APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-313/84-23 Licenses: DPR-51
50-368/84-23 NPF-6

Dockets: 50-313
50-368

Licensee: Arkansas Power and Light Company
P.O. Box 551
Little Rock, Arkansas 72203

Facility Name: Arkansas Nuclear One (ANO), Units 1 and 2

Inspection At: ANO Site, Russellville, Arkansas

Inspection Conducted: July 9-13, 1984

Inspector: Charles G. Hackney 8/31/84
C. A. Hackney, Emergency Preparedness Analyst Date

Other Accompanying Personnel:

D. H. Schultz, Comex Corporation

Approved: J. B. Baird 8/31/84
J. B. Baird, Chief, Emergency Preparedness Section Date

D. R. Hunter 9/7/84
D. R. Hunter, Chief, Reactor Projects Branch 2 Date

Inspection Summary

Inspection Conducted July 9-13, 1984 (Report 50-313/84-23; 50-368/84-23)

Areas Inspected: Routine, unannounced inspection of the ANO emergency preparedness program, including emergency detection and classification, protective action decisionmaking, and notification and communications. The inspection involved 74 inspector-hours onsite by two NRC inspectors.

Results: Within the scope of the inspection, no violations or deviations were identified.

DETAILS

1. Persons Contacted

Licensee Personnel

*F. Van Buskirk, Emergency Planning Coordinator
*T. C. Baker, Technical Analysis Superintendent
*B. Bata, Quality Assurance Engineer
*J. M. Levine, General Manager, ANO
*T. H. Cogburn, Special Projects Manager, ANO
*D. B. Lomax, Plant Licensing Supervisor, ANO
*P. L. Campbell, Licensing Engineer, ANO
*D. W. Boyd, Emergency Planning Coordinator
*L. W. Humphrey, Plant Administrative Manager
*J. T. Pugh, Lead Trainer General Employee Training
*L. W. Schempp, Manager of Nuclear Quality Control
*B. A. Baker, Operations Manager, ANO
Larry Kilby, Shift Supervisor
Julie Jacks, Shift Administrative Assistant
Jerry Teter, Shift Supervisor
Larry Norris, Shift Administrative Assistant
Bill Nichols, Shift Supervisor
Jerry Shinn, Shift Administrative Assistant
Ray Rust, Shift Supervisor
Phillip Wade, Shift Administrative Assistant
Richard Shinkowski, Shift Supervisor
Mike White, Shift Administrative Assistant
Tom Loyd, Shift Supervisor
Ron Ballard, Shift Administrative Assistant
Ken White, Shift Supervisor
Sally Burris, Shift Administrative Assistant
Rick Espolt, Shift Supervisor
Nancy Yockey, Shift Administrative Assistant
Max Gulick, Shift Supervisor
Eddie Neal, Shift Administrative Assistant
Robert Simmons, Shift Supervisor
Daryl Saulsberry, Shift Administrative Assistant

State of Arkansas

C. Meyer, State Coordinator
W. Lawton, Planning Specialist

Federal Emergency Management Agency (FEMA)

**A. Lookabaugh, Regional Assistance Committee (RAC) Chairman, Region VI

*Denotes those present at the exit interview.
**Contacted via Telephone.

2. Entrance Interview

The entrance interview was conducted on July 9, 1984, with Mr. Basil Baker, Operations Manager, and selected station staff members.

3. Interviews and Walk-Throughs

Areas examined by interviews and walk-throughs included emergency detection, classification, notification, and protective action recommendations. Interviews were conducted with ten 2-person shift crews from Units 1 and 2. The "crews" consisted of the shift supervisor (SS) and the shift administrative assistant (SAA).

The agenda for the interview consisted of providing each crew with guidelines for the conduct of the interview (see Attachment), overview questions concerning the emergency plan (E/P), and emergency plan procedures (EPP), and conducting an open-book walk-through of a plant-specific, hypothetical accident scenario. It should be noted that many questions were asked of the crews in the form of "prompts" if the level of detail of answers was insufficient or the answers were incorrect. Management personnel were provided a detailed presentation of all questions asked of the crews at a preliminary exit meeting July 11, 1984. Two SAAs were requested to perform dose assessment calculations utilizing a precomputed set of data obtained from another qualified SAA not involved in the walk-throughs.

