



October 3, 1991

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SUBJECT: Arkansas Nuclear One - Units 1 & 2  
Docket Nos. 50-313 & 50-368  
License Nos. DPR-51 & NPF-6  
Implementation Status of Four Issues at ANO

Gentlemen:

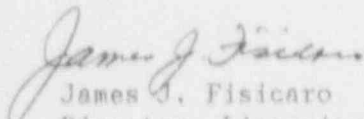
The NRR Project Managers for Arkansas Nuclear One, Units 1 and 2 (ANO-1 & 2) requested that Entergy Operations provide to them the implementation status of four issues at ANO. The issues include:

- The installation of the third auxiliary feedwater pump for ANO-2,
- The remaining ANO-1 reactor building temperature reduction modification,
- Generic Letter 88-17, "Loss of Decay Heat Removal", and
- Generic Letter 89-13, "Service Water System Problem Affecting Safety-Related Equipment".

A brief discussion and the current status of the implementation of each issue is provided in Attachments 1 through 4, respectively.

Should you have any questions regarding this submittal, please contact me.

Very truly yours,

  
James J. Fisicaro  
Director, Licensing

JJF/RWC/sjf  
Attachments

9110100197 911003  
PDR ADOCK 05000313  
P PDR

ADD 1/1

cc: Mr. Robert Martin  
U. S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011

NRC Senior Resident Inspector  
Arkansas Nuclear Op. - ANO-1 & 2  
Number 1, Nuclear Plant Road  
Russellville, AR 72801

Mr. Thomas W. Alexion  
NRR Project Manager, Region IV/ANO-1  
U. S. Nuclear Regulatory Commission  
NRR Mail Stop 11-D-23  
One White Flint North  
11555 Rockville Pike  
Rockville, Maryland 20852

Ms. Sheila R. Peterson  
NRR Project Manager, Region IV/ANO-2  
U. S. Nuclear Regulatory Commission  
NRR Mail Stop 11-D-23  
One White Flint North  
11555 Rockville Pike  
Rockville, Maryland 20852

ATTACHMENT 1

THIRD AUXILIARY FEEDWATER PUMP

### Third Auxiliary Feedwater Pump

In letter 2CAN078905, dated July 19, 1989, ANO committed to install a new alternative pumping system to supply water to the steam generators on ANO-2. Details on the proposed design and schedule for implementation of this change were provided in letter 2CAN049005, dated April 3, 1990.

ANO proposed in letter 2CAN049005, to install a third Auxiliary Feedwater Pump, which will also serve as a startup pump to be used in place of the motor driven Emergency Feedwater Pump for plant startup and shutdown. The pump was scheduled to be installed in the 1991 refueling outage.

During the eighth refueling outage for ANO-2 (2R8), ANO installed and placed the third Auxiliary Feedwater Pump into operation.

ATTACHMENT 2

ANO-1 REACTOR BUILDING TEMPERATURE  
REDUCTION MODIFICATION

### ANO-1 Reactor Building Temperature Reduction Modification

The Action Plan for the ANO-1 Reactor Building Temperature Reduction issue was submitted in letter ICANØ188Ø3, dated January 29, 1988. The Action Plan was updated in letter ICANØ19Ø16, dated January 25, 1990.

In letter ICAN1Ø9ØØ7, dated October 26, 1990, Entergy Operations committed to install an additional air handling unit. This unit was installed during 1R9. Entergy Operations also committed to add an additional air-cooled chiller to the Chilled Water System. This additional chiller modification was installed and placed into operation in May, 1991.

Initial results indicate that these modifications are performing in accordance to their design expectation for reducing reactor building temperatures. A results report is scheduled for completion prior to the end of 1991.

ATTACHMENT 3

GENERIC LETTER 88-17

LOSS OF DECAY HEAT

## Generic Letter 88-17, Loss of Decay Heat

Generic Letter 88-17, concerning loss of decay heat removal (DHR), requested that licensees respond to recommendations for both expeditious actions and program enhancements to address specific DHR concerns.

