

## Vogtle Electric Generating Plant Units 1 & 2 ERO Augmentation Description

This License Amendment Request revises the current Emergency Response Organization (ERO) Augmentation Plan for the Vogtle Electric Generating Plant (VEGP) Units 1 & 2. 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**

VEGP Units 1 & 2 Emergency Plan Revision 63.0 requires staffing of augmented ERO at the Alert or higher classification

The normal operating crew for two units includes a shift supervisor, licensed plant operators, and non-licensed plant operators. A shift manager is also on shift during operation (as defined in the Technical Specifications). Personnel from the Chemistry and Health Physics, Maintenance, and Security Departments are also on site continuously. The proposed revision to the Plan maintains the requirement to augment on-shift staff with qualified ERO 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 ERO 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)**

VEGP Units 1 & 2 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 VEGP Units 1 & 2 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 guidance assumes the on-shift staff will provide these functions throughout the emergency. The on-shift operation staffing as provided in the current plan Revision 63.0 meets the operations staffing requirements of 10 CFR 50.54(m)(2)(i) and the VEGP Units 1 & 2 Technical Specifications. In addition to the above stated requirements the VEGP Units 1 & 2 Emergency Plan also provides for a dedicated Shift Manager position to perform the NUREG-0654 Revision 1 function of Emergency Direction and Control. Per NUREG-0654 Revision 1 this function may be performed as a collateral duty of one of the individuals also performing the Plant Operations and Assessment of Operational Aspects function however by providing a Shift Manager to fill this function as a standalone position it enhances the ability of VEGP Units 1 & 2 to fulfill the Plant Operations and Assessment of Operational Aspects function. This has been demonstrated and documented by performing a 10 CFR Part 50, Appendix E shift staffing evaluation.

In accordance with the current and proposed VEGP Units 1 & 2 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 5.0. The on-shift staff as described serves 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 provides that this function may be fulfilled by personnel assigned other functions. Per Revision 5.0 of the VEGP Units 1 & 2 Emergency Plan, the Emergency Director (ED) function was a collateral duty of an ED qualified individual assigned to the Plant Operations and Assessment of Operational Aspects function until relieved by an augmented ED in the TSC within one hour of notification of an event. ED

As provided in the current revision to the VEGP Units 1 & 2 Emergency Plan, the Shift Manager is designated as the on-shift ED to fulfill the function of Emergency Direction and Control until relieved by the TSC ED within approximately 60 minutes of notification.

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. As provided in NUREG-0654 Revision 1 guidance and in Revision 5 of the VEGP Units 1 & 2 Emergency Plan, no standalone on-shift EDED was provided. With the adequate on-shift personnel provided for Plant Operations and Assessment of Operational Aspects function and with the Shift Manager fulfilling the function of Emergency Direction and Control as the dedicated on-shift ED, no additional burden will result from the Shift Manager retaining the Emergency Direction and Control function for a total of up to 90 minutes. This has been demonstrated and documented by performing a 10 CFR Part 50, Appendix E shift staffing evaluation. Details on how advances in technology, training and procedures support this proposed change are discussed later in this document.

In addition to the augmentation of an ED in the TSC within 90 minutes of an Alert or higher declaration an additional ED will be augmented in the EOF within 90 minutes of an Alert or higher declaration. The aspects of the Emergency Direction and Control function assigned to the TSC and EOF EDs are clearly defined in the proposed VEGP Units 1 & 2 Emergency Plan. The primary role of the EOF ED will be to

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assume the responsibility for state and local notifications and approval of Protective Action Recommendations (PARs). This ensures that in the unlikely event of a Hostile Action Based (HAB) event in which the site is not accessible to the ERO an ED would be available in the EOF within 90 minutes of an Alert or higher declaration to assume these aspects of the Emergency Direction and Control function to further minimize burden on Shift Manager/ED.

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

- TSC Emergency Director
- TSC Manager
- EOF Emergency Director
- EOF Manager
- TSC ERF Communicator
- TSC ENS Communicator
- EOF ERF Communicator
- EOF ENN Communicator
- TSC RP Supervisor
- EOF Dose Assessment Supervisor
- EOF Dose Analyst
- TSC Operations Supervisor
- Engineering Supervisor
- Reactor Engineer
- Electrical Engineer
- Mechanical Engineer
- Mechanical Maintenance Group Lead
- Electrical Maintenance Group[ Lead
- I&C Maintenance Group Lead
- RP/Chemistry Group Lead
- Field Monitoring Team Personnel
- Public Information Director

The increased augmentation time as proposed in the VEGP Emergency Plan will result in additional site personnel available to support the ERO which in turn will allow for the addition of more support personnel in the TSC and EOF to better assist in the transfer of command/control functions from the Control Room within the 90 minute timeframe.