During the scenario walk-through, the crew was expected to:

- React and respond to specific, simulated plant indications as they normally would and carry out, where possible (simulate carrying out when not), all actions of plant operating, abnormal, and emergency procedures.

- Classify the evolving plant conditions into one of the four emergency classes of 10 CFR 50, Appendix B and NUREG-0654 when appropriate.

- Perform all notification actions of the EPPs as required by checklist.

- Perform dose assessment calculation/evaluation and make appropriate protective action recommendations (PAR) to offsite authorities.

The first scenario emergency action level (EAL) necessitating an emergency declaration, "high activity in the reactor coolant," is specifically

listed in the criteria of ANO for alert classification. The second scenario EAL was a total loss of offsite and onsite AC power for a projected period of 6 to 8 hours. This situation was compounded by an initial condition of an out-of-commission, turbine-driven emergency feed pump. This latter multiple EAL situation is not specifically listed in the ANO criteria.

The performance of the SAAs and SSs (who became and remained the duty emergency coordinator (DEC) throughout the interview) in the four areas mentioned above is detailed as follows:

a. Some SSs failed to follow emergency operating procedures (EOP) precisely and failed to accomplish all steps (high activity in reactor coolant, abnormal operating procedures 1202.11 and 2202.11) or would not have referred to the EOPs at all without several prompts from the NRC inspector. Most SSs failed to indicate that they would refer to the station blackout EOP as a part of their response action in that portion of the scenario walk-through.

b. Two SSs failed to properly classify the EAL of 107 uCi/gm dose equivalent I-131 in reactor coolant as an alert emergency class. Most operators had difficulty classifying the total loss of AC power concurrent with the loss of feedwater (for scenario estimate of 6 to 8 hours) into a site area emergency or general emergency. When prompted by the NRC inspector several times about the length of time the loss was expected to continue, 40% of the operators decided the EAL necessitated declaration of a site area emergency, 40% decided it was a general emergency, and 20% concluded it was still an alert until further deterioration of conditions occurred. Most SSs were very vague in their understanding of approximate lengths of time for continued plant deterioration in the loss of power scenario after steam generator dryout which contributed to their inability to classify the accident.

c. Some SSs were not able to make timely notifications to offsite authorities; i.e., it required greater than 15 minutes to notify the state. All operators were aware of the time limitations on notifications, but lack of familiarity with the checklists contributed to tardiness.

d. SSs were not able to routinely identify criteria for determining which sections of staff augmentation (health physics, engineering technical support) would be required for an accident scenario. Similarly, SSs experienced difficulty in determining when to activate the technical support center/operational support center (TSC/OSC) due to arbitrary nature of the checklist (see related item below).

e. SSs were not able to routinely identify criteria for determining when evacuation of nonessential personnel would be initiated during the accident scenarios postulated. The absence of explicit guidance (procedure says "consider. . .") caused confusion when SSs were questioned directly about the subject.

f. Most SSs and SAAs were unaware of the nondelegateable responsibilities of the DEC including the decision to notify offsite authorities and the making of a PAR (see related item below).

g. Most SSs were aware of the prompt (15 minute) PAR for all general emergencies requiring a recommendation to shelter for a 2-mile radius and 5 miles downwind. However, no SSs (or SAAs) were aware of the more detailed, prompt decisionmaking PARs for core melt sequences (see related item below). Most SSs and SAAs were unable to define the applicable "downwind" sectors until prompted several times.

h. None of the SSs and SAAs involved in making PARs appeared to understand the relationship between plant (core) conditions, fission product barrier integrity, and the magnitude of possible onsite and offsite consequences for the accident scenarios discussed. None of the SSs and SAAs interviewed were aware of source strengths in the core and/or the coolant.

i. Most SSs and SAAs interviewed did not understand the necessity for making PARs even if a release was not in progress.

j. Two SAAs were requested to perform dose assessment calculations by the "pocket computer method." Utilizing the prearranged set of data provided by the NRC inspector, the SAAs were able to perform the calculations properly and quickly.

k. All SAAs checked in this area were able to promptly identify persons/agencies to be notified once directed by the DEC, to determine proper telephone numbers/communications channels to be used, and to properly use the equipment and authentication schemes. One SAA was not able to be evaluated in this area due to time constraints.