### • 60 Day Response to Generic Letter 88-17

Specifically, a 60-day response was requested to include a description of the actions taken to implement each of the eight recommended expeditious actions identified in the Generic Letter. The Generic Letter requested that these actions be implemented prior to operating in a reduced inventory condition.

Entergy Operations' response to each of the appropriate expeditious actions was provided in letter ECAN018901, dated January 5, 1989. Supplemental responses to GL 88-17 were provided in letters dated June 12, 1989 (1CAN068907), July 6, 1989 (2CAN078903), March 29, 1991 (0CAN039104) and April 26, 1991 (2CAN049110). The status of these actions is provided below.

1. A lesson plan was developed on the DHR system and is presented to maintenance and work control personnel. These lesson plans discuss the DHR systems, their functions, operations and procedures to be used on a loss of DHR.

Extensive operator training, both initial and requalification, have been in place to cover DHR system functions and operations, and procedures used for a loss of DHR. Operations personnel also receive a review of the DHR system prior to each scheduled refueling outages.

The additional lesson plans and enhancements to training have been completed and are currently in place. See the discussion provided below, in the 90 day response section, concerning the programmed enhancements.

2. The procedures controlling the RCS draining operations have been revised to incorporate the Generic Letter recommendations. See the discussion provided below, in the 90 day response section, concerning the programmed enhancements.
3. The procedures controlling the RCS draining operations have been revised to incorporate portions of the Generic Letter recommendations. For ANO-2, controls are provided for reduced inventory conditions to ensure that at least two means of RCS temperature are available, as discussed in our March 29, 1991 Amended 60-day response to GL 88-17 (0CAN039104). See the discussion provided below, in the 90 day response section, concerning the programmed enhancements.
4. The procedures controlling the RCS draining operations have been revised to incorporate portions of the Generic Letter recommendations. The operations logs have been revised as required to provide for periodic recording of at least two continuous RCS water level indications during reduced inventory operations. See the discussion provided below, in the 90 day response section, concerning the programmed enhancements.

5. A list of components which have a predictable potential for disrupting the RCS and/or the DHR system has been generated. This list was added to the appropriate procedure for reference. The appropriate procedures have been revised to incorporate the Generic Letter recommendations. See the discussion provided below, in the 90 day response section, concerning the programmed enhancements.
6. The procedures controlling the RCS draining operations have been revised to incorporate the Generic Letter recommendations. See the discussion provided below, in the 90 day response section, concerning the programmed enhancements.
7. ANO-1 is a Babcock & Wilcox NSSS design. ANO-2 currently does not use nozzle dams; however, ANO-2 is evaluating the use of nozzle dams. If nozzle dams are utilized at ANO-2, procedures and administrative controls will be implemented in accordance with this action.
8. Neither the ANO-1 or 2 NSSS have pop stop valves.

• 90 Day Response to Generic Letter 88-17

Generic Letter 88-17 also requested a 90 day response. This response was to include a description of enhancements, specific plans and a schedule for implementation of the six programmed enhancement recommendations identified in the Generic Letter. The six programmed enhancements were developed in parallel with the eight recommended expeditious actions, in accordance with the guidance and schedule discussed in the Generic Letter. These program enhancements involved the following areas:

1. Instrumentation;
2. Procedures;
3. Equipment;
4. Analyses;
5. Technical Specifications; and
6. RCS Perturbations

Entergy Operations provided the required response in letter #CAN038908, dated March 14, 1989. The status of each of these enhancements is provided below.

Instrumentation

In the letter dated March 14, 1989, Entergy Operations stated that ANO-1 provided reliable indications in the Control Room of the parameters that describe the condition of the RCS and the performance of systems normally used to cool the RCS. A variable setpoint for the ANO-1 DHR flow alarm was scheduled to be implemented during 1R9, as were variable setpoint alarms on high temperature from the core exit thermocouples and on low RCS level from the ICCMDS. These indications were implemented during 1R9.

Entergy Operations committed to 1) install an additional level indication (in addition to the existing tygon tube system) during the eighth refueling outage for ANO-2 (2R8); 2) incorporate the use of temporary cables to allow use of two core exit thermocouples while the reactor vessel head is being disconnected or reconnected, and 3) add visible and audible indications of abnormal conditions in temperature, level, and DHR system performance. These modifications were implemented during 2R8.

