

September 27, 2002

Mr. Craig G. Anderson
Vice President, Operations ANO
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNITS 1 AND 2 - EMERGENCY PLAN
CHANGES (TAC NOS. MB2825 AND MB2820)

Dear Mr. Anderson:

By application dated August 22, 2001, as supplemented by letters dated July 9, 2002, and September 25, 2002, and in accordance with 10 CFR 50.54(q), you submitted changes to the Arkansas Nuclear One (ANO), Units 1 and 2, Emergency Plan for Nuclear Regulatory Commission (NRC) review and approval prior to implementation. The key proposed changes are to (1) extend the time for augmentation of the on-shift Emergency Response Staff from 30 to 60 minutes for the current 30 minute responders and from 60 to 90 minutes for the current 60 minute emergency responders, and (2) extend the time allowed to activate the Emergency Response Facilities from 60 to 90 minutes. Some editorial changes, such as title changes, are also proposed.

The NRC staff has completed its review of the proposed ANO Emergency Plan changes and supporting documentation as discussed in the enclosed Safety Evaluation. The staff concludes that the proposed ANO Emergency Plan changes are acceptable in that the changes meet the planning standards of 10 CFR 50.47(b) and the requirements of Appendix E of 10 CFR Part 50.

On February 25, 2002, the NRC issued an Order modifying the operating licenses for ANO, Units 1 and 2, to require compliance with the interim safeguards and security compensatory measures listed in Attachment 2 to the Order. Please note that in the case of conflicts between the changes approved in the attached Safety Evaluation and the requirements contained in the interim compensatory measures (ICMs), the ICM requirements take precedence.

Sincerely,

/RA/

Robert A. Gramm, Chief, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-313 and 368

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO EMERGENCY PLAN CHANGES

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NOS. 1 AND 2

DOCKET NOS. 50-313 AND 50-368

1.0 INTRODUCTION

In the application dated August 22, 2001, as supplemented by letters dated July 9, 2002, and September 25, 2002, and in accordance with 10 CFR 50.54(q), Entergy Operations, Inc. (Entergy or the licensee) submitted changes to the Arkansas Nuclear One (ANO), Units 1 and 2, Emergency Plan for Nuclear Regulatory Commission (NRC) review and approval prior to their implementation. The key proposed changes are as follows: (1) extend the time for augmentation of the on-shift Emergency Response Staff from 30 to 60 minutes for the current 30 minute responders and from 60 to 90 minutes for the current 60 minute emergency responders, and (2) extend the time allowed to activate the Emergency Response Facilities (ERFs) from 60 to 90 minutes. Some editorial changes, such as title changes, are also proposed.

2.0 REGULATORY EVALUATION

The NRC staff finds that the licensee identified the applicable regulatory requirements in the original submittal dated August 22, 2001. The regulatory requirements and guidance for which the NRC staff based its acceptance are as follows:

2.1 Regulations

- 10 CFR 50.47(b)(1) states, in part: "... and each principal response organization has staff to respond and to augment its initial response on a continuous basis."
- 10 CFR 50.47(b)(2) states, in part: "... adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and ..."
- 10 CFR 50.47(b)(8), states: "Adequate emergency facilities and equipment to support the emergency response are provided and maintained."
- 10 CFR 50.47(b)(9), states: "Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use."

2.2 Guidance

- Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Revision 2, states, in part: "The criteria and recommendations contained in Revision 1 of NUREG-0654/FEMA [Federal Emergency Management Agency]-REP-1 are considered by the NRC staff to be acceptable methods for complying with the standards in 10 CFR 50.47 that must be met in on-site and off-site emergency response plans."
- NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," states in part:

In Section B. Onsite Emergency Organization, "5. Each licensee shall specify ... functional areas of emergency activity These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1...."

In Section H. Emergency Facilities and Equipment, "1. Each licensee shall establish a Technical Support Center ... in accordance with NUREG-0696, Revision 1" and "2. Each licensee shall establish an Emergency Operations Facility ... in accordance with NUREG-0696, Revision 1."

In Section I. Accident Assessment, "8. Each organization...shall provide methods, equipment and expertise to make rapid assessments of the actual or potential magnitude and locations of any radiological hazards.... This shall include activation, notification means, field team composition, transportation, communication, monitoring equipment and estimated deployment times."

- NUREG-0696, Revision 1, "Functional Criteria for Emergency Response Facilities," states, in part in subparagraph 2.3., "Upon activation of the TSC [Technical Support Center], ... achieve full functional operation within 30 minutes," and in subparagraph 4.3., "Upon EOF [Emergency Operations Facility] activation, ... achieve full functional operation within 1 hour."
- NUREG-0737, Supplement 1, "Clarification of TMI [Three Mile Island Nuclear Station] Action Plan Requirements," states, in part in subparagraph 8.2.1.a., "The TSC will perform EOF functions for the Alert Emergency class and for the Site Area Emergency class and General Emergency class until the EOF is functional," in subparagraph 8.2.1.j., "TSC - ... be fully operational within approximately 1 hour after activation," and in subparagraph 8.4.1.j., "EOF - Staffed using Table 2 (previous guidance approved by the Commission) as a goal. Reasonable exceptions to goals for the number of additional staff personnel and response times for their arrival should be justified and will be considered by NRC staff."

