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Mr. W. C. Seidle, Chief
Reactor Project Branch #2
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

SUBJECT: Arkansas Nuclear One - Units 1 & 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6
NUREG 0737 Item II.B.2, Plant
Shielding, IE Inspection 82-14/82-11

Gentlemen:

The NRC exit interview on June 25, 1982, relative to IE Inspection 82-14/82-11, indicated that a deviation from commitment with regard to NUREG 0578, Item 2.1.6.b, Design Review of Plant Shielding, would appear in the inspection report. Subsequent to this exit interview, an investigation of the validity of the deviation was initiated by AP&L.

A telephone call to the inspector revealed that the following letters were used in his inspection:

Letter Number 1-010-32 (OCAN018032) dated January 31, 1980,
D.C. Trimble to D.G. Eisenhut

Letter dated March 10, 1980, (OCNA038051)
R. W. Reid to W. Cavanaugh

Letter Number 1-030-22 (OCAN038022) dated March 31, 1980,
D.C. Trimble to D.G. Eisenhut

Letter Number 1-100-07 (OCAN108007) dated October 27, 1980,
D.C. Trimble to D.G. Eisenhut

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Letter Number 1-120-17 (OCAN128017) dated December 31, 1980, D.C. Trimble to D.G. Eisenhut

Letter Number OCAN118108 dated November 30, 1981, D.C. Trimble to D.G. Eisenhut

A review of these letters identified the following statements relative to this issue:

- The January 31, 1980, AP&L letter stated:

  "Therefore, by existing procedures and equipment, we will maintain the activity levels in the makeup tank/volume control tank with-in acceptable limits for access to vital areas."

  "Also, portable shielding will be purchased and remain on-site for use in areas to reduce personnel exposure to acceptable values."

- The March 10, 1980, letter from the NRC acknowledged:

  "For the short-term, the licensee will provide portable shielding on-site for use in areas to reduce personnel exposure."

  "Corrective actions for the long term, beyond 1980, to provide adequate access to the control room and sampling area, will be provided in the shielding report."

  "The licensee will identify any areas in which safety equipment may be unduly degraded by radiation fields during post-accident operations in the shielding report."

  "The licensee has concluded for this year that the levels of radioactivity in the makeup and purification system can be limited with existing plant equipment and procedures."

  "Based on the above considerations, we conclude that the licensee has met the Category 'A' requirements. An evaluation of the above design review and the licensee's corrective actions will be performed as part of the review of the Category 'B' Lessons Learned requirements."

- The March 31, 1980, AP&L letter stated:

  "We have identified long-term corrective actions which will minimize personnel exposure. These modifications include:

  1. Relocation of the clean and dirty liquid waste control panels from elevation 317' to elevation 354' on ANO-1. No access problems of unmanageable magnitudes were found on ANO-2 regarding access to waste control panels.

  2. Installation of an interlock to automatically isolate letdown and seal return on both units when core damage exceeds a point at which radiation levels become a hindrance to access around vital areas. Currently, the dose levels from 1% failed fuel are being considered as the set point beyond which isolation should occur.

  3. Modification of procedures on ANO-1 to warn against use of decay heat removal systems during accidents involving significant core damage. ANO-2 already has such a warning in the procedures."

- The October 27, 1980, AP&L letter stated:

  "The Category 'B' requirements for Item 2.1.6.b, Plant Shielding, have been completed, except for a procedure change which will be made to assure isolation of letdown and seal return when core damage exceeds a point at which radiation levels become a hindrance to access around vital areas. This procedure change will be made prior to January 1, 1981."

- The December 31, 1980, AP&L letter stated:

  "During an accident, damages are assessed by the operators. If operations outside the control room are necessary, operators accompanied by health physics personnel are dispatched. All areas of the plant are considered equally vital. Our review provides guidance as to where excessive radiation levels may exist after inadequate core cooling accidents that lead to significant core damage. If needed, the Technical Support Center and the Post-Accident Sampling Facility (PASS, under construction) will be manned. Sample analysis will be accomplished in the sampling facility. The Technical Support Center is located in the Administration Building where individual doses averaged over 30 days will be very small for all accident conditions. By January 1, 1982, the new sampling and sample analysis facility (PASS) will be operational. Shielding for this building has been designed to allow post-accident occupancy. Control room dose rates may exceed

GDC 19 criteria after core degradation has occurred if letdown and RCP seal return flow continues, because the Makeup Tank for ANO-1 and the Volume Control Tank for ANO-2 may develop very high radiation levels. Since this is a result of inadequate core cooling, the Inadequate Core Cooling Operator Guidelines are being reviewed to determine the most appropriate operator response to this situation."

- The November 30, 1981, AP&L letter stated:

"Item II.B.2 requires that plant modifications, required as a result of previously submitted plant shielding reviews, be completed by January 1, 1982. The results of the shielding reviews were submitted by letter from Mr. D. C. Trimble to Mr. D. G. Eisenhut, dated March 31, 1980. This letter identified three potential long-term corrective actions. These actions were:

1. Relocation of certain waste control panels (ANO-1)

2. Installation of an interlock to automatically isolate letdown and seal return on high radiation (ANO-1 and ANO-2)

3. Certain procedural modifications (ANO-1)

Our letter of October 27, 1980, from Mr. D. C. Trimble to Mr. D. G. Eisenhut, contained a statement indicating all plant shielding requirements had been met, except 'a procedural change which will be made to assure isolation of letdown and seal return when core damage exceeds a point which radiation levels become a hindrance to access around vital areas.' Although not explicitly stated in the October 27, 1980, letter, AP&L had determined subsequent to our March 31, 1980, letter that the modifications described in items 1 and 2 above were not required.

