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November 20, 1979

WILLIAM CAVANAUGH III
Vice President
Generation & Construction

1-119-15
2-119-8

Director of Nuclear Reactor Regulation
ATTN: Mr. Darrell G. Eisenhut, Acting Director
Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Arkansas Nuclear One-Units 1 & 2
Docket Nos. 50-313 & 50-368
License Nos. DPR-51 & NPF-6
Lessons Learned Task Force
Short-Term Recommendations
(File: 1510, 2-1510)

Gentlemen:

Since receipt of Mr. Harold R. Denton's October 30, 1979 letter, we have reviewed the NRC staff's additional clarification for compliance with the NUREG-0578 requirements. Based on our review of this letter and subsequent telephone conversations with members of your staff (i.e., Mr. Chuck Long on November 12, 1979, and Mr. Chris Nelson on November 6, 1979), a revision to our October 17, 1979 letter is hereby provided.

Only one "short-term" requirement of NUREG-0578 (i.e., Item 2.1.7.a, Auto Initiation of Auxilary Feedwater) is noted as requiring prior NRC review and approval. Our conceptual design for automatic initiation and control of the Emergency Feedwater System was provided in our October 31, 1979 letter addressed to Mr. R. W. Reid. Your review and approval of this proposed design is necessary by December 1, 1979, to assure completion of Item 2.1.7.a by the required implementation date. The designs for the "long-term" requirements will be submitted to you as they become available. Also, we will document to you our method of implementation by the required completion date for those items which do not require prior NRC approval.

Since our October 17, 1979 submittal, we have been making every reasonable effort to improve our implementation schedule. These efforts have resulted in several improvements having been made in the implementation dates. The necessary hardware modifications will be completed on time. We are, however, having difficulty meeting your schedule for determination of instrumentation for detection of inadequate core cooling and for completion of abnormal transient operating guidelines and procedures.

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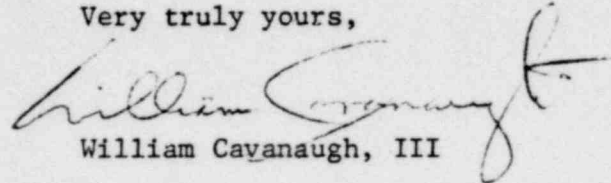
Mr. Darrell G. Eisenhut

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November 20, 1979

In light of the efforts we have made to meet the lessons learned schedule and the nature of our exceptions, we do not anticipate that you will find additional shutdowns of our units to be necessary. But because there exists the possibility of unforeseen delays (e.g., equipment delivery dates, etc.) which could prevent us from meeting a January 1980, deadline, we would propose to you that any items (excluding significant safety hazards), that evolve out of your review of ANO's status in respect to lessons learned which require shutdown, be grouped together and implemented by AP&L preferably in one Spring (1980) shutdown.

Very truly yours,



William Cavanaugh, III

WC:DGM:skm

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ARKANSAS NUCLEAR ONE - UNITS 1 and 2 RESPONSES TO U.
EISENHUT LETTER DATED SEPTEMBER 13, 1979 AS SUPPLEMENTED
BY H. DENTON'S LETTER DATED OCTOBER 30, 1979

Item a

The staff will be proposing a new rule on a Limiting Condition of Operation to require plant shutdown for certain human or procedural errors, particularly those which are repetitive in nature. As such, no action is required on your part at this time.

Response - ANO-1 and 2

No response required.

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Item b

At the present time we are delaying efforts regarding proposed rulemaking on both the inerting requirements for Mark I and II BWR containments, and the requirements regarding hydrogen recombiner capability; accordingly, no action is required on your part at this time.

Response ANO-1

Although no response is required, we believe it important to note that ANO-1 does have a dedicated, safety-grade Hydrogen Purge System.

Response ANO-2

Although no response is required, we believe it important to note that ANO-2 has dedicated and safety-grade Hydrogen Recombiners and Hydrogen Purge Systems.

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Item c

The ACRS comments on the shift technical advisor have resulted in our reassessment of the possible means of achieving the two functions which the Task Force intended to provide by this requirement. The two functions are accident assessment and operating experience assessment by people onsite with engineering competence and certain other characteristics. We have concluded that the shift technical advisor concept is the preferable short-term method of supplying these functions. We have also concluded that some flexibility in implementation may yield the desired

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results if there is management innovation by individual licensees. We have prepared a statement of functional characteristics for the shift technical advisor that will be used by the staff in the review of any alternatives proposed by licensees.

Response - ANO-1 and 2

See response to Section 2.2.1.b of Item f.

Item d

Three additional instrumentation requirements for short-term action were developed during the ACRS review of NUREG-0578. These items relate to containment pressure, containment water level and containment hydrogen monitors designed to follow the course of an accident.

Response - ANO-1

CONTAINMENT PRESSURE - ANO-1 currently has three safety grade, qualified containment pressure instrumentation loops, each of which displays a range of 0-65 psia. In addition, we have installed a fourth safety grade, qualified containment pressure instrumentation loop which is recorded over a range of 0-65 psia.

We will install two additional safety grade, qualified pressure instrumentation loops each capable of displaying a range of at least 0 to 192 psia (3 times design pressure of 59 psig) with one channel recorded over the same range. This design allows for measurement and indication capability for minus five psig.

Our current evaluation indicates that these will be installed by January 1, 1981.

CONTAINMENT WATER LEVEL - ANO-1 currently has installed one non-safety grade containment water level indicator.