The applicable regulation for making changes to a licensee's emergency plan is 10 CFR 50.54(q). This regulation states that licensees may change their radiological emergency plan without NRC approval only if the changes do not decrease the effectiveness of the plan, and the plan, as changed, continues to meet the planning standards of paragraph 50.47 and the requirements of Appendix E to 10 CFR Part 50. The licensee states in the application that the proposed changes have been reviewed considering the requirements of 10 CFR 50.47, 10 CFR Part 50, Appendix E, and other NRC guidance. The review determined that the increased augmentation times are a reduction in commitments for the emergency preparedness program, but will not result in a reduction of the capability of the Emergency Response Organization (ERO) to respond to an emergency, and will not reduce ANO's ability to protect the health and safety of the public. As a result, the licensee concludes that NRC review and approval was needed pursuant to 10 CFR 50.54(q).

3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of its proposed Emergency Plan changes, which are described in the original application dated August 22, 2001, and as supplemented in letters dated July 9, 2002, and September 25, 2002. The detailed evaluation below will support the conclusion that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the approval of the proposed emergency plan changes will not be inimical to the common defense and security or to the health and safety of the public.

The NRC staff evaluated the proposed changes in the following order: (1) extend the time for augmentation of the on-shift Emergency Response Staff from 30 to 60 minutes for the current 30 minute responders and from 60 to 90 minutes for the current 60 minute emergency responders, (2) extend the time allowed to activate the ERFs, and (3) proposed editorial changes.

3.1 Extend the Time for Augmentation of the On-shift Staff

The current ANO Emergency Plan specifies the response times for certain tasks as 30 minutes or 60 minutes to match the guidance in NUREG-0654. The proposed change to Table B-1 will revise the response times for augmentation personnel to 60 minutes in lieu of the current 30 minute response time, and 90 minutes in lieu of the current 60 minute response time.

Following is the licensee's justification followed by the NRC staff evaluation of the compensation provided for each task.

3.1.1 Notification/Communication Function/Task - Licensee's Justification

In its supplemental letter dated July 9, 2001, the licensee states that two qualified Notification Communicators are on shift at all times (one per unit). The task is normally performed by the Shift Engineer (SE) from the unaffected unit. The licensee states that the notification function is now highly automated and, as such, has substantially reduced the task burden for the on-shift Notifications Communicator. Once the notification systems are initiated, completion of the task primarily requires the communicator to monitor the performance of the systems and document the notification results. The proposed increase in the augmentation time is compensated for by

this reduction in the communicator's task burden provided by the automated system, and by the presence of a second qualified communicator on shift to assist should the need arise. Also, drill performance results demonstrate that this task is consistently and proficiently performed by one communicator, without assistance. An additional compensatory measure is also provided by maintaining two off-shift communicators continuously on-call (required to carry a pager). If the Shift Manager determines that earlier augmentation for this function is necessary or prudent, these additional qualified communicators can be called out immediately.

NRC Staff Evaluation

The licensee proposes to provide the capability to augment this function with one additional person within 60 minutes and two more within 90 minutes, as opposed to the current capability of one additional person in 30 minutes and two more in 60 minutes. The NRC staff finds the compensation described above to extend augmentation times for this function/task to be acceptable.

3.1.2 Emergency Operations Facility Director Task - Licensee's Justification

The licensee proposes to extend the required augmentation time for this position from 60 minutes to 90 minutes. However, two individuals who are qualified to perform the ANO Senior Manager function are continuously on-call (the TSC Director as well as an EOF Director). The Shift Manager has the authority and capability to direct either or both of these individuals to respond to the site immediately, any time it is determined that support for this function is required. Upon a Notification of Unusual Event, both of the on-call individuals are notified in order to inform them of the abnormal site event. At the Alert level or above, both the TSC Director and EOF Director are expected to respond immediately to their respective facility and one will assume the responsibility and authority as ANO Senior Manager from the Shift Manager, as soon as possible and without delay. The licensee's proposed changes require the TSC Director to be capable of assuming the ANO Senior Manager function from the Shift Manager within 90 minutes of an Alert declaration; the EOF Director is to be capable of assuming the ANO Senior Manager function within 90 minutes of a Site Area or General Emergency. The licensee also states in its supplemental letter dated July 9, 2002, that Shift Managers have demonstrated proficiency during numerous simulator drills to successfully perform critical emergency response functions for up to 90 minutes without augmentation.

NRC Staff Evaluation

The licensee proposes to extend the augmentation time for this position from 60 to 90 minutes. Two individuals are qualified to perform the ANO Senior Manager function and are continuously on-call, and the TSC Director and EOF Director will respond at an Alert or above. Also, Shift Manager performance during simulator drills provides an additional basis for extending the response time. The NRC staff finds the compensation described above to extend the required augmentation time for this task to be acceptable.

