AUG 13 1990

In Reply Refer To:
Dockets: 50-313
50-368

Entergy Operations, Inc.
ATTN: Neil S. Carns, Vice President
Operations, Arkansas Nuclear One
P.O. Box 551
Little Rock, Arkansas 72203

Gentlemen:

This acknowledges the granting of a temporary waiver of compliance to Arkansas Nuclear One, Unit 1 (ANO-1), from the provision of Technical Specifications (TS) 3.3.6 and 3.4.5.1 for "Engineered Safeguards (ES) Train 'A' Equipment" and "Emergency Feedwater System Flow Path," respectively. Your letter (1CAN089015) to this office, dated August 11, 1990, provides the written basis for the temporary waiver of compliance that you verbally requested on August 11, 1990.

A temporary waiver of compliance was verbally granted on August 11, 1990, by NRC Region IV allowing ANO-1 to continue operation in Mode 1 while repairs were completed to a masonry blockout located in the south wall of the ANO-1 control room to restore it to a seismically qualified condition. The period for the waiver of compliance from TS 3.3.6 and 3.4.5.1 was for 24 hours from 6:53 a.m. (CST) on August 11, 1990, to 6:53 a.m. on August 12, 1990. The verbal waiver was requested at 12:05 a.m. based on anticipation that repairs might not be completed by 6:53 a.m. and to preclude initiating a controlled shutdown to place the reactor in a hot shutdown condition. It is acknowledged that ANO technically completed all repairs by 6:52 a.m. on August 11, 1990.

Region IV performed an evaluation of your followup written documentation and found it to be in conformance with the information that you provided to Mr. Thomas P. Gwynn of the Region IV office during a telephone conference on August 10, 1990. As committed by your staff, we understand that you did maintain the following compensatory measure in effect until repairs were completed to the masonry blockout in the ANO-1 control room wall:

- Instructions were provided to operations personnel of the potential for a failure of the blockout in the ANO-1 control room wall and the resultant effect on plant equipment.
- Materials were staged and available to restore control room habitability should an opening in the blockout occur.
- Personnel of both units of ANO were instructed to initiate an immediate plant shutdown should a seismic event occur of such magnitude as to

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induce any degradation of the blockout and/or in the event that the seismic event resulted in a monitoring instrumentation alarm (greater than 0.1 g).

As indicated by Mr. Jim Vandergrift of your staff on August 11, 1990, we understand that the ANO Plant Safety Committee reviewed and approved the basis of your proposed request for a temporary waiver of compliance prior to requesting this waiver from NRC Region IV. If your understanding of this matter differs from that expressed above, or if your have any other questions regarding this matter, please contact Mr. Thomas F. Westerman of my staff at 817/860-8145.

Sincerely,

Samuel J. Collins, Director
Division of Reactor Projects

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ATTN: Senior Resident Inspector
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U.S. Nuclear Regulatory Commission
ATTN: Regional Administrator, Region IV
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bcc to DMB (IE51)

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Entergy Operations

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August 11, 1990

1CAN089015

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

Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Request for a Temporary Waiver
of Compliance

Dear Mr. Martin:

This letter provides the written documentation to follow-up the Arkansas Nuclear One (ANO) Unit 1 verbal request at 0005 hours on August 11, 1990 regarding a temporary waiver of compliance from Technical Specification Limiting Condition for Operation (LCO) Sections 3.3.6 and 3.4.5.1 for, "Engineered Safeguards (ES) Train 'A' Equipment" and "Emergency Feedwater System Flow Path", respectively. On August 9, 1990 an engineering inspection of a blockout located in the south wall of the ANO-1 Control Room discovered that the blockout was constructed of grout filled concrete blocks. However, no structural steel rebar could be located in the blockout structure and additional grouting was required. The waiver request focuses on the potential effect on plant equipment from a postulated failure of the blockout during a seismic event. The ANO Plant Safety Committee has reviewed and approved the evaluation and actions discussed herein. A total of 24 hours was verbally requested and granted, if required to exceed the subject LCO's.