On July 11, 1984, the NRC inspectors met with ANO management to discuss their observations and to inform ANO management that one ANO crew could not adequately address the scenario questions or demonstrate knowledge and use of emergency plan implementing procedures. Following the NRC and ANO management meeting, the ANO management made a decision to take immediate corrective action. On July 12, 1984, a memo was written to direct the SS and SAA to immediately contact their counterpart on the other unit (Units 1 and 2 have adjacent control rooms) and their senior

reactor operator for any plant event that may be construed as possibly reportable or an entry level emergency action level for emergency classification. The relieved teams were to review their 13 assigned EPPs and be prepared to adequately perform during a special drill to be conducted during a future selected date by the operations manager. The licensee's full corrective actions and the results achieved will be reviewed in a future emergency preparedness inspection (Open Item 313/8423-01; 368/8423-01).

No violations or deviations were identified.

4. Emergency Plan and Emergency Plan Procedures

The following observations were made concerning review of the E/P and EPPs by the NRC inspector:

a. Emergency plans, procedures, and training materials did not differentiate between emergency action levels and emergency classifications as described in 10 CFR 50, Appendix E, paragraphs IV.B and C.

b. Emergency plans, procedures, and training materials did not properly identify the noun names of the defined emergency classifications of the reference in a. above. For example, a site area emergency is referred to as a "site emergency" in the ANO plan.

c. Some readily identifiable, observable plant conditions that were listed as "example initiating conditions" for the emergency classifications of Appendix I, NUREG-0654, or were listed as postulated accidents in the FSAR, were absent from the E/P and EPPs as EALs ("Criteria" in ANO terminology). Examples included loss of AC power and results of onsite and offsite monitoring (10 CFR 50, Appendix E, paragraph IV.B and NUREG-0654, paragraph D.2).

d. The E/P and EPPs did not contain the general emergency, prompt decisionmaking PARs based on precursors of a release (i.e., core and containment status) contained in IE Information Notice 83-28, dated May 4, 1983.

e. The E/P and EPPs did not mandate the evacuation of onsite, nonessential personnel in the event of a site area emergency or general emergency (NUREG-0654, paragraph J.4).

f. The E/P and EPPs did not provide for the activation of the TSC and OSC at the alert emergency classification (NUREG-0696, paragraph 1.4; NUREG-0737, Supp. 1, paragraph 8.2.1).

g. The following omissions were noted in a review of "Emergency Action Level (EAL) Notification," Form No. 1903.10I:

(1) The form was missing some entries listed in the guidance criteria of NUREG-0654, paragraph E.4 such as:

(a) Telephone number of message sender

(b) Point and height of radioactive material release

(c) Estimate of surface radioactive contamination inplant, onsite, and offsite

(2) The form did not provide for making protective action recommendations if no release was occurring.

(3) The form did not provide for signature of DEC authorizing release/notification of offsite authorities if no release was occurring.

The NRC inspectors discussed these areas of weakness in the E/P and emergency plan implementing procedures with licensee representatives.

No violations or deviations were identified.

5. Training

The NRC inspectors reviewed training courses for protective action decisionmaking, AX-20901-028, emergency action level response, AX-20901-002, and their respective tests. The NRC inspectors noted that the training courses did not use the emergency classification nomenclature defined by the regulation, and emergency action levels and emergency classes were used interchanged. The emergency training courses also did not emphasize making protective action recommendations based on the potential for radioactivity releases and how to determine which sectors should be specified when making PAR for sheltering. Since the training course material draws from the E/P and EPPs, these weaknesses were in areas also identified in paragraph 4 of this report, based on the NRC inspector's review of those documents.