This change is acceptable in that the use of a dedicated on-shift ED ensures the Emergency Direction and Control Function is adequately maintained with no more than minimal impact to the function prior to the 90 minute augmentation time. Also, the increase in ERO augmentation time supports increases in TSC and EOF support staff which enhances the overall emergency response capability of VEGP.

### **Notification and Communication**

NUREG-0654 Revision 1 guidance requires one Communicator to be assigned on-shift. Revision 5.0 did include this position. Revision 63.0 of the VEGP Units 1 & 2 Emergency Plan Annex provides for 2 Communicators however this number is modified by a note that indicates this function may be fulfilled by individuals assigned other functions. In the proposed revision to the VEGP Units 1 & 2 Emergency Plan this will no longer be a collateral duty of personnel assigned other functions rather there will be sufficient appropriately trained personnel on-shift to ensure the Communications function is assigned to

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an individual with no collateral functions.

A detailed on-shift staffing analysis has been performed in accordance with 10 CFR 50 Appendix E which demonstrates that with a dedicated on-shift position to perform the Communicator function there is no undue burden on the Control Room staff or impact on the notification function resulting from an increase in initial augmentation time to 90 minutes.

In addition, the proposed change to the VEGP Units 1 & 2 Emergency Plan provides for the transfer of state and local notifications, to include authority to approve the content of the notification form, directly to the EOF from the control room. The proposed change includes both sufficient communications personnel to perform the communications and an ED with the authority to approve the content of the notification. This ensures that in the unlikely event of a Hostile Action Based (HAB) event in which the site is not accessible to the ERO sufficient personnel to perform the Communications function will be available in the EOF within 90 minutes of an Alert or higher declaration to assume Communications function to further minimize burden on Shift Manager/ED.

The proposed change in emergency response function personnel augmentation time from approximately 60 minutes from notification to 90 minutes from declaration of an Alert or higher emergency classification is acceptable in that the use of a dedicated on-shift individual to perform the Communicator function, the ability to transfer the Communications function directly to the EOF and sufficient augmented personnel in the EOF to perform the Communicator function within 90 minutes ensure no additional burden is incurred by the on-shift staff.

### **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/ED using NMP-EP-110, Emergency Classification Determination and Initial Action procedure, 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.

As part of the Plant Operations and Assessment of Operational Aspects function the operating crew utilize 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 NMP-EP-112, Protective Action Recommendations procedure, 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.

The Safety Parameter Display System (SPDS) provides a display of plant parameters from which the status of plant operation can be assessed in the control room. The SPDS has the following functions:

- Aids the control room operators in the rapid detection and identification of abnormal operating conditions.

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- Provides additional specific information to analyze and diagnose the cause of abnormal operating conditions.
- Monitors plant response to corrective actions.
- Provides grouping of parameters to enhance the operators' capability to assess plant status quickly without surveying all control room displays concurrently.
- Directs the operators' attention to other specific confirmatory non-SPDS control room displays.
- Provides human factors engineered display formats in simple and consistent display patterns and coding.
- Provides display information on a real-time basis, along with validation of data.
- Provides generated selectable trend displays on a real-time basis for monitoring reactivity control, reactor core cooling and heat removal from the primary system, reactor coolant system integrity, radioactivity control, containment integrity, and other selected parameters.

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.

### **EOF ED**

The TSC ED is not assigned to the on-shift complement. The TSC ED currently arrives within 60 minutes of notification of an Alert or higher emergency classification 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. The EOF is also staffed within this 60 minute timeframe however there is currently no ED provided in the EOF.

Under this proposal, the Shift Manager/ED is relieved within 90 minutes by the ED 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. This ensures that in the unlikely event of a Hostile Action Based (HAB) event in which the site is not accessible to the ERO sufficient personnel to perform the Radiological Accident Assessment and Support of Operational Accident Assessment function will be available in the EOF within 90 minutes of an Alert or higher declaration to assume to further minimize burden on Shift Manager/ED.