The subject LCO's require a reactor shutdown be initiated and the reactor be in a hot shutdown condition within 36 hours from entering the LCO's. The concrete blocks were grouted and steel fasteners were inplace at approximately 0234 hours on August 11. At that time, ANO believed that the blockout would be seismically acceptable pending a 3 hour cure time and allowing a final torque pass. At approximately 0607 hours, the grout had cured and the wall was physically completed pending final engineering and quality group signoffs. At 0652 hours the wall was structurally accepted and the attendant ES equipment was declared operable. The LCO expiration time period was documented as 0653 hours on August 11, 1990. ANO technically returned all affected systems back to an operable status prior to the expiration of the LCO. However, to meet the intent of the hot standby requirements in the subject LCO's, ANO believes it relied on the granted waiver to not begin a controlled reactor shutdown prior to reaching the LCO expiration time period.

The attached provides the information required to request a temporary waiver of compliance.

Your cooperation regarding ANO's verbal request is appreciated. If you have further questions regarding the attached information, please contact Mr. Jim Fisicaro at (501) 964-3228.

Very truly yours,

E. C. Ewing
General Manager,
Assessment

ECE/tmb
Attachment
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Washington, D. C. 20555

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U. S. Nuclear Regulatory Commission
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Rockville, MD 20852

ANO Senior Resident Inspector

ATTACHMENT

ANO-1
Temporary Waiver of Compliance to
Technical Specification Sections 3.3.6 and 3.4.5.1

Description of Condition/Requirements for Which Waiver is Required

On 07/26/90, while performing an inspection of fire barrier penetration seals, personnel identified air flow around a conduit penetrating a blockout located in the south wall of the ANO-1 control room. It was determined that the conduit was not sealed properly.

While evaluating and inspecting the penetration seal deficiency, personnel noted that the uppermost concrete blocks in the blockout did not appear to be filled with grout. Due to limitations on accessibility, it could not be determined if the blockout contained rebar (reinforcing steel) or was structurally reinforced in any other manner. The blockout is constructed of concrete blocks as depicted on the attached simplified drawing (Figure 1). This structure is not a load bearing portion of the control room wall.

Engineering personnel performed an initial evaluation of the condition, however, were not able to locate adequate plant design drawings or documentation to conclusively determine how the blockout was constructed. Therefore, further review of the blockout was required to determine its structural integrity during and following a postulated seismic event. Actions were initiated immediately to develop an inspection plan to determine if the blockout design was adequate and to develop any necessary modifications to the structure.

Inspections and final evaluations of the as-built condition of the blockout were completed on August 9, 1990. These inspections indicated the blockout was constructed of grout filled concrete blocks, however, no rebar could be located in the structure. Based on this information it was concluded that the design was inadequate. An evaluation was conducted to determine the potential effect on plant equipment of a postulated failure of the blockout during a seismic event. This evaluation identified several components which might be potentially affected under these conditions. A 120 volt vital power electrical distribution panel, RS-1, is partially mounted on the blockout outside the ANO-1 control room. If the blockout were to collapse it is reasonable to believe that this panel could be damaged resulting in a loss of power to the equipment supplied from the panel. A review of loads powered by this panel indicates that failure of RS-1 would result in the inoperability of the automatic actuation system for train 'A' of engineered safeguards (ES) equipment and train 'A' of the Emergency Feedwater System (EFW). This equipment has been declared inoperable and ANO is in compliance with the appropriate Technical Specification (TS) requirements. The affected TS are 3.3.6 for the ES train 'A' equipment and 3.4.5.1 for the EFW flow path. These specifications will require a plant shutdown to a hot shutdown condition if the associated systems are not restored to an operable condition within 36 hours.

The estimated time required to restore the blockout to a seismically qualified condition may exceed the time allowed by the TS for the inoperable equipment. Therefore, Entergy Operations, Inc. formally requests a waiver of compliance from the requirements of TS 3.3.6 and 3.4.5.1 for a time period of 24 hours.