The NRC inspectors discussed the weaknesses identified above (including paragraph 4) with licensee representatives and identified emergency detection, emergency classification, notification and PAR communications as areas in which the training program could be upgraded. The licensee's actions in regard to these identified weaknesses will be reviewed during future emergency protection inspections. (Open Item 313/8423-02; 368/8423-02).

No violations or deviations were identified.

6. Notifications and Communications

The NRC inspector reviewed EPP 1903.10 with the station emergency planning coordinator. The NRC inspector noted that the emergency classes were not consistent with those classes defined in 10 CFR Part 50, Appendix E. Further, it was determined by review that the emergency action level and the emergency classes were used interchangeably in the station classroom training and procedures.

The NRC inspector noted that there was a message authentication system in place to be used by the state and the licensee during drills, exercise, or emergencies. The NRC inspector requested that the emergency planning coordinator place calls to the Department of Energy, Little Rock Control Center, state of Arkansas, and the Pope County Sheriff's Department to verify the capability to notify these offsite contacts. These calls were made and each facility answered the incoming call expeditiously.

The NRC inspector reviewed EPP 1903.61 and the communications check sheets for the period from July 12, 1983, through June 25, 1984. Each communication check sheet had been filled in with the appropriate information.

The NRC inspector reviewed selected prompt public notification maintenance records. During the review of the Emergency Broadcast System (EBS) radio surveillance records it was noted that some people had reported their EBS radios as not working. However, the NRC inspector could not determine from these records the number of radios that had been reported as out of order and then had been repaired or replaced at a later date.

The NRC inspector made a request for additional information concerning the number of radios that had not been repaired/replaced and how long the radios had been inoperable. This is considered to be an unresolved item (Unresolved Item 313/8423-03; 368/8423-03) pending receipt and review of additional information.

The NRC inspector contacted the FEMA RAC chairman to determine if the adequacy test had been performed for the prompt public notification system. There had not been an adequacy test performed during this inspection period. The RAC chairman stated that FEMA inspectors had verified the operation of several sirens during the last ANO and state exercise.

No violations or deviations were identified.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An unresolved item disclosed during the inspection is discussed in paragraph 6.

8. Exit Interview

The NRC inspector met with the licensee representatives denoted in paragraph 1 throughout the inspection period and on July 13, 1984, and summarized the scope and findings of the inspection activities.

The NRC inspectors described their observations related to the performance of the SSs and SAAs during the walk-throughs. The NRC inspectors also discussed the immediate attention and action that had been initiated and additional action that would be taken by the licensee toward upgrading the SSs and SAAs in the areas of emergency detection, classification, notification, and protective action recommendation. The ANO operations manager stated that AP&L management acknowledged the NRC inspectors' concerns and would implement additional timely and effective actions.

The prompt public notification system was left as an unresolved item pending the receipt of additional information. Mr. Levine stated that Region IV would receive additional EBS radio information by July 20, 1984.

ATTACHMENT

INTERVIEWEE GUIDELINES

- The interview technique is being used as an efficient means to determine the availability of instrumentation, equipment, analytical tools, reference material, and other facilities related items. The interview is not intended to be a test of an individual's knowledge; e.g., a failure to demonstrate the use of reference material may indicate a poor filing system or an inadequate training program rather than an individual's weakness/lack of knowledge.

- Interview material and results are not to be discussed among other licensee personnel until after the inspection is complete.

- Realize that the interviewer may have only general knowledge of the licensees plant design, procedures, organization, and facilities.

- Respond honestly to all questions.

- Keep in mind that the interview is "open book." The interviewee is encouraged to use all available reference material, request assistance from other personnel (if that is what would be done in an actual emergency), actually make telephone checks, activate data acquisition and display systems, etc. In fact, an interviewee may be requested to make demonstrations to accomplish the objective of reviewing the facilities, equipment, and instrumentation.

- Interviewees should feel free to ask the interviewer for clarification or additional information.

- Interviewees should point out when their personal preferences, methods of performing functions, and suggestions for change differ significantly from established policies and procedures in effect.

- Do not concern yourself with the realism or probability of the events in the postulated accident scenario.

- The interviewee should identify to the interviewer, by name, the additional personnel to be contacted to evaluate functional area with which the interviewee is not familiar.