We will install one safety grade, qualified, narrow range level instrumentation loop which indicates in the Control Room. We will also install two safety grade, qualified, wide range water level instrumentation loops which indicate in the Control Room, one channel of which shall be recorded. The wide range indicators shall have a range capable of indicating, on scale, a level corresponding to at least 500,000 gallons of liquid in the Reactor Building. This quantity of liquid is greater than the available water supply capability.

Our current evaluation indicates that these will be modified by January 1, 1981.

CONTAINMENT HYDROGEN MONITORS - ANO-1 currently has installed 2 safety grade, qualified hydrogen monitors capable of indicating from 0 to 5% hydrogen. We will modify these two hydro-

gen monitors to be capable of monitoring 0 to 10% hydrogen in the Reactor Building. These are qualified and safety grade, and are indicated in the Control Room with one channel recorded.

Our current evaluation indicates that these will be modified by January 1, 1981.

Response - ANO-2

CONTAINMENT PRESSURE - ANO-2 currently has installed four safety grade, qualified containment pressure transmitters four channels of which indicate (in the Control Room) 0 to 70 psia, one channel of which is recorded over the same range. We will install two additional safety grade, qualified containment pressure transmitters capable of indicating in the Control Room 0 to 177 psia (3 times design pressure of 54 psig), one channel of which will be recorded over the same range. This design allows for measurement and indication capability for minus five psig.

Our current evaluation indicates that these will be installed by January 1, 1981.

CONTAINMENT WATER LEVEL - ANO-2 currently has installed two safety grade, qualified, wide range water level indicators (which indicates 46" to 128" above the top of the sump) in the Control Room with one channel recorded. The maximum elevation measured (128") is sufficient to indicate, on scale, a level which corresponds to in excess of 600,000 gallons of liquid in the containment.

We will modify the instrumentation on both existing channels to provide indication from the top of the sump to at least a level corresponding to 600,000 gallons of liquid in the containment.

We will install one safety grade, qualified water level indicator (indicating in the Control Room), which indicates the level from the bottom of the sump to the top of the sump.

Our current evaluation indicates that this modification and installation will be completed by January 1, 1981.

CONTAINMENT HYDROGEN MONITORS - ANO-2 currently has installed 2 safety grade, qualified hydrogen monitors capable of indicating from 0 to 5% hydrogen. We will modify these two safety grade, qualified, hydrogen monitors to monitor 0 to 10% hydrogen in the Containment Building. These will indicate in the Control Room over at least the same range and one channel will be recorded.

Our current evaluation indicates that these will be modified by January 1, 1981.

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Item e

An additional requirement following issuance of NUREG-0578, which concerned a remotely operable high point vent for gas from the reactor coolant system, was developed.

Response - ANO 1

A generic design effort, to which AP&L is committed, is underway by B&W to provide a functional description of the construction, location, size, and appropriate power supply for reactor coolant system high point vents. Appropriate safety analyses considering the effects of such vents are also being pursued. Current schedule indicates this effort should be completed and forwarded to you in January, 1980.

Providing the results of this investigation do not reveal any significant safety issues with regard to installation of such vents, we will install high point vents as appropriate from these analyses.

Provided the evaluations are completed as expected, these vents should be installed by January 1, 1981, contingent upon NRC approval and equipment availability.

Response - ANO-2

A generic design effort, to which AP&L is committed, is underway by CE to provide a functional description of the construction, location, size, and appropriate power supply for reactor coolant system high point vents. Appropriate safety analyses considering the effects of such vents are also being pursued. Current schedule indicates that the above items and a conceptual design will be submitted to you for your review by January 1, 1980.

Providing the results of this investigation do not reveal any significant safety issues with regard to installation of such vents, we will install high point vents as appropriate from these analyses.

Provided the evaluations are completed as expected, these vents should be installed by January 1, 1981, contingent upon NRC approval and equipment availability.

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Item f

The Lessons Learned Task Force has compiled a set of errata and clarifying comments for NUREG-0578.

Recommendation 2.1.1 - Emergency Power Supply Requirements for Pressurizer Heaters, Power Operated Relief Valves and Block Valves, and Pressurizer Level Indicators in PWRs.

Response - ANO-1

PRESSURIZER HEATERS - B&W has determined that 126 Kw of pressurizer heater capacity is necessary within 2 hours following a loss of offsite power to assure proper control for natural circulation in the hot standby condition.

The two existing sets of 84 Kw of proportional heaters are each connected to a diesel generator bus. These heaters are not tripped upon SIAS.

42 Kw of supplemental heaters will be powered from the swing bus (can be connected to either diesel) and energized manually from the control room. Tripping these heaters upon SIAS is not necessary for diesel generator load protection.

POWER OPERATED RELIEF VALVES - Currently the ANO-1 PORV is powered from safety grade D.C. power (channel 1, red) and the block valve is powered from black (nonsafety) A.C.

We will provide safety grade AC motive and control power (channel 2, green) to the PORV block valve. The power source only will be safety grade appropriately isolated with qualified, safety grade interface devices to isolate the safety from the nonsafety grade portions of the system. This will be completed by January 1, 1980.

PRESSURIZER LEVEL INDICATORS - Currently, the ANO-1 pressurizer level indicators are safety grade, qualified, and powered from safety buses. Therefore, we meet this recommendation and no modifications are necessary.

Response - ANO-2

PRESSURIZER HEATERS -

- 1) Currently, ANO-2 has 300 Kw of Pressurizer Heaters powered from safety buses (150 Kw from each vital bus).
- 2) 150 Kw of pressurizer heaters (assuming single failure) is sufficient to maintain natural circulation in a hot standby condition assuming integrity of the Reactor Coolant System.
- 3) In establishing emergency power to the pressurizer heaters, priority has been given to LOCA and MSIB loads.
- 4) The pressurizer heaters powered from the safety buses are automatically shed when the Diesel Generators are providing power (i.e. automatically shed upon a transfer from off-site to emergency power sources).