The proposed change presents no adverse impact to the TSC staffing when compared to Revision 5.0 or Revision 63.0 of the VEGP Units 1 & 2 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**

NUREG-0654 Revision 1 does not provide for on-shift dose assessment capability. The current version of the VEGP Units 1 & 2 Emergency Plan does provide for an on-shift capability for performance of dose assessment and is currently assigned to an on-shift Health Physics individual. In the proposed change on-shift dose assessment will be assigned to appropriately trained Chemistry personnel who will be dedicated to this task with no other collateral emergency response duties. This will in turn free up the Health Physics individual to perform other Health Physics related tasks.

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With the improvements in the dose assessment software program, as well as plant status, meteorological, and radiation monitoring data, chemistry can perform dose assessments during emergency conditions easily and rapidly. Enhancements in dose assessment software have reduced to the time required by a dose assessor to perform dose assessment runs and provide the results to the ED. In addition, the dose assessment software is operational in a Windows based Operating System located on the SNC Local Area Network (LAN) and as such can be readily accessed from any LAN computer on the SNC network.

An additional chemistry individual will be provided as part of the minimum on-shift staffing such that any required chemistry samples may be collected without impacting the chemistry individual assigned to perform dose assessment. A review of the EOPs, AOPs, Emergency Plan, and the procedures used by Operations for off-normal plant conditions did not identify any conflicts between completion of dose assessment and other on-shift chemistry functions within the 90 augmentation time frame. This has been demonstrated and documented by performing a 10 CFR Part 50, Appendix E shift staffing evaluation.

Augmentation by the RP Supervisor TSC within 90 minutes will relieve the Shift Manager/ED of the role of oversight of the on-shift dose assessor. The TSC will 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 based since dedicated resources for performing these tasks maintained on-shift.

### **Offsite/Onsite Surveys, In-Plant surveys and RP**

NUREG-0654 Revision 1 identifies one on-shift "HP Technician" who is responsible for performing in-plant surveys. NUREG-0654 Revision 1 does not provide for any on-shift personnel for on-site out of plant surveys or for off-site surveys. NUREG-0654 Revision 1 further identifies two Health Physics technicians under the Protective Actions function for performing the tasks of Access Control, HP Coverage for repair, corrective actions, search and rescue, first aid, firefighting, personnel monitoring and dosimetry. However these individuals are modified by a note that indicates these individuals may be assigned other functions such as the HP technician assigned to in-plant surveys task and the individual assigned to Chemistry/Radio-chemistry task under the Radiological Accident Assessment and Support of Operational Accident Assessment function.

Revision 63.0 of the VEGP Units 1 & 2 Emergency Plan provides for 2 individuals to perform on-site out of plant surveys. These individuals include an individual qualified to perform the survey and an assistant to drive a vehicle. An additional individual is provided to coordinate communications between this out of plant team and the dose assessor. In addition to these individuals 2 personnel are assigned for the above stated tasks under the Protective Action function.

As part of the proposed change to the VEGP Units 1 & 2 Emergency Plan the on-site out of plant survey will be performed by a single Health Physics technician. SNC currently uses predesignated, readily accessible survey points around the VEGP plant site for collecting on-site survey data. Prior to dispatch of the on-site out of plant monitoring technician the dose assessor will brief the survey technician on the event conditions, direction of potential/actual plume path, potential radiological conditions, etc. and dispatch the technician to one of the predesignated sample points in the downwind direction of the potential/actual plume path. The survey technician will then obtain the pre-staged on-site out of plant survey kit and vehicle and proceed to the designated location. The dose assessor and the survey technician will have the capability to maintain near continuous communications which will allow the dose assessor to redirect the technician while in route if needed. Since the designated sample points are on-site and readily accessible via the VEGP plant site road system there will be no immediate need for

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the survey technician to travel off-site and as such this survey can be performed by a single individual without impacting the accuracy or timeliness of the survey.

As part of the proposed change to the VEGP Units 1 & 2 Emergency Plan the individual coordinating communications between the out of plant survey technician and the dose assessor will be eliminated in lieu of having the survey technician communicate directly with the dose assessor. This will expedite communication of field survey readings to the dose assessor for input into the dose assessment program resulting in a shorter completion time of dose assessment runs using actual field survey results.