3.1.3 Offsite Dose Assessment Task - Licensee's Justification

In its application dated August 22, 2001, the licensee states that offsite dose assessment and issuance of protective action recommendations (PARs) is performed by shift personnel prior to

augmentation by off-site responders. The Shift Manager will make the PAR based upon either plant conditions or radiological conditions.

The licensee states in its supplemental letter dated July 9, 2002, that at ANO the offsite dose assessment task is performed by on-shift personnel using the Radiological Dose Assessment Computer System (RDACS). The ANO shift organization includes two Nuclear Chemists who are both qualified to perform the offsite dose assessment function. The on-shift dose assessors perform this task in the control room and report directly to the Shift Manager of the affected unit. They receive the same level of training and possess the same level of expertise as the TSC and EOF dose assessment personnel. (This includes the ability to manually input radiological and meteorological parameters in the event that the online monitoring input capability is inoperable.) The RDACS system capabilities in the control room are identical to those in the TSC and EOF. The presence of this capability on-shift also enhances the Shift Manager's ability to effectively carry out the Emergency Direction and Control function by providing early offsite dose assessment data as input for development of PARs to offsite authorities. The on-shift dose assessors are augmented with a Dose Assessment Supervisor plus additional dose assessors. These individuals respond upon a declaration of an Alert (or higher) emergency class and proceed to the EOF to assume responsibility for the off-site dose assessment function. The personnel who staff the Dose Assessment Supervisor position have senior nuclear chemistry experience.

NRC Staff Evaluation

Having the capability to perform offsite dose assessment on-shift is required by 10 CFR 50.47(b)(9). The ANO shift organization includes two Nuclear Chemists who are both qualified to perform the offsite dose assessment function. The on-shift dose assessors perform this task in the control room and report directly to the Shift Manager of the affected unit. They receive the same level of training and possess the same level of expertise as the TSC and EOF dose assessment personnel. (This includes the ability to manually input radiological and meteorological parameters in the event that the online monitoring input capability is inoperable.) NUREG-0654, Table B-1, specifies the capability to provide one person to perform offsite dose assessment within 30 minutes. However, the NRC staff finds the compensation described above to extend augmentation times for this task to be acceptable.

3.1.4 Offsite Survey and Onsite (Out-of-Plant) Survey Tasks - Licensee's Justification

In its supplemental letter dated July 9, 2002, the licensee states that the ANO shift staffing augmentation proposal would extend the augmentation times for six Health Physics (HP) Technicians assigned to perform offsite and out-of-plant surveys from 30 and 60 minutes to 60 and 90 minutes, respectively. The justification for extending the augmentation times provided by the licensee in its supplemental letter dated July 9, 2002, identifies the overstaffing of the shift organization and its capability to perform onsite surveys, the immediate availability to the on-shift organization of offsite dose assessment information from the RDACS for input into protective-action decision-making, and the reduction in workload for the on-shift staff realized by improvements in technology and work processes (see detailed discussion in Section 3.1.6).

NRC Staff Evaluation

NUREG-0654, Table B-1, specifies that the organization is to have the capability to add three additional individuals to perform offsite and onsite (out-of-plant) surveys within 30 minutes and three more within 60 minutes. The licensee has proposed the use of six HP Technicians to perform these surveys, whereas Table B-1 of NUREG-0654 does not specify the position or title of these individuals. Three of the HP Technicians are to respond within 60 minutes and three more are to respond within 90 minutes. The on-shift HP Technician from the unaffected unit would also be available to perform onsite surveys. The NRC staff evaluation of the compensation provided by the reduction in workload for the on-shift staff realized by improvements in technology and work processes is discussed in Section 3.1.6. The NRC staff finds the compensation described above to extend augmentation times for these tasks to be acceptable.

3.1.5 In-Plant Surveys and HP Coverage - Licensee's Justification

In proposed Table B-1, the licensee identifies one on-shift HP Technician who is designated to perform in-plant surveys and three personnel per unit to provide in-plant protective actions. In-plant protective actions include HP coverage for repair and corrective actions, search and rescue, first aid, and fire fighting, as well as access control, personnel monitoring, and dosimetry tasks. Proposed Table B-1 also identifies that the HP Technician assigned in-plant surveys will be augmented within 60 minutes by one HP Technician and another HP Technician within 90 minutes. Also, proposed Table B-1 identifies that the three personnel per unit designated to perform in-plant protective actions will be augmented by two HP Technicians within 60 minutes and two additional HP Technicians within 90 minutes.

The licensee also states that the shift organization exceeds the minimum complement identified in Table B-1 of NUREG-0654 by providing a total of eight people to perform radiation protection tasks - two HP Technicians (one per unit) plus six non-licensed operators (three per unit). All non-licensed operators (auxiliary operators (AOs) and waste control operators (WCOs)) are qualified Category III Advanced Radworkers, which enables them to perform radiological surveys and use radiation detection instrumentation to provide HP coverage for their response activities in radiation and high radiation areas.