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- 5) Procedures will be developed by January 1, 1980, to manually reload the pressurizer heaters onto the emergency power sources with consideration given to:
 - a) Which ESF loads may be shed for a given situation.
 - b) Instrumentation and criteria for operator use to prevent overloading a diesel generator.
- 6) The class IE interface for main power and control power are protected by qualified class IE isolators.

POWER OPERATED RELIEF VALVE - The ANO-2 design does not incorporate a PORV and associated block valve, therefore no modifications are necessary.

PRESSURIZER LEVEL INDICATORS - Currently the ANO-2 pressurizer level indicators are safety grade, qualified, redundant, and powered from safety buses. Therefore, we meet this recommendation and that no modifications are necessary.

Recommendation 2.1.2 - Performance Testing for BWR and PWR Relief and Safety Valves.

Response ANO-1 and 2

AP&L is committed to programs currently underway by B&W and CE to provide input and support to an industry wide qualification program (EPRI). Every effort is being made to support and encourage these programs and to meet your recommended schedule. Our program and schedule will be submitted by January 1, 1980.

Recommendation 2.1.3a - Direct Indication of Power Operated Relief Valve and Safety Valve Position for PWRs and BWRs.

Response - ANO-1 and 2

We currently have on order acoustic monitoring devices which will provide positive indication and annunciation of an open valve in the control room. These will be installed immediately downstream of the two pressurizer code safeties and the PORV on ANO-1 and immediately downstream of the two pressurizer code safeties (ANO-2 does not have a PORV) on ANO-2.

These devices, procured from B&W, are the only ones available to our knowledge. They are manufactured from the best available equipment. The preamps are the same type used in the TMI-2 acoustic monitoring system which survived longer than most electrical equipment in the TMI-2 Reactor Building thereby demonstrating a substantial degree of qualification.

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The units have been seismically tested and are single failure proof, testable, and will be supplied safety grade power. They do not, however, have sufficient QA documentation to classify them as safety grade and cannot be classified as qualified. We are investigating generic qualification of the units and will report the results of our investigation and a schedule for qualification, if feasible, by January 1, 1980.

The acoustic monitoring devices will be installed by January 1, 1980.

Temperature elements downstream of the PORV and safety valves on ANO-1 and downstream of the safety valves on ANO-2 provide backup indication of valve position. These are monitored in the control room and alarm on high temperature. Guidance in monitoring test instruments will be added to the applicable procedures by January 1, 1980.

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Recommendation 2.1.3.b - Instrumentation for Detection of Inadequate Core Cooling in BWRs and PWRs.

Response - ANO-1

AP&L is committed to a generic B&W program which will determine what additional instrumentation, if any, is needed for detection of inadequate core cooling. This program was documented in the NRC minutes of the August 9, 1979 meeting with the B&W Owners Group. Due to the significant and thorough scope of this effort, instrument requirements, conceptual designs, and draft guidelines will be submitted to you by February 1, 1980. This is the most expedited schedule. We will complete appropriate plant specific procedures and provide training within 60 days of completion of this effort. In the interim guidelines for procedure modification and operator training are being developed as described in the August 9, 1979 meeting.

Every effort will be made to install instrumentation determined necessary by the above evaluation by January 1, 1981, subject to equipment availability and NRC reviews. These modifications, if applicable, will include an unambiguous indication of Reactor Vessel Water Level.

We have ordered two redundant, safety grade, primary coolant saturation meters which will provide, in the control room, on-line continuous indication of coolant saturation condition. Safety grade, wide range, redundant, temperature inputs will be provided. A dedicated safety grade pressure input will be provided to each meter. The saturation meters will be installed by January 1, 1980, and upgraded to completely safety grade in May 1980.

The interim installation will use non-safety grade temperature input bridges until qualified components arrive in May, 1980. The existing computer inputs allow back up indication upon request, also, the existing display instrumentation in the control room has the capability of being manually interpreted for saturation conditions.

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Appropriate steps are being taken to ensure that the addition of the safety grade saturation meters will not adversely impact the reactor protection system or engineered safety features system. For the above reason, delivery schedules do not allow a safety grade system to be installed by January 1, 1980, as interfact requirements must be maintained by B&W/Bailey Meter, the original supplier of the protection equipment.

Response - ANO-2

AP&L is committed to a generic CE program which will determine what additional instrumentation, if any, is needed for detection of inadequate core cooling. Due to the significant and thorough scope of this effort, instrument requirements, conceptual designs, and generic procedures will not be submitted until March 1, 1980.

This is the most expedited schedule. Provided the scope of this effort is not beyond our expectations, we will develop appropriate plant specific procedures and provide training within 60 days of completion of this effort.

Every effort will be made to install instrumentation determined necessary by the above evaluation by January 1, 1981, subject to equipment availability and NRC reviews. These modifications will include an unambiguous indication of Reactor Vessel Water Level.

We have ordered two redundant, safety grade, primary coolant saturation meters which will provide, in the control room, on-line continuous indication of coolant saturation condition. Wide range, safety grade redundant temperature inputs will be provided. A dedicated safety grade pressure input will be provided to each meter.

The safety grade saturation meter will be installed by January 1, 1980. Appropriate steps will be taken to ensure that the addition of the safety grade saturation meters will not adversely impact the reactor protection or engineered safety features systems.

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Recommendation 2.1.4 - Containment Isolation Provision for PWRs and BWRs.