Preliminary Evaluation of Safety Significance and Consequences of Request

For events such as earthquakes, the primary safety considerations relate to the capability to shut down the plant and maintain it in a safe condition. A review of the function of the equipment which is considered to be inoperable due to the potential for failure of the control room wall blockout indicates that the safe shutdown capability for ANO-1 would not be significantly compromised due to the partial unavailability (loss of automatic actuation capability) of this equipment.

The train 'A' engineered safeguards equipment required to be operable by TS 3.3.6 is not required for safe shutdown following a seismic event. This equipment is used for the mitigation of design basis accidents at the facility. The design basis of ANO-1 does not consider these types of accidents to occur concurrently with a seismic event. Additionally, the capability to manually operate the equipment would not be affected by the condition being postulated to occur, therefore, operator action could be taken and the equipment used if necessary.

The EFW is designed to automatically actuate and is utilized to supply feedwater to the steam generators (SG) for decay heat removal and, therefore, one train of the system is needed for safe plant shutdown following a seismic event. The failure of power distribution panel RS-1 would prevent the automatic actuation of train 'A', however, the capability to manually operate the train and supply feedwater to the SGs would not be affected. Additionally, the redundant EFW system train (train 'B') is seismically qualified and should remain fully functional and available to supply adequate feedwater to either or both of the SGs, if necessary.

The safety significance of this condition also relates to the probability of occurrence of a seismic event during the time period the affected equipment is inoperable. Since ANO-1 structures were designed and constructed, at a minimum, to Uniform Building Code requirements (UBC), it is assumed that the blockout can maintain the forces due to the UBC earthquake of 0.05g (49 cm/sec ^{2}). In this case, the following information can be used to determine the expected average frequency of having such an event. Based on the data presented in NUREG/CR-4713 it can be determined that the daily probability of exceedance of a 0.05g earthquake is approximately 8.2×10^{-6} for ANO-1. More recent data developed by EPRI under Project 101-53 indicates the mean probability of exceedance for a 0.05g earthquake is 7.4×10^{-7}, an extremely low probability of occurrence.

The above frequencies could be compared to the NRC Generic Letter 88-20 "Individual Plant Examination (IPE) for Severe Accident Vulnerabilities" screening criteria which is used to determine important functional sequences that contribute to core melt. Any functional sequence that contributes 1×10^{-6} or more per reactor year to core melt is considered important and should be included in the IPE. If this screening criteria is converted to a corresponding probability, one could imply that any event which has a probability of greater than 4×10^{-5} of occurring during the plant life (assuming 40 years) is considered important. As determined using the EPRI

data, five days of operation would suggest that the frequency of experiencing the UBC earthquake or greater is approximately 3.7×10^{-4} during the plant lifetime. This is considered acceptable, since 1) this reflects a low relative probability, 2) the value is below the adjusted "screening criteria" of the IPE generic letter, and 3) it is not expected that the failure of the blockout would directly lead to core melt without additional equipment failures thus reducing the overall frequency even further.

Basis for no Significant Hazards Consideration

In accordance with 10CFR50.92(c), this consideration addresses the three criterion outlined therein. The criterion are addressed in numerical order.

Criterion 1

The extension of the time allowed by the ANO-1 Technical Specification for plant operation without the automatic actuation capability for the affected systems will not affect the probability of occurrence of any design basis event. As previously discussed the capability to shut the plant down and maintain safe shutdown conditions will not be significantly affected, therefore, the consequences of occurrence of a seismic event will not be significantly increased.

Criterion 2

The postulated failure of the blockout and subsequent failure of electrical distribution panel RS-1 does not create the possibility of a new or different kind of accident from that previously evaluated. The effects of a possible failure of RS-1 have been previously evaluated as part of a single failure analysis of systems at ANO-1. Plant design should be acceptable considering either a LOCA or seismic event and loss of RS-1.