#### Procedures

In the March 14, 1989 letter, Entergy Operations stated that ANO-1 does not operate in a reduced inventory condition as defined by the Generic Letter with fuel in the core, therefore the requirement for containment closure does not apply. Several ANO-1 and ANO-2 operating procedures were enhanced in accordance with the Generic Letter. The enhancements referenced in the ANO response were implemented using temporary procedure changes to promptly address the required expeditious actions and were maintained as appropriate. These temporary changes were made permanent changes by 1R9 and 2R8.

#### Equipment

In letter OCAN038908, Entergy Operations stated that administrative and procedural controls governing equipment availability during partial loop conditions existed for both units. These procedures were enhanced according to the Generic Letter. The enhancements referenced in the ANO response were implemented using temporary procedure changes to promptly address the required expeditious actions and were maintained as appropriate. These temporary changes were made permanent changes by 1R9 and 2R8.

#### Analyses

Generic Letter 88-17 requested that licensee conduct analyses to supplement existing information and develop a basis for procedures, instrumentation installation and response, and equipment/NSSS interactions and responses. In letter OCAN038908, Entergy Operations stated that additional plant specific analyses to further enhance procedures and training were being performed. These analyses were initially completed during the summer of 1989. Subsequent revisions have been performed to support continued procedure enhancement. These analyses are undergoing further review as a followup to comments made during the ANO-1 shutdown operations inspection.

#### Technical Specification

Item 5 of Generic Letter 88-17 programmed enhancements recommended identification of Technical Specifications that restrict or limit the safety benefit of the actions identified in the Generic Letter and submittal of appropriate changes. In letter OCAN038908, Entergy Operations stated that ANO is evaluating appropriate Technical Specification changes.

A change request for ANO-2 Specification 3/4.9.8.1 was submitted on December 15, 1989 (2CAN128903) and another request to change ANO-2 Specification 3/4.1.1.3 was submitted on February 25, 1991 (2CAN029101). ANO has determined that a reduction in the minimum shutdown cooling loop flow from 3000 to 2000 gpm was appropriate. The December 15, 1989, request was approved by the NRC in letter dated April 30, 1990, Amendment 104. The February 25, 1991, request is currently being reviewed by the NRC.

## RCS Perturbations

Lists of components which have a predictable potential for disrupting the RCS and/or DHR system have been generated for ANO-1 and ANO-2. This information has been included in the appropriate operations procedures and provided to the work planning organization to assist them in determining components and systems which can or should not be worked at various points in an outage involving DHR and reduced inventory operations.

Certain enhancements were initially implemented by temporary changes. Permanent procedural changes and work planning process changes were completed by 1R9 and 2R8.

### • Programmed Enhancement Inspection

Both of the ANO-1 and ANO-2 programs and actions for GL 88-17 have received NRC inspection. In the ANO-2 GL 88-17 inspection report, dated April 24, 1991, it was noted that Entergy Operations agreed to perform the following actions:

- 1) Submit a letter to address current compensatory actions which are being taken to prevent inaccurate RCS level indication caused by potential problems associated with the RCS level instrument common variable leg sensing line.
- 2) Submit a letter to the NRC which discusses plans for evaluating the enhancements for the ANO-2 reactor coolant system reduced inventory level monitoring capability.
- 3) Evaluate enhancement of the shutdown cooling system performance monitoring system to better detect the approach of a shutdown cooling pump to vortexing conditions and make improvements as deemed appropriate.

With regards to item 1 above, Entergy Operations submitted letter 2CAN049110, dated April 26, 1991, that described the ANO-2 RCS shutdown level measurement system and the compensatory measures being taken to reduce the potential for hot leg instrument line blockage.

In response to item 2, Entergy Operations reaffirms our intent to perform an evaluation for potential enhancement of the RCS shutdown level measurement system. This evaluation will include a review of the 3/8th inch tubing routing and protection and a review of other improvements beyond the current design of the system. Entergy Operations will utilize the next ANO-2 refueling outage (2R9) to perform walkdowns of the system for input to the evaluation. Completion of the evaluation is scheduled for the first quarter of 1993.