Relocation of the waste control panels was deemed unnecessary due to a determination that access to the panels was not required following an accident. Isolation of letdown and seal return was determined to be best accomplished manually, due to the undesirable consequences of inadvertant or unexpected automatic isolation.

Our current position relative to this item is contained in AP&L's letter from Mr. D. C. Trimble to Mr. D. G. Eisenhut, dated December 31, 1980. We currently have no plans to

implement plant modifications as a result of the plant shielding reviews. The procedural changes described in our previous letters have, however, been completed"

The inspector's concern was for the isolation of letdown and seal return as a result of high activity. His primary finding was that isolation of letdown was not required on the ANO-2 Reactor Turbine Trip Procedure 2202.04.

An extensive search was performed with regard to isolation of letdown and seal return on high radiation and a warning against use of the decay heat system during accidents involving significant core damage. The following procedures were researched to determine if changes were made to accomplish the above subsequent to March 31, 1980.

Procedure Number 1202.06, Loss of Coolant/RC Pressure
Procedure Number 2202.06, Loss of Reactor Coolant
Procedure Number 1202.11, High Activity in Reactor Coolant
Procedure Number 2202.11, High Activity in Reactor Coolant
Procedure Number 1104.04, Decay Heat Removal Operations
Procedure Number 2104.04, Shutdown Cooling System
Procedure Number 1104.02, Makeup and Purification System Operations
Procedure Number 2104.02, Chemical and Volume Control System Operations

The only evidence of any procedure changes relating to the issue were discovered in the Loss of Reactor Coolant Procedure, 2202.06, which stated:

"3.17 Initiate RCS sampling and dose-rate assessment for operation in SDC mode with present RCS activity.

CAUTION: DO NOT PROCEED INTO SDC SYSTEM OPERATION WITHOUT A RX. AUX. BLDG. DOSE-RATE ASSESSMENT. IF KNOWN LEAKAGE EXISTS ON A SINGLE SDC SYSTEM (SUCH AS LPSI PUMP SEAL LEAKAGE) PREFERENCE IS TO BE GIVEN THE OTHER LOOP FOR SERVICE."

This statement was found in Rev. 1 dated December 20, 1979. Note that this date is prior to the March 31, 1980, letter which stated the ANO-2 procedure had a warning.

The above provisions of NUREG 0578 Item 2.1.6.b, and subsequent NUREG 0737 Item II.B.2, have been verified to be completed with the exception of the following:

1. The procedure changes relating to isolation of letdown and seal return on high activity. (Refer to October 27, 1980, and November 30, 1981, letters).

2. The procedure changes to warn against use of decay heat removal systems during accidents involving significant core damage on ANO-1 (Refer to March 31, 1980, and November 30, 1981, letters).

The review of this situation has led to the following procedures being revised to incorporate appropriate caution statements for operations performed with severe core damage, and/or actions to isolate letdown (ANO-1 and ANO-2) and seal return (ANO-2 only), at a prescribed radiation level.

Procedure 1202.11, High Activity in Reactor Coolant, effective September 8, 1982
Procedure 2202.11, High Activity in Reactor Coolant, effective September 8, 1982
Procedure 1104.04, Decay Heat Removal Operations, effective September 8, 1982
Procedure 2104.04, Shutdown Cooling System, effective September 8, 1982

It should be noted that our LOCA procedures (1202.06 and 2202.06) have always called for isolation of letdown. These procedures address both small and large break LOCA's. As expressed in the December 31, 1980, AP&L letter, an accident which would produce source terms such as those specified in the shielding study would be a result of inadequate core cooling. It is AP&L's contention that the isolation of letdown issue of II.B.2, Plant Shielding, was adequately covered by existing procedures.

However, at this time the Loss of Reactor Coolant procedure 2202.06, and the Loss of Coolant/RC Pressure procedure 1202.06 are being reviewed to determine if caution statements are appropriate for these procedures also. These procedures will be evaluated and any necessary changes will be made by October 15, 1982.

An informal meeting occurred with Bill Johnson, a Resident NRC Inspector, on September 8, 1982. The results of his investigation were the same as ours. He found no procedure changes which required isolation of letdown and seal return on high radiation. In addition, no procedures were found on ANO-1 which warned against use of the decay heat system during accidents involving significant core damage. Mr. Johnson felt that the LOCA procedures (1202.06 and 2202.06) should be revised to add cautions not only on the use of decay heat but also on re-establishing letdown. We said that we would evaluate this. As stated above, this evaluation will be completed by October 15, 1982. We also discussed that isolation

of seal return was undesirable on ANO-1 and could potentially reduce the reliability of the RCP seals if RCP pump operation were required. However, we also stated that a design change to provide the capabiity of diverting seal return to the quench tank is under consideration for installation during the next refueling. This change, if performed, would allow seal return to be isolated without affecting seal reliability.

On September 15, 1982, the NUREG item for Plant Shielding was discussed with the Special NRC Inspection Team and the Resident Inspector in detail. The evolution of the letters was discussed, associated procedures were reviewed, and our subsequent follow-up actions were outlined. The procedure changes that had been made were identified, and the future evaluation for additional changes was discussed.

As discussed above, procedure changes have now been completed to specifically address this item. Additionally, although the present LOCA procedures (1202.06 and 2206.06) do call for isolation of letdown, we are reviewing these procedures to determine if additional provisions and/or cautions should be added.

Very truly yours,

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