Criterion 3

The postulated conditions do not represent a significant reduction in a margin to safety. As previously discussed, any reduction in the capability to maintain safe shutdown conditions following a seismic event are considered to be minimal. Additionally, although a design basis accident is not expected to occur concurrently with a seismic event, the capability to mitigate the consequences of such an event if it were to occur would not be significantly reduced due to the possible loss of the ability to automatically actuate the affected engineered safeguards equipmant.

Additional Considerations

The evaluation of a postulated failure of the control room wall blockout resulted in declaring certain equipment required by the Technical Specifications to be inoperable based on the potential for failure of electrical distribution panel RS-1. The evaluation also concluded that operation of other plant equipment may be affected should the blockout fail. The following discussion addresses the safety implications of failure of the blockout on other plant systems.

Control Room Emergency Ventilation System (CREVS)

The CREVS for ANO-1 and ANO-2 combined Control Rooms consists of two redundant filter trains, both of which are located outside the ANO-1 section of the Control Room. Each filter train includes a centrifugal fan, roughing filter, absolute filter, and charcoal absorbent. When the system is in service filtered outside air is provided to pressurize the Control Rooms to minimize unfiltered air inleakage into the Control Room. The CREVS trains are normally isolated from the Control Room by isolation dampers. In the event of detection of high radiation or high chlorine concentration, the normal Control Room air ventilation systems of both ANO-1 and ANO-2 are automatically isolated and the CREVS is automatically actuated. Two quick acting chlorine detectors (2CLS-8760-2 and 2CLS-8761-1) are provided at the normal ventilation system supply duct for ANO-1 and two detectors (2CLS-8762-2 and 2CLS-8763-1) at the ANO-2 supply air duct. Any one of these detector signals will initiate operation of the CREVS. Additionally, radiation monitors RE-8001, located in the ANO-1 Control Room area, and RE-8750-1, located in the ANO-2 normal outside air intake, are provided to automatically actuate CREVS upon detection of high radiation. The CREVS maintains Control Room habitability by automatically starting and isolating the normal Control Room ventilation system upon receipt of indications of high radiation or high chlorine concentration. A postulated failure of the blockout could cause a breach in the Control Room envelope which would result in the inability of the CREVS to maintain a slight positive pressure in the Control Room.

As a compensatory measure to address this condition in the unlikely event it should occur, appropriate materials have been staged and are available to cover any opening which might exist should the blockout fail. This action will be performed to restore Control Room envelope integrity to an adequate level such that the CREVS could perform its function. Instructions have been provided to personnel regarding the actions required to implement this measure, if necessary. Notwithstanding these considerations, to provide an additional margin of safety, both units of ANO will initiate immediate plant shutdowns should a seismic event occur of such magnitude to induce any degradation in the blockout. It should be noted that plant procedures currently require a plant shutdown following a seismic event large enough to actuate the seismic monitoring instrumentation alarm (i.e.,0.1g).

Equipment Located on Panel C-26

Control panel C-26 is located approximately 5 feet north of the blockout. Although it is considered to be extremely unlikely, if the entire blockout or portion of the blockout were to fall intact during a seismic event, the rear portion of this panel could be impacted. C-26 contains controls for the following equipment:

1. Both trains of containment hydrogen analyzers
2. Both trains of containment hydrogen recombiners
3. Both trains of penetration room ventilation system
4. Operating handswitches for the service water system sluice gates located at the ANO-1 intake structure
5. Containment isolation valves associated with the reactor coolant sampling system, steam generator sampling system and containment atmosphere radiation monitoring system

These controls are mounted on the front portion of the panels away from any postulated blockout debris impact area. The panel is seismically mounted and would not be expected to fail as a result of the blockout collapse. Although, it is not possible to predict the exact response of the equipment controls contained in the panel, it is not expected that any of this equipment would be rendered inoperable.

Operations personnel are cognizant of the potential for a failure of the blockout and the resulting effect on plant equipment as discussed herein.

FIGURE 1

ANO-1 Control Room Blockout
(Typical)