For item 3, Entergy Operations also reaffirms our intent to perform an evaluation of the shutdown cooling (SDC) performance monitoring for potential approach of SDC pump vortexing. This evaluation is expected to be completed by June 30, 1992.

ATTACHMENT 4

GENERIC LETTER 89-13

SERVICE WATER SYSTEM PROBLEMS  
AFFECTING SAFETY-RELATED EQUIPMENT

## Generic Letter 89-13, Service Water Problems Affecting Safety-Related Equipment

Generic Letter 89-13, "Service Water Problems Affecting Safety-Related Equipment", issued on July 18, 1989 (ECNA078922), requested that licensees submit a 180 day response on establishing programs to implement Recommendations I through V of the Generic Letter. The ANO response to Generic Letter 89-13, dated January 26, 1990 (ECAN019312), discussed both one-time actions and ongoing programs for each of the recommendations. The following information provides a status of the actions committed to in the response.

It should be noted that this submittal does not represent the required notification of the implementation of the actions identified in Generic Letter 89-13. This submittal will be provided within 30 days of completion of the required actions during the upcoming 1R10 and 2R9 outages at ANO.

### Recommendation I - Biofouling Control

The ANO biofouling program has been implemented as discussed in our letter of January 26, 1990. In this submittal, Entergy Operations committed to notify the NRC of changes in biocide types. In Operating License Amendments 132 and 107 for ANO-1 & 2 (ECNA079009), respectively, the NRC approved the use of alternate biocide treatment approaches other than chlorine. ANO currently uses bromine for biological fouling control.

### Recommendation II - Thermal Performance

The ANO-2 one-time actions to purchase and install additional instrumentation and conduct thermal performance measurements were completed during 2R8. Two conditions were identified from the 2R8 performance measurements which are currently being addressed for resolution.

Similar actions for ANO-1 will be completed during 1R10 (currently scheduled for the spring 1992) as discussed in our response of January 26, 1990. However, the initial verification of service water heat exchanger capability for thermal performance measurements was conducted during 1R9.

In Entergy Operations' letter dated November 30, 1990 (1CAN119010), ANO-1 Makeup Room Coolers VUC7A, 7B, and 7C were removed from the thermal performance measurement list provided in the initial January 26, 1990, submittal, since they do not perform a safety related function.

### Recommendation III - Degradation Control

The surveillance and control of service water component degradation are performed as part of the ongoing actions for the ANO Service Water Integrity Program (SWIP).

#### Recommendation IV - As-Built Verification

Walkdowns of the Service Water systems were conducted for both units during the last respective refueling outages (1R9 and 2K8). Engineering Reports, documenting the service water system verification, were completed subsequent to each unit's outage. The system walkdowns and design verifications resulted in various findings and drawing discrepancies. However, the system design verification determined that the ANO-1 & 2 service water systems met their licensing basis and would perform their intended safety functions.

#### Recommendation V - Procedures and Training

Reviews of ANO-1 & 2 maintenance, operating and emergency procedures were conducted and documented prior to startup from the refueling outages. Additional surveillance and preventative maintenance actions were identified and changes to the appropriate procedures will be completed prior to restart from the next refueling outages (1R10 and 2R9). This was discussed in our January 26, 1990, letter.

Any necessary revisions to the ANO training modules will also be performed prior to the next refueling outages as discussed in our January 26, 1990, letter.

#### Emergency Cooling Pond (ECP) Fish Population

In Entergy Operations' letter dated July 2, 1990 (ECAN079005), ANO committed to perform additional chemical treatment of the ECP to reduce the fish population and establish a frequency for future ECP chemical treatment. In August 1990, an additional ECP chemical treatment was conducted and fish population determined. As a result of the fish population encountered, it was determined that an annual ECP treatment will be sufficient to control the fish population to prevent significant rehabilitation of the ECP. The program for annual treatment of the ECP will be added to the ANO SWIP.