Response - ANO-1

Our response to IE Bulletin 79-05A (dated April 16, 1979) identified all essential and non-essential systems and committed to provide diverse containment isolation signals and modifications which we believe will conform to your recommendations. B&W is currently evaluating our proposed modifications to assess their effectiveness. We anticipate these modifications will be implemented by January 1, 1980.

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Response - ANO-2

Our response to IE Bulletin 79-06B (August 16, 1979) identified all essential and non-essential systems and committed to provide certain modifications which we believe will conform to your recommendations. CE is currently evaluating our proposed modifications to assess their effectiveness. We anticipate these modifications will be implemented by January 1, 1980.

Recommendation 2.1.5.a - Dedicated Penetrations for External Recombiners or Post-Accident Purge Systems.

Response - ANO-1

ANO-1 has currently installed redundant, safety grade, and dedicated hydrogen purge systems. Therefore, this recommendation is satisfied by the existing design.

Response - ANO-2

ANO-2 has currently installed redundant, safety grade, and dedicated hydrogen purge systems as well as redundant and safety grade in containment hydrogen recombiners. Therefore, this recommendation is satisfied by the existing design.

Recommendation 2.1.5.b - Inerting BWR Containments

Response - ANO-1 and 2

ANO-1 is a B&W PWR design and ANO-2 is a CE PWR design, therefore, this recommendation is not applicable to these units.

Recommendation 2.1.5.c - Capability to Install Hydrogen Recombiner at each Light Water Nuclear Power Plant.

Response - ANO-1 and 2

We are currently re-evaluating our procedures for use of hydrogen purge (ANO-1), and hydrogen purge and recombiners (ANO-2) to assess their effectiveness in view of information from TMI-2 and NUREG-0578. These procedures will be modified as appropriate and training provided on the modifications by January 1, 1980.

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Recommendation 2.1.6.a - Integrity of Systems Outside
Containment likely to Contain Radioactive Materials
(Engineered Safety Systems and Auxiliary Systems)
for PWRs and BWRs.

Response - ANO-1 and 2

AP&L is in the process of developing a program to implement these recommendations. The program is expected to be organized as follows.

1. Define all safety and auxiliary systems outside containment which could potentially contain high radioactivity following an accident.
2. Define the accident boundaries of each of these systems.
3. Perform a visual inspection of each of these systems to identify system features which could provide leakage paths for radioactive material. (i.e. valve packings, flanges, valve bonnets, pump seals, etc.).
4. The items identified in 3 above will be reviewed to determine for testability for leakage and for potential design improvements to reduce leakage. In these cases where testing is impractical, an inspection program will be implemented.
5. Test procedures will be prepared to run periodic tests of each system for leakage and to measure leakage where practical. Results of the first test will be reported to NRC.
6. Preventative maintenance schedules will be developed for those items having a high potential for leakage based on our operating experience.
7. The methods outlined in steps 1, 2, and 3 have begun and are expected to be complete by January 1, 1980. Based on the review (step 4) a schedule will be developed and forwarded to NRC for completion of steps 5 and 6. Step 4 is expected to be completed by January 1, 1980.

As requested in your October 17, 1979 letter, we will address the North Anna Unit 1 incident, as it applies to our units, as part of our January 1, 1980 response.

Recommendation 2.1.6.b - Design Review of Plant Shielding
of Spaces for Post-Accident Operations.

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Response - ANO -1 and 2

A design review of plant shielding in areas that may contain radioactive material following an accident is currently underway. Major systems to be considered include makeup, letdown, recirculation, shutdown cooling, sampling and gaseous radwaste systems. Results of this review will be completed and forwarded to you along with any identified feasible design modifications by January 1, 1980. Those modifications will be completed by January 1, 1981, subject to equipment availability and NRC reviews.

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Recommendation 2.1.7.a - Automatic Initiation of the Auxiliary Feedwater System for PWRs.

Response - ANO-1

The IE Bulletins and the Commission's Confirmatory Shutdown Orders for B&W designed plants dealt with improved Auxiliary Feedwater System Reliability. We plan to meet the requirements of Item 2.1.7.a by January 1, 1980 as outlined in our October 31, 1979 letter.

Response - ANO-2

The ANO-2 Emergency Feedwater System is designed to meet Branch Technical Position 10-1 Rev. 1. The system is redundant, safety grade, and meets single failure requirements.

Therefore, our existing system meets this recommendation inclusive of the long-term item and that no modifications are required.

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Recommendation 2.1.7.b - Auxiliary Feedwater Flow Indication to Steam Generators for PWRs.

Response - ANO-1

Currently ANO-1 has non-safety grade flow indication of emergency feedwater flow to the steam generators.

We will, by January 1, 1980, upgrade this indication to provide redundant indication of flow to each steam generator which will derive power from a safety power source with appropriate qualified, safety grade isolation. We will upgrade this indication to full safety grade by January 1, 1981.

Response - ANO-2

The ANO-2 Emergency Feedwater System is designed to meet BTP 10-1 Rev. 1 and as such currently meets this recommendation. Therefore, no modifications are necessary.

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Recommendation 2.1.8.a - Improved Post-Accident Sampling Capability.

Response - ANO-1 and 2

Currently we are reviewing all appropriate designs and procedures to assure the feasibility of sampling and analyzing reactor coolant and containment atmosphere under post-accident conditions. These reviews will be completed and a report describing these results and any procedural modification necessary to assure sampling capability prior to the January 1, 1981 modifications forwarded to you by January 1, 1980. The identified corrective actions will be implemented by January 1, 1981, subject to equipment availability and NRC review.