Also, in its supplemental letter dated July 9, 2002, the licensee states that ANO has radiation monitoring instrumentation in place that enables remote determination of in-plant dose rates without the need to dispatch HP Technicians to acquire the information. In addition to the Area Radiation Monitoring system, ANO has installed the Remote Acquisition and Display System (RADS). RADS is a system developed by Entergy which uses telemetry-capable instrumentation to provide remote indication of dose rates in the plant. This system is available to the on-shift organization and can be accessed using desk-top computers in the Control Rooms, TSC, Operational Support Center (OSC), and other locations that have been set up for this function. The capability of this system to remotely acquire radiological survey data significantly reduces the need for shift HP Technicians in the field, and, in combination with the additional HP staffing assigned to the shift organization, contributes significantly to the compensatory measures for the proposed extended augmentation times. The system capabilities relieve on-shift HP Technicians of administrative burdens associated with access control, personnel monitoring, and dosimetry issues, making the HP Technicians available to

the shift organization for other duties, including in-plant surveys and HP coverage. The RADS computer system has battery and emergency diesel generator back-up power supplies.

NRC Staff Evaluation

Contrary to the format used in NUREG-0654, Table B-1, the licensee discusses the task of HP coverage for repair and corrective actions, search and rescue, first aid, and fire fighting, in combination with the in-plant survey task due to the similarity of the expertise needed to perform these tasks. Consequently, the protective action tasks for access control, personnel monitoring, and dosimetry are addressed in Section 3.1.6.

NUREG-0654, Table B-1, identifies the need for one on-shift HP Technician to perform in-plant surveys and two on-shift personnel (who may be assigned other tasks) to perform the in-plant radiation protection tasks of HP coverage for repair, corrective actions, search and rescue, first aid, and firefighting and radiation protection tasks such as access control, personnel monitoring, and dosimetry. HP coverage for repair, corrective actions, search and rescue, first aid, and firefighting will be discussed in this section. The radiation protection tasks of access control, personnel monitoring, and dosimetry will be discussed in Section 3.1.6. The NRC staff evaluation of the compensation provided by the reduction in workload for the on-shift staff realized by improvements in technology and work processes is also discussed in Section 3.1.6.

The licensee provides two on-shift HP Technicians (one per unit) to perform in-plant surveys. This capability exceeds the guidance in Table B-1 of NUREG-0654 to provide one HP Technician for this task. Therefore, the extra HP Technician could be available to perform HP coverage for repair, corrective actions, search and rescue, first aid, and firefighting.

Also, NUREG-0654, Table B-1, specifies that the augmenters for in-plant surveys are to be HP Technicians. The licensee proposal to augment the on-shift staff performing in-plant surveys with one HP Technician within 60 minutes and one more in 90 minutes is consistent with this guidance.

The licensee also proposes to designate three on-shift personnel per unit, who may be assigned other functions and who are not HP Technicians, to perform HP coverage for repair, corrective actions, search and rescue, first aid, and firefighting. The licensee's proposal of three on-shift personnel per unit to provide HP coverage exceeds the guidance provided in Table B-1 of NUREG-0654, which specifies two personnel to perform all the in-plant protective actions. Therefore, the NRC staff finds the compensation described above to extend augmentation times for these tasks to be acceptable.

3.1.6 Access Control, Personnel Monitoring, and Dosimetry Tasks - Licensee's Justification

In its supplemental letter dated July 9, 2002, the licensee states that the Entergy Radiological Information Management System (ERIMS) allows plant personnel to process in to and out of a controlled access without the need for HP Technicians to perform associated administrative tasks. The access control features of this computer-based system enable emergency workers to self-issue dosimetry, establish and track dose limits, verify that radworker training is current, and document that they have read and understand the Radiation Work Permit. These tasks can be performed by individual emergency responders through a user interface with the

ERIMS, without the need for support or assistance from HP personnel. The system capabilities relieve on-shift HP Technicians of administrative burdens associated with access control, personnel monitoring, and dosimetry issues, making the HP Technicians available to the shift organization for other duties. Both the RADS and ERIMS computer systems have battery and emergency diesel generator back-up power supplies.

Also, as stated in its supplemental letter dated July 9, 2002, all AOs and WCOs are qualified Category III Advanced Radworkers, which enables them to perform radiological surveys and use radiation detection instrumentation to provide HP coverage for their response activities in radiation and high radiation areas.

NRC Staff Evaluation

The HP coverage tasks associated with the in-plant radiation protection tasks specified in NUREG-0654, Table B-1, were discussed in Section 3.1.5. This section addresses the remaining tasks (access control, personnel monitoring, and dosimetry issues) identified in NUREG-0654, Table B-1, as in-plant radiation protection tasks.

