



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA ST., N.W., SUITE 3100
 ATLANTA, GEORGIA 30303

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Report Nos. 50-259/82-38, 50-260/82-38, 50-296/82-38

Licensee: Tennessee Valley Authority
 500A Chestnut Street
 Chattanooga, TN 37401

Facility Name: Browns Ferry

Docket Nos. 50-259, 50-260, and 50-296

License Nos. DPR-33, DPR-52, and DPR-68

Inspection at Browns Ferry site near Athens, Alabama

Inspectors:	<u>W. E. Cline</u>	<u>11/19/82</u>
	W. E. Cline	Date Signed
	<u>R. R. Marston</u>	<u>11/19/82</u>
	R. R. Marston	Date Signed

Accompanying Personnel: G. Bethke, D. Higby, W. Knox, and D. Schultz

Approved by:	<u>W. E. Cline</u>	<u>11/19/82</u>
	for G. R. Jenkins, Chief	Date Signed
	Emergency Preparedness Section	
	Division of Emergency Preparedness	
	and Operational Support	

SUMMARY

Inspection on November 1-4, 1982

Areas Inspected

This routine, announced inspection involved 160 inspector-hours on site in the area of an emergency preparedness exercise.

Results

Of the areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. Jones, Plant Superintendent
- *H. Abercombie, Division of Nuclear Power
- *J. Hufham, Chief, Emergency Preparedness and Protection Branch
- *E. Belvin, Radiological Hygiene Staff
- *R. Maxwell, Radiological Hygiene Staff
- *J. Ingersen, Radiological Hygiene Staff
- *J. Pittman, Assistant Plant Superintendent
- *T. Chinn, Compliance Supervisor
- *E. Sliger, Supervisor, REP Staff
- *W. Thomison, Technical Analysis Manager
- *A. Sorrell, HP Superintendent
- *B. Marks, REP Staff
- R. Hunkapiller, Operations Manager
- E. Cargill, Health Physicist
- *R. Smith, Nuclear Safety Review Staff
- *A. Qualls, Bellefonte Nuclear Plant Superintendent
- *T. White, Division of Nuclear Power Representative
- *E. Kingery, Radiological Hygiene Staff
- R. Tibi, Compliance Staff
- *C. Rozear, Compliance Staff
- *R. Cole, Office of Power QA Staff

Other licensee employees contacted included technicians, operators, security force members, and office personnel.

Other Organizations

State of Alabama

- W. Willis, Alabama Public Health
- *J. McNeese, Alabama Public Health
- *B. Hannah, Alabama Public Health
- *L. Bowden, Alabama Civil Defense
- *K. Giggy, Alabama Civil Defense

NRC Resident Inspector

- *G. Paulk

- *Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on November 4, 1982, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Exercise Scenario

The exercise scenario developed by the licensee met the requirements of 10 CFR 50.47(b)(14), 10 CFR 50, Appendix E, Paragraph IV.F and the specific criteria in NUREG 0654, Section II, Paragraph N.3. The scenario contained a sequence of events starting from an alert and escalating to a general emergency. The scenario provided for testing such functions as notification of offsite agencies, staffing and operation of emergency response facilities, public information dissemination, radiological protection and control measures, protective action decisionmaking, and assessment actions. Some difficulties arose during the exercise as a result of scenario problems. Some players such as the health physicists dispatched with the post accident reactor coolant sampling team and certain damage control/repair teams were not provided with scenario data by controllers. In some cases accident assessment was hindered by data presented by controllers which contained conflicting or contradictory operational and radiological data. In certain instances the scenario also failed to provide controller data which was representative of the accident condition. For example, during the course of the simulated emergency situation it was noted that controller data cards did not contain such information as:

- a. indication of increasing area radiation monitor, continuous air monitor, and process radiation monitor readings outside the 565 level of the reactor building.
- b. drywell airborne and radiation monitor increased readings following uncovering of the core.
- c. indication of radwaste tank increases
- d. indication of substantial change in torus temperature until late in the accident.

The inspector discussed the need to obtain inputs and reviews from personnel qualified in plant operations during the preparation of the exercise scenario. Close attention should be given to radiological and operations parameters so as to avoid presentation of conflicting or contradictory information. A licensee representative indicated that this matter would be considered during future scenario development (82-38-01).