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Recommendation 2.1.8.b - Increased Range of Radiation Monitors

Response - ANO-1 and 2

Currently ANO-2 has installed two post accident, safety grade, radiation monitors capable of indicating and recording to 10^7 R/hr. However, these monitors are not qualified. They have been involved in a qualification program since 1976 and have yet to meet qualification requirements. Modifications have been made and the monitors are about to begin qualification testing again. This qualification testing is currently scheduled to be completed by June 1980.

Provided this qualification testing is successful, we will provide two safety grade, qualified monitors in both ANO-1 and ANO-2, with one channel recorded in each unit. This should be provided by January 1, 1981, subject to success of the qualification program and availability of equipment.

We will install noble gas effluent monitoring equipment with an upper range of $10^5 \mu\text{Ci/cc}$ (Xe-133). Monitors are to be provided for the Radwaste Area Stack, Fuel Handling Area Stack and the Reactor Building Stack on ANO-1 and for the Fuel Handling Area Vent, Radwaste Area Vent, Containment Purge and the Auxiliary Building Extension Vent on ANO-2. These monitors will be powered from a safety grade source.

We are currently evaluating designs and investigating types and availability of monitors. The best schedule we have been able to obtain supports a delivery date of April 1981. Due to this delivery problem and the length of installation, these monitors will not be installed until June 1981. This is our most expedited schedule.

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Capability currently exists to perform spectral analysis of all iodine and particulate filters. Therefore, we currently meet the iodine recommendation.

Recommendation 2.1.8.c - Improved In-Plant Iodine Instrumentation.

Response-ANO-1 and 2

Currently we have nine portable air samplers and procedures for obtaining and performing spectral analyses on these samples. Therefore, we currently satisfy this recommendation.

Recommendation 2.1.9 - Analysis and Design of Off-Normal Transients and Accidents.

1. Small Break LOCA analysis and preparation of emergency procedure guidelines.
2. Implementation of small break LOCA emergency procedure guidelines.
3. Analysis of inadequate core cooling and preparation of emergency procedure guidelines.
4. Implementation of emergency procedures and retraining related to inadequate core cooling.
5. Analysis of accidents and transients and preparation of emergency procedure guidelines.
6. Implementation of emergency procedures and retraining related to accidents and transients.
7. Analysis of LOFT small break tests.

Response - ANO-1

1. The analyses have been performed, emergency procedure guidelines prepared, procedures modified, and training provided.
2. Emergency procedures have been modified and operator training has been provided.
3. These analyses and procedural guidelines are being prepared as our response to IE Bulletin 79-05C Item 5 and will be provided to us by B&W by October 31, 1979.

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4. Emergency procedures will be modified and operator training provided based on the results of Item 3 above by January 1, 1980.
5. We are participating in a generic B&W program to address this item. As presented to members of the NRC staff in a meeting with the B&W Owner's Group on September 13, 1979, the Abnormal Transient Operating Guidelines (ATOG) Program is an indepth and thorough effort to develop plant specific operational guidelines. These guidelines will in turn be used to develop detailed emergency procedures for a broad spectrum of abnormal transient events.

Due to the detailed nature of the ATOG Program (i.e, use of event trees, safety sequence diagrams, and system auxiliary diagrams), as described in the September 13, 1979 meeting, ANO-1 (the lead plant) will have draft guidelines from B&W by February 22, 1980, and will have final guidelines by March 14, 1980.

6. Plant specific procedures and operator training based on the results of Item 5 above will be completed within 3 months of completion of item 5.
7. AP&L is committed to a generic B&W program to analyze the LOFT small break tests. As discussed with the staff by the B&W Owners Group in a September 13, 1979, meeting, the results of this analysis will be available by January 15, 1980. This is currently our most expedited schedule based on the scheduled workload of B&W personnel. We understand from B&W this schedule is acceptable based on rescheduling the LOFT L3-1 Test to November 24, 1979.

Response - ANO-2

1. The analyses have been performed, generic emergency procedure guidelines prepared and submitted to NRC for review.
2. Plant specific emergency procedures will be prepared and implemented within 3 months of NRC approval of the generic guidelines in 1 above.
3. These analyses and procedural guidelines are being prepared as our response to IE Bulletin 79-06C Item 5 stated and will be provided by October 31, 1979.
4. Emergency procedures will be modified and operator training provided based on the results of Item 3 above by January 1, 1980.

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5. AP&L is committed to a generic CE effort to address this item. Due to the indepth nature of this effort it was necessary to separate the effort into two parts.
 - a) Analyses of all FSAR Chapter 15 events will be completed by February, 1980. This is our most expedited schedule.
 - b) Analyses of remaining events will be completed by September, 1980. This is our most expedited schedule.
6. Plant specific procedures and operator training will be completed within 3 months following completion of each Section of Item 5.
7. AP&L has committed to a generic CE program to analyze the LOFT small break tests. The results of these analyses will be completed and forwarded to you in December 1979.

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Recommendation 2.2.1.a - Shift Supervisor's Responsibilities.

Response - ANO-1 and 2

Once per year, the Vice-President, Generation and Construction, will issue a management directive to the personnel primarily responsible for plant operations and safety, which will emphasize that the primary management responsibility of the shift supervisor is for the safe operation of the plant. This directive will also clearly establish the shift supervisor's command duties under all plant conditions. The first of such directives will be issued on or before January 1, 1980.

Plant procedures are being reviewed and modified, as appropriate, to assure that the duties, responsibilities, and authority of the shift supervisor and control room operators are properly defined to effect the establishment of a definite line of command and clear delineation of the command decision authority of the shift supervisor in the Control Room relative to other plant management personnel. Particular emphasis is being placed on the following:

- a. The responsibility and authority of the shift supervisor is to maintain the broadest perspective of operational conditions affecting the safety of the plant as a matter of highest priority at all times when on duty in the Control Room. The idea will be reinforced that the shift supervisor should not become totally involved in any single operation in times of emergency when

multiple operations are required in the Control Room.