In the past, licensees have discussed and proposed the use of technological advances in radiation monitoring, instead of relying on effective on-scene HP job coverage for emergency entry teams. During the initial response period of an accident, the normal pre-work HP survey of the work area is, in most cases, not an acceptable method (it can take too long for the HP Technician to perform the survey and then report back to brief the workers). Given the inherent nature of accidents, the work area conditions could have significantly and unpredictably changed by the time the workers arrive. In the vast majority of plant locations, installed radiation monitoring equipment is not adequate alone (or not present) to satisfy the evaluation need. Additionally, such equipment may not be operational or reliable. Merely equipping each worker with an electronic dosimeter (ED) (without an accompanying HP Technician) is not an adequate, stand-alone method to satisfy the survey requirement. EDs do provide dose and dose rate alarms, but experience shows clearly that in high noise areas, these alarms are not easily heard. During normal, non-emergency conditions, workers have ignored these alarms, many ED designs are not qualified for high heat/humidity conditions, their relatively small displays may not be visible in high humidity conditions, and EDs should not be used as survey instruments (see Regulatory Guide 8.28). Also, during normal, stable operations, the typical plant HP controls for entering and working in high radiation areas do not allow worker entry into areas with unknown radiation levels. However, EDs do provide an additional level of protection for the worker by offering an electronic time-keeping backup and alerting a worker to a change in radiation levels.

Providing continuous dose telemetry (CDT) coverage is one method that would be adequate, as long as the licensee could demonstrate that the CDT would function under accident conditions and in all accessible areas and that communication with the wearer of the device could be maintained. CDT would require an HP Technician at the remote control station, as part of entry team oversight. Unless the HP Technician performs an initial survey before an operator entered an area, allowing an operator (with dose telemetry) to enter without an extended survey instrument (e.g., a teletector) could lead to unnecessary dose (and possibly an overexposure).

NUREG-0654, Table B-1, specifies that the organization is to have the capability to provide two individuals to perform in-plant protective actions which includes HP coverage for repair and

corrective actions, search and rescue, first aid, and fire fighting (which was discussed in Section 3.1.5), as well as access control, personnel monitoring, and dosimetry which will be discussed in this section. A footnote in NUREG-0654, Table B-1, also identifies that these tasks may be performed initially by on-shift personnel assigned other functions. NUREG-0654, Table B-1, also specifies the need to augment on-shift personnel performing these tasks with two HP Technicians within 30 minutes and two more within 60 minutes. The licensee has stated that all AOs and WCOs (three per unit), who are assigned emergency response functions, are qualified Category III Advanced Radworkers which enables them to perform radiological surveys and use radiation detection instrumentation to provide HP coverage for their response activities in radiation and high radiation areas. These six AOs and WCOs are the same personnel who are expected to provide HP coverage for repair and corrective actions, search and rescue, first aid, and fire fighting as discussed in Section 3.1.5. The licensee also proposes to augment the six AOs and WCOs with two HP Technicians within 60 minutes and two more within 90 minutes, which is consistent with Table B-1 of NUREG-0654.

The licensee also relies on the availability of computer systems to relieve HP Technicians of access control, personnel monitoring, and dosimetry tasks. Even though on-shift AOs and WCOs have been trained to perform radiological surveys and use radiation detection instrumentation to provide HP coverage for their response activities in radiation and high radiation areas during normal and shutdown conditions, they would not be qualified to perform surveys in areas that are potentially immediately dangerous to health and life. However, the AOs and WCOs proposed by the licensee could perform ancillary HP tasks, thereby freeing the HP Technicians to cover any vital response activities. Also, the on-shift HP Technician from the unaffected unit may also be available to perform some of these tasks. Therefore, the NRC staff finds the compensation described above to extend augmentation times for these tasks to be acceptable.

3.1.7 Chemistry/Radio-chemistry Task - Licensee's Justification

In its supplemental letter dated July 9, 2002, the licensee states that the organization currently provides two Nuclear Chemists on shift (one per unit), thus exceeding the minimum staffing requirement for this function. Furthermore, the task burden for Nuclear Chemists was significantly reduced with the elimination of the requirements for the Post Accident Sampling System (PASS) at ANO in August 2000.

NRC Staff Evaluation

NUREG-0654, Table B-1, specifies the capability to provide one on-shift Nuclear Chemist and the capability to augment with an additional Nuclear Chemist within 60 minutes. The NRC staff finds the compensation described above to extend augmentation times for this task to be acceptable.

3.1.8 Technical Support Task - Licensee's Justification

The licensee states in its supplemental letter of July 9, 2002, that the primary task in this functional area is to provide technical support to the organization by providing a Shift Technical Advisor (STA), plus the capability to add engineering support in the areas of core thermal hydraulics and electrical and mechanical expertise. At ANO, the on-shift Operations organization includes an SE for each unit, who also performs the STA function. The SEs are

responsible to advise the Shift Managers on the status of the core and thermal hydraulic conditions as part of their STA duties. In its supplemental letter dated September 25, 2002, the licensee also states the STA provides expertise in the areas of electrical and mechanical technical support. Specifically, the prerequisites for individuals selected for assignment to the shift organization as SEs/STAs specify that they should hold a bachelor's degree in engineering, engineering technology, or physical science from an accredited institution, or a bachelor's degree in a technical discipline which includes course work specified by ANO procedures. The licensee states that exemptions are evaluated on a case basis. Also, the initial SE/STA training program is designed to complement the candidate's degree and includes course work in topics such as electrical theory, motors and generators, electrical switchgear, and electrical print reading, as well as, pump construction, and operation, valve construction and operation, heat exchanger theory, ion exchangers, material science, and piping and instrument diagrams. Since ANO has placed engineering expertise on shift for each unit, adequate compensation has been provided for the requested extensions for augmentation times for this technical support function.