Regarding in-plant surveys; personnel accessing the Radiological Control Areas (RCA) at VEGP Units 1 & 2 are required by procedure to obtain electronic personal dosimetry prior to entry. The same dosimetry is also used as a "key" to unlock turnstiles to gain access to the RCA. Radiation work permits (RWPs) establish the necessary preset warnings/alarms associated with the dosimetry. During a declared emergency, there are emergency kits with preprogrammed DADs for rapid entry into the RCA located at the OSC, Security and Field Monitoring Team Kits on site and at the Hospitals for offsite. Personnel responding from the TSC will go to the RP Control Point to obtain a briefing and dosimetry. In the event the normal access system is non-functional an emergency reentry process has been developed. All digital alarming dosimeters (DADs) are removed from shelf and turned on by RP with a computer that has battery back-up using a software program to set the RWP dose and dose rate alarm limits. This process 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. In addition, the proposed change to the VEGP Emergency Plan continues to maintain the 2 Health Physics technicians provided in the current version of the Emergency Plan for performing the tasks supporting the Protective Actions (in plant) function. An additional 4 Health Physics technicians will respond within 90 minutes to support Radiological Accident Assessment and Chemistry/Radio-Chemistry and Protective Actions (in-plant) function. This will provide sufficient Health Physics resources to address the needs of both the on-shift and augmented ERO personnel.

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 Integrated Plant Computer (IPC) system and the dose assessment computer 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 dedicated on-shift personnel. 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.

Additional off-site survey data is available after the emergency response facilities are activated, however monitoring of installed plant radiological instrumentation in conjunction with the dedicated on-shift on-site out of plant survey technician is sufficient for the first 90 minutes of an accident.

With improved installed instrumentation, dose calculation computer modeling, and dedicated on-shift staffing for dose assessment and on-site out of plant surveys, there is no more than minimal impact to the performance of these tasks as a result of the proposed changes to augmentation times.

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### **Plant System Engineering**

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

#### **Technical Support**

NUREG-0654 Revision 1 guidance provided for a Shift Technical Advisor (STA) to be available on-shift to perform the Technical Support task to include core/thermal hydraulics in response to the NUREG-0737 requirements resulting from the Three Mile Island accident. Revision 5 of the VEGP Units 1 & 2 Emergency Plan provided an individual to fulfill the STA task. Subsequently VEGP implemented a Technical Specification Amendment to align the STA position with the guidance of "Commission Policy Statement on Engineering Expertise on Shift" published in Federal Register Notice 50 FR 43621, dated October 1985. As a result Revision 10 of the VEGP Units 1 & 2 Emergency Plan implemented a change to assign the STA task as a collateral duty to an STA qualified SRO assigned to other functions.

The current VEGP Units 1 & 2 Emergency Plan continues to identify this task is fulfilled by an individual holding the STA qualification as a collateral duty of appropriately qualified on-shift personnel that may also be assigned to another function. This will typically be assigned either to the Shift Manager or another on-shift Senior Reactor Operator (SRO). The performance of this task as a collateral duty is aided by the use of the IPC which graphically displays all of the pertinent parameters with trending and graphing capabilities, alarm functions, color coded indication for changes in state for the Critical Safety Function Status Trees, etc. which greatly enhances critical parameter monitoring and rapid identification and assessment of in plant conditions. A 10 CFR 50 Appendix E shift staffing evaluation has validated that this task can be performed without conflict as a collateral duty out through 90 minutes. Based on this the extension in augmentation time to 90 minutes does not result in more than minimal impact to the performance of this task.

#### **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 5.0 of the VEGP Units 1 & 2 Emergency Plan stated that Damage Control & Repair actions for minor emergencies would be completed by plant personnel, including cleanup, repair and damage control. Historically, Mechanical Maintenance, System Operator, Electrical Maintenance, Instrument and Control Technician 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,

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- 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. The current version of the VEGP Emergency Plan provides for 1 mechanical journeyman, one electrical journeyman and 1 instrument and controls technician on-shift to support the repair and corrective action task. These numbers will be maintained in the proposed change to the VEGP Emergency Plan. In addition to these personnel a maintenance supervisor will also be added to shift to provide supervisory oversight for repair and corrective actions further enhancing the on-shift response capability. The 10 CFR 50 Appendix E shift staffing evaluation has further validated this and demonstrated that no maintenance personnel were assigned tasks during the 90 minutes prior to augmentation. This would indicate that augmentation of the on-shift journey/technician staffing on an as needed basis is adequate. Additionally, the proposed change to the VEGP Emergency Plan provides for augmentation of maintenance discipline specific leads in the OSC as well as an overall OSC Manager within 90 minutes of an Alert or higher emergency classification. With the described on-shift maintenance staffing there is no impact on the repair and corrective action tasks described under the Plant System Engineering, Repair and Corrective actions function as the result of extending augmentation time to 90 minutes.