- b. The shift supervisor, until properly relieved, will remain in the Control Room at all times during accident situations to direct the activities of Control Room operators. Persons authorized to relieve the shift supervisor shall be specified.
- c. If the shift supervisor is temporarily absent from the Control Room during routine operations, the Plant Operator who is the lead control room operator will be designated to assume the Control Room command function. These temporary duties, responsibilities, and authority will be clearly specified.

Training programs for shift supervisors will emphasize and reinforce the responsibility for safe operation and the management function the shift supervisor is to provide for assuring safety.

The administrative duties of the shift supervisor will be reviewed by the Director of Generation Operations. Administrative functions that detract from or are subordinate to the management responsibility for assuring the safe operation of the plant will be delegated to other operations personnel not on duty in the Control Room.

Procedures to implement the above will be completed and training provided by January 1, 1980.

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Recommendation 2.2.1.b - Shift Technical Advisor

Response - ANO-1 and 2

Beginning January 1, 1980, AP&L will provide a Shift Technical Advisor at Arkansas Nuclear One available to be called to the Control Room and capable of being in the Control Room within 10 minutes or less upon receiving a call. This individual will be available 24 hours a day for each unit except when both units are in a cold shutdown condition.

His primary duty will be to assist the shift supervisor in "accident assessment". This individual does not report to the Operations Superintendent and, therefore, has a degree of independence from the operations line organization.

The "experience assessment" function, described in Attachment 2 of your September 13, 1979 letter, will be performed by engineers of various disciplines (i.e., mechanical, electrical, nuclear) on the Arkansas Nuclear One plant staff (plant performance group). Feedback of this experience assessment will be provided to Shift Technical Advisor and the Operation staff.

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During normal working hours, the Shift Technical Advisor duties will be assigned to a qualified individual on-site who will perform his normal duties provided these duties will allow response to the Control Room in 10 minutes. Should it be required, his Shift Technical Advisor duties will supercede his normal duties.

We are evaluating your training recommendations for the Shift Technical Advisor as well as participating in industry efforts to further define appropriate training and optimize use of this individual. We have not, at this time, completed our evaluation or formalized a training program. We are devoting our maximum efforts to this area in a sincere effort to complete full training of these individuals by January 1, 1981. We will provide you a description of our program and a schedule for completion of training by January 1, 1980.

We believe that this is an effective and efficient method of fulfilling this vital function and that this method meets the intent of this recommendation.

* * * * *

Recommendation 2.2.1.c - Shift and Relief Turnover Procedures.

Response - ANO-1 and 2

AP&L is in the process of reviewing and revising, as appropriate, plant procedures for shift and relief turnover. These revised procedures will be consistent with the clarification of this recommendation provided at our Regional Meeting.

1. Procedure(s) will be provided for the oncoming and offgoing control room operators and the oncoming shift supervisor to assure a complete and effective turnover. The following items will be included in the procedure(s):
 - a. Assurance that critical plant parameters are within allowable limits;
 - b. Assurance of the availability and proper alignment of all systems essential to the prevention and mitigation of operational transients and accidents;
 - c. Identification of systems and components that are in a degraded mode of operation permitted by the Technical Specifications.

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For such systems and components, the length of time in the degraded mode will be compared with the Technical Specifications action statement;

2. Procedure(s) will be provided to assure a complete and effective turnover by the offgoing to the oncoming auxiliary operators and technicians. These procedure(s) will address any equipment under maintenance or test that by themselves could degrade a system critical to the prevention and mitigation of operational transients and accidents or initiate an operational transient; and
3. A system will be established to evaluate the effectiveness of the shift and relief turnover procedure (for example, periodic independent verification of system alignments).

The reviews, modified procedures, and training will be completed by January 1, 1980.

Recommendation 2.2.2.a - Control Room Access

Response - ANO-1 and 2

AP&L is reviewing the plant procedures for Control Room access. We will implement procedures which will limit Control Room access during an emergency. These procedures will include the following:

1. Administrative procedures that establish the authority and responsibility of the person in charge of the Control Room to limit access.
2. Procedures that establish a clear line of authority and responsibility in the Control Room in the event of an emergency. The line of succession for the person in charge of the Control Room will be established and limited to persons possessing a current senior reactor operator's license. The plan will clearly define the lines of communication and authority for plant management personnel not in direct command of operations, including those who report to stations outside of the Control Room.

These procedures will be implemented and training provided by January 1, 1980.

Recommendation 2.2.2.b - On-site Technical Support Center.

Response - ANO-1 and 2

We will, by January 1, 1980, designate an On-site Technical Support center consistent with the clarification set forth in item 1 on page 58 of Mr. Denton's letter of October 30, 1979.

We have been working for several months on a revised Emergency Plan for ANO which addresses problem areas identified at TMI-2. Incorporated in this plan is an alternative proposal for establishing a Technical Support Center. It provides for the designation of three locations which can serve as a technical support center during an emergency. The severity of the emergency will dictate which location will be used. Each location will be properly instrumented, sized, & equipped with necessary communications systems.

In the event of the necessity for a plant or site evacuation due to radiation or contamination, a location free from radiation or contamination, a location free radiological problems will be selected. This will enhance accessibility to the technical support center and greatly reduce Health Physics personnel protection problems. The plan has been submitted to NRC for review by the NRC Emergency Planning Team. Provided the NRC Lessons Learned Review Group concurs with our proposal, we will make every effort to implement it by January 1, 1981. However, it does require construction of additional buildings and procurement of substantial equipment which could delay final implementation. We will, however, exercise our best effort as we believe this plan and the support centers therein are essential and meet your recommendations.