The inspectors also noted that controllers were lacking at locations where certain emergency functions were being tested. The lack of controllers

appeared to cause confusion to some players in that they were not sure as to what actions to take because controllers were not presented to provide input. The inspector pointed out that due to the lack of controllers, the training benefits from the exercise could be diminished. The need for additional controllers was pointed out to TVA management during the exit interview. TVA management representatives acknowledged the inspectors' concern.

6. Assignment of Responsibility

This area was reviewed in accordance with the requirements of 10 CFR 50.47(b)(1), 10 CFR 50, Appendix E, Paragraph IV.A, and the specific criteria in NUREG 0654, Section II.A.

The inspectors verified that the licensee had made specific assignments to the emergency organization. The inspectors observed activation, staffing, and operation of the emergency organization at the Technical Support Center (TSC), Central Emergency Control Center (CECC), Division of Nuclear Power Emergency Center (DNPEC), and the Muscle Shoals Emergency Control Center (MSECC). At each of these centers, the assignment of responsibility appeared to be consistent with that prescribed in the licensees approved procedures.

7. Emergency Organization

This area was reviewed in accordance with the requirements of 10 CFR 50.47(b)(2), 10 CFR 50, Appendix E, Paragraph IV.D., and the specific criteria in NUREG 0654, Section II.B.

The licensee activated and operated emergency organizations from the Control Room, TSC, CECC, DNPEC, MSECC, and the Knoxville Emergency Control Center (KECC). The TSC was activated promptly following the declaration of the alert condition. A senior management representative from the Office of Power was dispatched to the TSC. Activation of the MSECC and CECC occurred promptly following the alert condition. During the early phase of the simulated accident some confusion appeared to exist as to the roles/responsibilities of certain members of the TSC Technical Assessment Manager's Staff. The confusion was apparently caused by the overlap of responsibilities between the TSC Technical Assessment Manager and the OSC. Additionally, it appeared that the effectiveness of the TSC Technical Assessment Manager could be increased by reducing the span of control from 10 subordinates to a more manageable number. The licensee also identified these problem areas and indicated that corrective action would be taken. During the course of the exercise the Shift Technical Advisor (STA) did not appear to be used. The need to utilize the STA was discussed with licensee representatives. The licensee agreed to evaluate use of the STA in emergency situations.

It appeared that the alternate OSC supervisor was not authorized access to the TSC from a security standpoint. Entry to the TSC was ultimately granted to the alternate OSC supervisor. Although this situation did not appear to affect the outcome of the exercise, it pointed out the need to have all members of the emergency organization and their designated interims and alternates who have a role in the TSC to be cleared

for access to the TSC. The licensee indicated this matter would be reviewed (82-38-02).

After the TSC had been in operation approximately three hours, several members of the TSC staff appeared to temporarily leave their assigned posts without proper relief. The TSC Director (Site Emergency Director) observed this situation and instituted appropriate controls.

8. Emergency Response Support and Resources

This area was observed to determine that arrangements for emergency response support and other resources had been made pursuant to 10 CFR 50.47(b)(3), 10 CFR 50, Appendix E, Paragraph IV.A, and the specific criteria in NUREG 0654, Section II.C.

Licensee resources at the DNPEC, CECC, KECC, and MSECC were used to support the emergency response effort. Local agencies responding to the emergency situation included county government agencies in Lauderdale, Lawrence, Limestone, and Morgan Counties. State of Alabama agencies to include representatives from the Alabama Departments of Civil Defense and Public Health responded to and provided emergency services and support to the simulated accident.

The TSC staff was augmented with a senior management representative from the Office of Power. The senior management representative periodically conferred with the TSC Director on technical issues and alternative remedial actions. According to licensee representatives, additional manpower resources to augment the TSC were available from the Division of Nuclear Power and the Office of Engineering Design and Construction (Knoxville). These personnel resources were not requested to provide on-site augmentation to TSC or plant staff during the simulated emergency.

The inspector observed that no TVA security was available at the MSECC and near site news media center. A licensee representative indicated security was requested for the MSECC, but security force personnel were not assigned due to the need to attend to an actual security problem in the Muscle Shoals area. The inspector noted that activation of security for the DNPEC and CECC was not timely. It took approximately two hours for the security operation to set up and issue badging to personnel assigned to the DNPEC and CECC. Licensee security representatives also noted this problem and indicated that followup action would be taken (82-38-03).