NRC Staff Evaluation

NUREG-0654, Table B-1, specifies the capability to provide one person with core/thermal hydraulics expertise within 30 minutes and two more individuals with electrical and mechanical expertise within 60 minutes. In its supplemental letter dated September 25, 2002, the licensee states that the STA provides expertise in the areas of electrical and mechanical technical support. The licensee also added a footnote to proposed Table B-1 that states that the STA duties encompass the core/thermal hydraulics function. The NRC staff finds the compensation described above to extend augmentation times for these tasks to be acceptable.

3.1.9 Repair and Corrective Actions Tasks - Licensee's Justification

In its application dated August 22, 2001, as supplemented by letter dated July 9, 2002, the licensee states that a qualified Rad Waste Operator (RWO) for each unit is part of the normal on-shift organization (i.e., WCOs). Furthermore, during the initial stages of an event, the major response activities are concentrated on determining the cause of the event and placing the plant in a safe condition through plant manipulations and system alignments. Extensive equipment repairs would rarely be performed during the initial phases of an event, but rather would be performed after the plant is as stable as possible. The expected maintenance needs during the initial phase of the event would likely be of a minor troubleshooting and corrective action nature, as dictated by Emergency Operating Procedures and/or Abnormal Operating Procedures. The on-shift, non-licensed operators (AOs and WCOs) are available and capable of performing these tasks. The AOs and WCOs receive basic training which enables them to perform minor troubleshooting and corrective action tasks. Examples of such tasks include, but are not limited to, breaker alignments and defeat of under-voltage relays (performed during degraded power conditions), troubleshooting and corrective actions for motor operated and air operated valve malfunctions, valve packing adjustments, and installing jumpers.

Considering the resources provided by maintaining the RWOs (i.e., WCOs) on shift, the general overstaffing of the on-shift non-licensed operator positions and their capabilities to perform minor troubleshooting and corrective actions during the initial phase of the emergency, the licensee believes that extending the augmentation times for additional personnel for repair and

corrective actions is reasonable, and would not decrease the effectiveness of an emergency response.

NRC Staff Evaluation

NUREG-0654, Table B-1, provides for these on-shift tasks to be performed by shift personnel assigned other functions, followed by augmentation from off-site by additional maintenance expertise and an RWO within 60 minutes, and two electrical maintenance/instrumentation and control technicians within 30 minutes. The NRC staff finds the compensation described above to extend augmentation times for this task to be acceptable.

3.1.10 On-shift Staff Performance During Simulator Drills - Additional Licensee Justification

In its supplemental letter dated July 9, 2002, the licensee states that the proficiency of the on-shift Operations staff to perform critical ANO Emergency Plan functions, without support from off-shift/off-site resources, is routinely evaluated during Operations continuing training. Emergency response drill objectives are integrated into evaluated simulator sessions for plant operators. During these drills, there is no augmentation of the on-shift Operations staff with additional personnel, and there is no turnover of emergency response duties or responsibilities to the ERFs. The shift control room staff is expected to perform all emergency response tasks that are required by the simulator scenario, in conjunction with other required actions that are directed by normal, abnormal, and emergency operating procedures. Evaluated emergency response tasks include emergency classification, notification, off-site dose assessment, formulation, and simulated implementation of PARs for off-site authorities. Representatives from the Emergency Preparedness Staff are present during these simulator drills in order to evaluate the emergency response performance of the on-shift Operations staff. During the period from January 1, 2001, through May 14, 2002, a total of 186 evaluated simulator sessions were conducted. Of these drills, 94 sessions lasted greater than 60 minutes. Seventy of these drills reached a Site Area Emergency and 10 drills reached a General Emergency. The letter further states that the Emergency Preparedness Staff has thoroughly analyzed the results of these drills and found that there were no performance failures, deficiencies, or weaknesses for which the cause was determined to be an inadequate level of on-shift staffing.

NRC Staff Evaluation

The NRC staff finds the on-shift staff performance during simulator drills described above provides additional bases for extending ERF activation.

3.1.11 Prompt Augmentation - Additional Licensee Justification

The licensee states in its application dated August 22, 2001, that the proposed changes establish realistic response times for the ERO and for staffing ERFs. Its application also states that ERO personnel are expected to respond immediately and without delay upon notification, regardless of their location at the time. Footnote 3 to Table B-1, which states that emergency responders are to report as soon as possible without delay, has been proposed as an addition. Also, the Shift Manager can direct additional personnel to respond immediately to augment the shift staff at any time, regardless of the status of plant conditions or the emergency class.

NRC Staff Evaluation

The NRC staff finds that the prompt augmentation described above provides additional bases for extending ERF activation.