* * * * *

Recommendation 2.2.2.c - On-site Operational Support Center.

Response - ANO-1 and 2

We will, by January 1, 1980, designate an On-site Operational Support Center consistent with the clarification of this recommendation provided in our Regional Meeting. That is:

1. A designated area separate from the Control Room.
2. Set up for Operations Support Personnel.
3. Communications with Control Room and On-site Technical Support Center.
4. Not necessarily a separate dedicated room or center.

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As discussed in our response to Recommendation 2.2.2.b above, the On-site Operational Support Center is included in our proposed revised Emergency Plan and will be implemented consistent with our response to Recommendation 2.2.2.b above.

Recommendation 2.2.3 - Revised Limiting Conditions for Operation of Nuclear Power Plants Based Upon Safety System Availability.

Response - ANO-1 and 2

No response is necessary as per Item a. above.

Near Term Requirements For Improving Emergency Preparedness

Item 1

Upgrade licensee emergency plans to satisfy Regulatory Guide 1.101, with special attention to the development of uniform action level criteria based on plant parameters.

Response - ANO-1 and 2

AP&L has been developing the bases for a revision to the ANO Emergency Plan based on experience from TMI-2. This information will be submitted to our Emergency Plan reviewer prior to his plant specific review of ANO's Emergency Plan. We have been working and will continue to work closely with the NRC Emergency Planning Review Group and will revise the ANO Emergency Plan as appropriate based upon their review and in accordance with the established schedule.

Item 2

Assure the implementation of the related recommendations of the Lessons Learned Task Force involving instrumentation to follow the course of an accident and relate the information provided by this instrumentation to the emergency plan action levels. This will include instrumentation for post-accident sampling, high range radioactivity monitors, and improved in-plant radioiodine instrumentation. The implementation of the Lessons Learned Task Force's recommendations on instrumentation for detection of inadequate core cooling will also be factored into the emergency plan action level criteria.

Response - ANO-1 and 2

Instrumentation installed for detection of inadequate core cooling as per our response to Recommendation 2.1.3.b will be factored into the ANO Emergency Plan action level criteria.

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Item 3

Determine that an emergency operations center for Federal, State and Local personnel has been established with suitable communications to the plant, and that upgrading of the facility in accordance with the Lessons Learned Task Force's recommendation for an in-plant technical support center is underway.

Response - ANO-1 and 2

An Emergency Operations Center currently exists for Federal, State, Local AP&L personnel. These facilities are in the process of being upgraded, the details of which will be provided in the revised ANO Emergency Plan.

Hardwired and wireless communications with off-site agencies currently exist and are being upgraded as in the above paragraph.

Plans for a Technical Support Center are under development, the details of which will be provided in the revised ANO Emergency Plan.

Item 4

Assure that improved licensee off-site monitoring capabilities (including additional thermoluminescent dosimeters or the equivalent) have been provided for all sites.

Response - ANO-1 and 2

Our current off-site monitoring capability consists of 7 TLDs around the site. Our revision to the ANO Emergency Plan will upgrade this capability by the addition of approximately 33 TLDs as well as the capability of aerial surveillance. These TLDs will be placed in two rings around the site, 16 TLDs (angular segments) to a ring. One ring will be at the site boundary, one at 3 to 5 miles with the remaining 8 at strategic and control locations.

Item 5

Assess the relationship of State/Local plans to the licensees' and Federal plans so as to assure the capability to take appropriate emergency actions. Assure that this capability will be extended to a distance of ten miles. This item will be performed in conjunction with the Office of State Programs and the Office of Inspection and Enforcement.

Response - ANO-1 and 2

AP&L has worked closely with state and local agencies in the past and has developed an excellent working relationship with these agencies. The State of Arkansas has a "concurred in" state Emergency Plan which currently includes a 10 mile Emergency

Planning Zone. We are working closely with these agencies as we upgrade ANO's Emergency Plan to provide compatibility of the various plans.

Item 6

Require test exercises of approved emergency plans (Federal, State, Local and licensees), review plans for such exercises, and participate in a limited number of joint exercises. Tests of licensee plans will be required to be conducted as soon as practical for all facilities and before reactor startup for new licensees. Exercise of State plans will be performed in conjunction with the concurrence reviews of the Office of State Programs. As a preliminary planning bases (sic), assume that joint test exercises involving Federal, State, Local and licensee will be conducted at the rate of about ten per year, which would result in all sites being exercised once each five years. Revised planning guidance may result from the ongoing rulemaking.

Response - ANO-1 and 2

AP&L currently exercises ANO's Emergency Plan approximately once per year by conducting a test with State, Local, and Federal agencies. This test normally exercises every aspect of the emergency response short of public participation inclusive of actual response to the site with equipment. We will continue to exercise on this same frequency and will revise our testing procedures to testing exercises incorporating all your recommendations at least once every 5 years as deemed appropriate by the Emergency Plan Review Team.

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DEFINITIONS

1. Safety Grade - Meets the applicable design basis requirements for "safety grade" which are based on and meet the intent of these positions or revisions to IEEE-279 which are applicable to each unit.
2. Qualified - Environmentally qualified to the Design Basis requirements for the appropriate unit as applicable.