### **Protective Actions (In-Plant)**

For this function NUREG-0654 Revision 1 specifies providing 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 5.0 of the VEGP Units 1 & 2 Emergency Plan provided for 2 individuals for performing this function. This practice continues up through the current version of the VEGP Emergency Plan. As previously discussed ; personnel accessing the Radiological Control Areas (RCA) at VEGP Units 1 & 2 are required by procedure to obtain electronic personal dosimetry prior to entry. The same dosimetry is also used as a “key” to unlock turnstiles to gain access to the RCA. Radiation work permits (RWPs) establish the necessary preset warnings/alarms associated with the dosimetry. During a declared emergency, there are emergency kits with preprogrammed DADs for rapid entry into the RCA located at the OSC, Security and Field Monitoring Team Kits on site and at the Hospitals for offsite. Personnel responding from the TSC will go to the RP Control Point to obtain a briefing and dosimetry. In the event the normal access system is non-functional an emergency reentry process has been developed. All digital alarming dosimeters (DADs) are removed from shelf and turned on by RP with a computer that has battery back-up using a software program to set the RWP dose and dose rate alarm limits. This process 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. In addition, the proposed change to the VEGP Emergency Plan continues to maintain the 2 Health Physics technicians provided in the current version of the Emergency Plan for performing the tasks supporting the Protective Actions (in plant) function. An

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additional 4 Health Physics technicians will respond within 90 minutes to support Radiological Accident Assessment and Chemistry/Radio-Chemistry and Protective Actions (in-plant) function. This will provide sufficient Health Physics resources to address the needs of both the on-shift and augmented ERO personnel.

System 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. Installed plant area radiation monitors are used to provide indication of in plant radiation levels prior to dispatch of personnel into the plant. This allows for personnel to be assigned the appropriate dose and dose rate alarms for their electronic personal dosimetry prior to dispatch and to assign additional Health Physics technician support as needed. An additional 4 Health Physics technicians will respond within 90 minutes to support Radiological Accident Assessment and Chemistry/Radio-Chemistry and Protective Actions (in-plant) function. This will provide sufficient Health Physics resources to address the needs of both the on-shift and augmented ERO personnel. A 10 CFR 50 Appendix E staffing evaluation was performed which validated that the 2 Health Physics technicians in conjunction with dosimetry protocols described above are sufficient to provide any needed in-plant survey support prior to augmentation of additional Health Physics personnel at 90 minutes.

### **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.

A staffing analysis meeting the requirements of 10 CFR 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.” There are no proposed changes to this area. The VEGP Units 1 & 2 Emergency Plan utilizes appropriately trained on-shift personnel to fulfill this function as a collateral duty. 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 developed without a specific 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 ERO for the VEGP Units 1 & 2 Site was analyzed and it was

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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 60 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 in augmentation time is needed to address concerns regarding limitations on the number of ERO staff augmentation personnel available to respond to the site within the existing 60 minute augmentation time. Due to the remote location of the VEGP site in relation to nearby population centers many personnel live far enough away from the plant that they are precluded from being assigned to the ERO. As the population has grown in the nearby population centers traffic flow has increased further challenging ERO response times many of the existing ERO members. 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 rather it will increase the number of personnel responding. In addition, the expectation of VEGP ERO personnel is to respond to activation of the ERO immediately upon notification and as such will not be applied as permission to delay response to an event.

The ERO in Revision 5.0 of the Emergency Plan consisted of 15 positions which were augmented to support site response to an emergency. There were 21 individuals qualified to fill each position at that time, making the ERO a total of 36 individuals. Today, the ERO consists of 24 on-shift positions which are filled by personnel assigned to one of four (4) ERO teams. This represents a .01 % 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 [# TBD].

