events and their effects, effectiveness of response(s) to emergent conditions, classifications of emergencies, development of recommendations to protect the public and any other actions related to critical safety functions and plant safety during abnormal and emergency situations. By routine monitoring of equipment and plant operations, the

[Site Name]
ERO Augmentation Description

STA can focus on preventive actions in order to mitigate the consequences of an accident and protect public health and safety.

Increases in On-Shift Staffing

There has been an increase in on-shift staffing from what was required in Revision **[SER approved rev #]** of the Emergency Plan in order to ensure adequate performance of the major emergency plan functions and tasks. A total of **[Site specific #]** persons are identified for on-shift staffing which is an increase from the regulatory guidance provided by NUREG-0654 Revision 1 total of 10 persons. A comparative chart depicting on-shift and augmented staffing based on NUREG-0654 Rev. 1, Revision **[SER approved Rev #]** of the **[Site name]** Emergency Plan, the **[current rev #]** Emergency Plan and proposed revisions is included in Enclosure **[#]**.

Enhancements in Information Sharing with Offsite Agencies

There has been a dramatic increase in the ability of the site to share event specific information with Offsite Response Organizations from the one to one telephonic capabilities existing at the time **[SER approved rev #]** was approved. Real time plant data is communicated to the Nuclear Regulatory Commission via the approved ERDs system. Additionally, local OROs are provided real time data through automated methods (currently WebEOC). These enhancements provide more timely and accurate information of actual plant conditions than originally available.

Improvement Summary

The improvements to staffing, equipment, procedures, communication of plant information, and training that have occurred since initial approval of the PBNP Emergency Plan have resulted in a significant increase in the on-shift capabilities and knowledge. Based on these improvements, it is concluded that there would be no significant degradation or loss of any functional task as a result of the proposed augmentation times.

Summary

Based on the overall improvements available to the ERO since the original implementation of the guidance contained in NUREG-0654/FEMA REP-01 Revision 1, the proposed Emergency Response Organization is capable of implementing the Emergency Plan in accordance with the requirements of 10 CFR 47 and 10 CFR 50 Appendix E. An analysis demonstrating the on-shift staff is adequate to perform the required functions until relieved by the ERO as required by 10 CFR 50 Appendix E.IV.A.9 was conducted to support the submittal.