3.1.12 Summary

On a unit basis, each unit has 11 personnel on shift who have been assigned emergency response tasks. The licensee has identified eight on-shift personnel in excess of the minimum shift staffing guidance for a dual unit site provided in NUREG-0654. The licensee's on-shift staffing, as shown in proposed Table B-1, includes one additional Shift Manager, one additional Control Room Operator, one additional AO, two additional WCOs, one additional STA (SE), one additional HP Technician, and one additional Nuclear Chemist. In the event of an emergency, the licensee has the capability to incorporate six of these personnel to support the response to the affected unit as follows: one AO will perform repair and corrective action tasks, two WCOs are assigned to radiological protection and repair tasks, the HP Technician has been assigned to radiological protection tasks, the Nuclear Chemist has the capability to perform off-site dose assessment and chemistry/radio-chemistry for either unit, and the STA (SE) will perform notification/communication tasks. The licensee has not identified any specific emergency response tasks for the Shift Manager or the extra Control Room Operator from the unaffected unit. Support from the unaffected unit in the event of an emergency is acceptable due to the remote likelihood that there would be a severe accident at both units at the same time. Attached is the ANO Emergency Plan Table B-1.

Also, 10 additional personnel will augment the on-shift staff within 60 minutes and an additional 19 will respond within 90 minutes. Acceptable compensation for extending the 60 minute responders to 90 minutes includes the addition of one WCO per unit, and the support of six on-shift personnel from the unaffected unit. Emergency responders are also expected to respond immediately and without delay upon notification, regardless of their location at the time. Therefore, the NRC staff finds the compensation described above to extend the time for augmentation of the on-shift emergency response staff from 30 to 60 minutes for the current 30 minute responders and from 60 to 90 minutes for the current 60 minute emergency responders would not be a decrease in the effectiveness of the ANO Emergency Plan and is acceptable.

3.2 Extend the Time Allowed to Activate the Emergency Response Facilities

3.2.1 Licensee's Justification

The licensee's justification for extending the time to declare the ERFs operational within 90 minutes are: (1) ANO will activate all ERFs at the Alert emergency classification level, (2) emergency responders are expected to report to their assigned facility as soon as possible and without delay, (3) the distribution of ERO personnel, (4) site demographics and population density, (5) probabilistic risk assessment (PRA) considerations, and (6) severe accident management guideline (SAMG) considerations.

Activation of all ERFs at an Alert

In its supplemental letter dated July 9, 2002, the licensee states that the specific requirements proposed are for the TSC and OSC to be operational within 90 minutes of an Alert declaration. The proposed requirement for the EOF is for it to be operational within 90 minutes of a Site Area or General Emergency declaration. In its supplemental letter dated September 25, 2002, the licensee states that the operational goal for the EOF, should it be activated at the Alert, is also within approximately 90 minutes. The licensee defines "operational" for each facility in terms of the positions that are required by the ANO Emergency Plan to be staffed in order to be capable of performing its specified function.

ERO response as soon as possible

In its application dated August 22, 2001, the licensee states that ERO personnel are expected to respond immediately and without delay upon notification, regardless of their location at the time. Footnote 3, which states that emergency responders are to report as soon as possible without delay, has been proposed as an addition to Table B-1. Also, the Shift Manager can direct additional personnel to respond immediately to augment the shift staff at any time, regardless of the status of plant conditions or the emergency class.

ERO personnel distribution

In its application dated August 22, 2001, the licensee states that some plant personnel live far enough away from the plant that they are precluded from being assigned to the ERO. Also, the proposed changes will increase the number of eligible plant personnel to fill critical ERO positions and add valuable expertise. The licensee also states that the proposed changes establish realistic response times for the ERO and for staffing ERFs.

Site demographics and population density

ANO is a remote site, pursuant to the siting standards contained in 10 CFR Part 100. In its application dated August 22, 2001, the licensee states there are no general site characteristics or general population features that are at variance with 10 CFR Part 100. Also, the licensee states that the population within a two mile radius of the plant is considered small enough so that prompt protective actions could be taken by Entergy and appropriate offsite authorities prior to full augmentation by the ERO.

PRA considerations

In its application dated August 22, 2001, the licensee states that the proposed changes to the ANO Emergency Plan do not pose a risk to the public health and safety, as substantiated by PRA considerations.

SAMG considerations

In its application dated August 22, 2001, the licensee states that the proposed changes to the ANO Emergency Plan do not pose a risk to the public health and safety, as substantiated by the SAMGs.

3.2.2 NRC Staff Evaluation

NUREG-0737, Supplement 1, Section 8.2.1.j., states in part, that the TSC will "...be fully operational within 1 hour after activation." The licensee's proposed changes to Table B-1 exceed this guidance. However, the licensee has proposed ANO Emergency Plan changes sufficient to justify extending the ERF operational time to 90 minutes and meeting planning standard 10 CFR 50.47(b)(2), which states in part, "...adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and..."