### **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.

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| TSC 90 Minute Augmentation ERO  |  |                                  |
|---|--|----------------------------------|
| Major Functional Area   | Major Task   | Position Title                   |
| Emergency Direction and Control   |  | ED                               |
|   |  | TSC Manager                      |
|   |  | Operations 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              |
| Protective Actions  | Repair and corrective actions  | Maintenance Supervisor           |
|   | Access Control   | Not applicable for this facility |
|   | RP coverage for repair, corrective actions, search and rescue first aid & firefighting |                                  |
|   | Personnel monitoring   |                                  |
|   | Dosimetry  |                                  |

| 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 (2)        |
|   | 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        |

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|                    |   |                              |
|--------------------|---|------------------------------|
|                    |   | Lead                         |
|                    |   | I&C Maintenance Group Lead   |
|                    |   | RP/Chemistry Group Lead      |
|                    |   | RP/Chemistry Technicians (2) |
| Protective Actions | Access Control  |                              |
|                    | <ul style="list-style-type: none"> <li>RP coverage for repair, corrective actions, search and rescue first aid &amp; firefighting</li> <li>Personnel monitoring</li> <li>Dosimetry</li> </ul> |                              |
|                    |   |                              |
|                    |   |                              |

| EOF 90 Minute Augmentation ERO  |  |  |
|---|--|--|
| Major Functional Area   | Major Task   | Position Title                             |
| Emergency Direction and Control   | Emergency Operations Facility (EOF) Director   | ED   |
|   |  | EOF Manager                                |
|   |  | Support Coordinator                        |
|   |  | Emergency Communication Coordinator        |
|   |  | Security Coordinator                       |
|   |  | Offsite Response Coordinator               |
|   |  | Administrative Support Staff               |
|   |  | Liaisons (at EOCs)<br>- GA<br>- AL<br>- SC |
| Notification / Communication  | Notify licensee, State, local and Federal personnel & maintain communication           | ENN Communicator                           |
|   |  | ENS Communicator                           |
|   |  | HPN Communicator                           |
|   | Intra facility Communications  | ERF Communicator                           |
|   |  | 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  |  |

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| 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**

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 [# TBD]. An on-shift analysis utilizing NEI 10-05, Assessment of On-Shift ERO 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 [# TBD] of this submittal.

#### **Plant Computer System**

At the time of the original approval of the Revision 5.0 of the Emergency Plan, the site utilized an Emergency Response Facility Computer System. The operator interface consisted of a small number of printers located in the control room and computer room.

In 1986, the Emergency Response Facility Computer System was housed in the TSC. The design criteria for SPDS were based on the requirements of NUREG-0737, Supplement 1, regarding the need for a SPDS and the upgrading of ERFs. The requirements specified for SPDS were met or exceeded by a system of

Vogle Electric Generating Plant Units 1 & 2  
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displays of concentrated parameters from which plant safety status can be rapidly assessed. The parameters on the SPDS displays were provided by the Proteus 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 2010, the site installed the Integrated Plant Computer (IPC). 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 ED 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.

## Vogtle Electric Generating Plant Units 1 & 2 ERO Augmentation Description

### **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 dose assessment program. Meteorological Information Dose Assessment System – Nuclear (MIDAS-NU) has a rapid dose assessment option provided specifically for use by the on-shift operations personnel and requires minimal data input.

The 1986 dose assessment software, the dose assessment computer used manual entry of basic meteorological data and either manual entry of radiological data or use of internally stored source terms.

In 1990s (Specific date TBD) , an upgrade to the Dose Assessment program was installed on the ERF Computer to facilitate prompt initial emergency classification by operating personnel. This dose assessment software was replaced by the MIDAS-NU in 1990s (Specific date TBD)

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 RP personnel using the MIDAS-NU program. The MIDAS-NU 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 38 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 IPC. EOP curves are generated by IPC to graphically display plant conditions relative to limits or required actions.

#### **EIPs**

In [year] VEGP Units 1 & 2 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.

## Vogle Electric Generating Plant Units 1 & 2 ERO Augmentation Description

### **Training Improvements**

#### **Operations Training**

Training is used to strategically drive improved performance at VEGP Units 1 & 2. Since NRC approval of the VEGP Units 1 & 2 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. Simulator evaluations that include emergency response scenarios periodically exceed 90 minutes in length and 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 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 5.0 of the Emergency Plan in order to ensure adequate performance of the major emergency plan functions and tasks. A total of **21** 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

Vogtle Electric Generating Plant Units 1 & 2  
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augmented staffing based on NUREG-0654 Rev. 1, Revision 5.0 of the VEGP Units 1 & 2 Emergency Plan, Revision 63.0 Emergency Plan and proposed revisions are included in Enclosure [# TBD].

**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 Revision 5.0 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 Revision 5.0 VEGP Units 1 & 2 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.