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IMPLEMENTATION SCHEDULE
1979 OUTAGE

December 1979 Outage

- 2.1.1 Emergency Power Supplies to Pressurizer Heaters (Units 1 or 2)
Emergency Power to PORV Block Valve (Unit 1).
- 2.1.3.a Safety Grade PORV (Unit 1) and Safety Valve Position Indication (Units 1&2).
- 2.1.3.b Margin to Saturation Meters With Nonsafety Grade Temperature Inputs. (Units 1&2).
- 2.1.4 Containment Isolation of ES Actuation (Units 1 & 2).
- 2.1.7.b Add Redundant Nonsafety Grade Trains to EFW Flow Indication (Unit 1).
- 2.1.7.a. Control Grade Auto Initiation of EFW (Unit 1).

May 1980 Completion

- 2.1.3.b Upgrade Temperature Inputs to Tsat Meters to Safety Grade (Unit 1).

December 1980 Outage

- 2.1.3.b RV Level Indication
- 2.1.6.b. Plant Shielding Improvements
- 2.1.7.a Safety Grade Auto. EFW Initiation
- 2.1.7.b. Upgrade EFW Flow Instrumentation to Safety Grade (Unit 1).
- 2.1.8.a Post Accident Sampling System
- 2.1.8.b High Range Radiation Monitors Containment
Water Level Monitors Containment Hydrogen
Monitors RCS Vents

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1981

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Item d - Increase Range of Containment Pressure Indications																					
ANO-1																X					
ANO-2																X					
Item d - Increase Range of Containment Water Level Indicators																					
ANO-1																X					
ANO-2																X					
Item d - Increase Range of Hydrogen Analyzers																					
ANO-1																X					
ANO-2																X					
Item e - Remotely operable High Point vents.																					
ANO-1 Generic Design Implement				X																	
ANO-2 Generic Design Implement				X																	
R-2.1.1 - Emergency Power																					
PER. Heaters - ANO-1																					
ANO-2																					
evaluation																					
implement	X																				
PORV- ANO-1																					
block valve																					
ANO-2 -NA																					
PER. Level Indicators																					
ANO-1 NA																					
ANO-2 NA																					

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[illegible]

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	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
R-2.1.4 - Containment Isolation																					
ANO-1																					
modified				X																	
ANO-2																					
modified				X																	
R-2.1.5.a - Hydrogen Purge																					
ANO-1	COM	PLE	TED																		
ANO-2	COM	PLE	TED																		
R-2.1.5.b - Inerting BWR																					
Containments																					
ANO-1 & 2	NOT	APP	LIC	ABLE																	
R-2.1.5.c - Hydrogen Recombiners																					
ANO-1																					
evaluate proce-																					
dures				X																	
ANO-2																					
evaluate proce-																					
dures				X																	
R-2.1.6.a - Integrity of Systems																					
ANO-1 & 2																					
visual inspec-																					
tion				X																	
review for																					
improvements				X																	
test procedures																					
and preventiva-																					
tive mainten-																					
ance	NOT	AVA	IL	ABLE																	

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	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
R-2.1.6.b - Plant Shielding ANO-1 & 2 review modifications				X												X					
R-2.1.7.a - AFW Initiation ANO-1 ANO-2	COM COM	PLE PLE	TE TE																		
R-2.1.7.b - AFW Flow Indication ANO-1 safety grade ANO-2	COM COM	PLE PLE	TE TE													X					
R-2.1.8.a - Post-Accident Sampling ANO-1 & 2 review modifications			X													X					
R-2.1.8.b - Radiation Monitors ANO-1 & 2																X					
R-2.1.8.c - Iodine Instrumentation ANO-1 & 2	COM	PLE	TE																		
R-2.1.9 - Off-Normal Transients ANO-1																					
1) generic	COM	PLE	TE																		
2) plant specific	COM	PLE	TE																		
3)	X																				
4)				X																	
5)					X																
6)						X															
7)				X						X											

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	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
ANO-2																					
1)				3	MON	TH	FRO	M N	RC	API	ROV	AL									
2)				3	MON	TH	FRO	M N	RC	API	ROV	AL									
3)	X																				
4)			X																		
5) chapter 15					X																
other												X									
6)															X						
7)			X																		
R-2.2.1.a - Shift Supervisor Responsibilities																					
ANO-1 & 2																					
Management																					
Directive				X	-	YEA	RLY														
Procedures				X																	
R-2.2.1.b - Shift Technical Advisor																					
ANO-1 & 2																					
Interim				X																	
Schedule for																					
completion of																					
training				X																	
R-2.2.1.c - Shift Turnover Procedures																					
ANO-1 & 2																					
procedures				X																	
R-2.2.2.a - Control Room Access																					
ANO-1 & 2																					
procedures				X																	

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	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
R-2.2.2.b - Technical Support Center																					
ANO-1 & 2 Interim				X																	
Final																X					
R-2.2.2.c - Operational Support Center																					
ANO-1 & 2 Interim				X																	
Final																X					
R-2.2.3 - Limiting Conditions for Operations																					
ANO-1 & 2	NOT	APP	LIC	ABLE																	
EMERGENCY PREPARDNESS																					
Item 1 - Reg. Guide 1.101																					
ANO-1 & 2				X																	
Item 2 - Action Level Criteria																					
ANO-1 & 2	FOL	LOW	ING	COMP	LET	ION	OF	R-2.1.3. b													
Item 3 - Operations Center																					
ANO-1 & 2 Interim																					
Final	COM	PLE	TED													X					

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	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Item 4 - Offsite Monitoring																					
ANO-1 & 2																					
Interim	COM	PLE	TED																		
Final				X																	
Item 5 - 10 Mile EPZ																					
ANO-1 & 2																					
Compatibility	COM	PLE	TED																		
ANO-1 & 2																					
existing plans	COM	PLE	TED																		
upgraded plans			X																		
Item 6 - Test Exercises																					
ANO-1 & 2	APP	ROX	IMA	TELY	YEA	RLY															

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