The NRC staff used the following evaluation to form the basis for evaluating the licensee's proposal to extend the times to augment the minimum emergency on-shift staffing in the event of an emergency.

(1) Description of On-shift Staffing Levels

Although the licensee states that the operations crews for emergencies are purposely overstaffed compared to NUREG-0654, Table B-1, this table only indicates the minimum staffing requirements for emergencies. For a multi-unit site, the first footnote for NUREG-0654, Table B-1, specifies that for each unaffected unit in operation, the licensee should maintain one shift foreman, one control room operator, and one AO except that units with units sharing a control room may share a shift foreman if all functions are covered. The licensee's on-shift staffing, as shown in proposed Table B-1, exceeds the minimum on-shift staffing for emergencies guidance by having one additional Shift Manager, one additional Control Room Operator, one additional AO, two additional WCOs, one additional STA (SE), one additional HP Technician, and one additional Nuclear Chemist, for a total of eight additional personnel. The on-shift staffing for emergencies, as shown in proposed Table B-1, provides an acceptable alternative to extending the 30 and 60 minute responders augmentation times to 60 and 90 minutes, respectively, and would provide part of the basis for extending augmentation times.

(2) Increase the ERF Pool

In its application dated August 22, 2001, the licensee states that the proposed changes to extend augmentation times will increase the number of eligible plant personnel to fill critical ERO positions and add valuable expertise. Therefore, expanding the ERO pool would provide part of the basis for 30 and 60 minute responders to be extended to 60 and 90 minutes, respectively.

(3) Early Activation of ERFs

The licensee indicated all emergency facilities are activated at the Alert emergency classification. However, as discussed above, the licensee proposes to increase the operational time goal for all emergency facilities to 90 minutes. Current guidance is for the licensee to activate the TSC and OSC at the Alert emergency classification. The early activation of the EOF would provide part of the basis to extend the 30 and 60 minute capability to augment the on-shift staff for emergencies to 60 and 90 minutes, respectively.

(4) ERO Response Times

The licensee expects ERO personnel to respond immediately and without delay upon notification, regardless of their location at the time. The licensee has proposed Footnote 3 to Table B-1, which states that emergency responders are to report as soon as possible without delay. Also, the licensee states that the Shift Manager can direct additional personnel to respond immediately to augment the shift staff at any time, regardless of the status of plant conditions or the emergency class. The licensee further states that the proposed 60 and 90 minute augmentation is expected to be the maximum time for personnel to respond to a notification. These actions provide for augmentation of the on-shift staff prior to the goals of declaring the ERFs operational within 90 minutes of an Alert.

The licensee's information related to site demographics and population density was not considered in the evaluation of the request to extend the activation times for the ERFs, since the licensee has established a capability for promptly notifying responsible State and local governmental agencies within 15 minutes of declaring an emergency, has demonstrated that the State and local officials have the capability to make a public notification decision promptly upon being informed by the licensee of an emergency condition, and has demonstrated that administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway Emergency Planning Zone.

The licensee's information related to PRA was also not considered in the evaluation of the request to extend the activation times for the ERFs, since risk has already been considered in the determination of the size of the Emergency Planning Zones. NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants", states that the size of the Emergency Planning Zones is based on the rationale of a full spectrum of accidents and corresponding consequences tempered by probability considerations.

Further, the licensee's information related to SAMG considerations was not considered in the evaluation of the request to extend activation times for the ERFs, since the ANO SAMGs are intended for use in the TSC, which may not be operational for 90 minutes following the declaration of an Alert.

3.2.3 Summary

The NRC staff finds the alternative times for ERF activation/staffing (operational) time goals acceptable. Currently, the ANO Emergency Plan indicates that the ERF activation time goal is 60 minutes. Extending the ERF operational time goals to 90 minutes from the declaration of an Alert is acceptable due to the compensation provided by adding additional emergency responders on-shift for emergencies, the required prompt response of ERO personnel, the increase in the ERO pool of available personnel, and early activation of the EOF. Therefore, extending the time allowed to activate the ERFs would not be a decrease in the effectiveness of the ANO Emergency Plan and the change is acceptable.

3.3 Proposed Editorial Changes

The licensee proposed editorial changes to Table B-1 to more closely align the table with current ANO titles and with NUREG-0654 titles, tasks, and areas. The following proposed editorial changes are acceptable:

- Title changes in Table B-1
- New Footnote 3 to Table B-1
- Revised wording of Footnotes 1 and 5 to Table B-1

4.0 CONCLUSION

The NRC staff has determined that the licensee's proposed ANO Emergency Plan changes in its application dated August 22, 2001, and as supplemented by the letters dated July 9, 2002, and September 25, 2002, are acceptable. The NRC staff also finds that the ANO Emergency Plan changes meet the planning standards of 10 CFR 50.47(b) and the requirements of Appendix E of 10 CFR Part 50. Therefore, the Commission concludes, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the approval of the proposed emergency plan changes will not be inimical to the common defense and security or to the health and safety of the public.

Attachment: ANO Emergency Plan Table B-1

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Date: September 27, 2002

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