9. Emergency Classification System

This area was observed to determine that the standard emergency classification and action levels are in use by the licensee as specified by 10 CFR 50.47(b)(4), 10 CFR 50, Appendix E, Paragraph III.C., and NUREG 0654, Section II.D.

The licensee appropriately classified the accident situation as it progressed from an alert to a site area emergency and then to a general

emergency. The licensees promptly classified the accident situation at the alert and site area emergency condition. Although classification of the general emergency situation appeared to be made within a reasonable amount of time, it appeared that the EALs corresponding to general emergency condition could be clarified for those situation involving multiple failures. The licensee indicated that the classification scheme in BFNP-IPD-IP-1 would be reviewed and evaluated for multiple failure conditions.

10. Notification Methods/Procedures

This area was reviewed in accordance with the requirements of 10 CFR 50.47(b)(5), 10 CFR 50, Appendix E, Paragraph IV.D. and in criteria specified in NUREG 0654, Section II.E.

Upon declaration of the alert condition at the plant, the Emergency Operations Duty Specialist in Chattanooga (CECC) was notified. The Emergency Operation Duty Specialist initiated calls to offsite agencies as specified in the licensees approved procedure DNPEC, IPD, IP-3. Although, all calls were completed it took approximately one hour to accomplish the initial notification. At one point, the Emergency Operations Duty Specialist was delayed when he made a verification call back to the plant and was put on "hold" for several minutes. The licensee also noted this problem area and indicated that corrective action would be taken.

Notification of the initial alert condition appeared to be made promptly to the plant emergency organization. Key members of the TSC staff were assembled in the TSC within thirty minutes.

11. Emergency Communications

This area was reviewed to determine that the requirements in 10 CFR 50.47(b)(6), 10 CFR 50, Appendix E, Paragraph IV.E, and the criteria in NUREG 0654, Section II.F were met.

The inspector observed the availability and use of communication systems by the onsite emergency organization and offsite licensee support organization. The inspector also observed the dissemination and use of information within the licensees emergency organization. The licensee used telephone systems, facsimile, and the electronics blackboard extensively during the emergency. Even though, these systems appeared to be used effectively some communication problems relating to information dissemination were noted. Examples of problem areas noted include but are not limited to those specified below:

- a. During the early phases of the simulated accident confusion existed at the MSECC and CECC concerning the duration of the radiological release from the plant. As a result of the MSECC's not being able to obtain plant release information promptly, an assumption was made that a 15-minute release had occurred. This had an impact of the initial dose projections from the MSECC and also had a bearing on a news release

which was authorized by the CECC and subsequently released to the media (see paragraph 12 below).

- b. Approximately two hours lapsed before the MSECC obtained the technical parameters from the plant which were necessary for detailed offsite dose projections. During this time, dose projections were made based on conservative assumptions and a 15-minute release.
- c. No accident conditions or plant status was announced over the plant PA system during the simulated emergency.
- d. Often messages were not prefaced with the announcement "this is a drill."
- e. Some errors in communications required additional communications to clarify the situation. This situation occurred during the transmittal of meteorological information from the CECC when wind speed was given in meters per hour as opposed to miles per hour. Also some confusion existed as to whether events/actions were being reported in Eastern Standard or Central Standard Time.
- f. Radiological units used were not consistent. The most common mistake was interchanging millirem and rem.
- g. During the afternoon phase of the exercises the CECC did not appear to be obtaining updated dose projections from the MSECC, yet the MSECC was fully functional and receiving current plant operational information.

These communication problem areas illustrate the need for the licensee to place emphasis on communications and information flow. The licensee also noted similar communications problems and indicated followup action would be taken (82-38-04).

Communications activities among offsite and onsite radiological survey teams was observed. The personnel observed appeared to be familiar with communication protocol and reporting requirements. The inspector had no comments.

12. Public Information and Education

This area was reviewed in accordance with the requirements of 10 CFR 50.47(b)(7), Appendix E, Paragraph IV.D., and the criteria in NUREG 0654, Section II.G.

A near site media center was established at Calhoun Community College. Information was provided to the near site news media center by the CECC. The Manager of the Office of Power was designated as the utility spokesman. The licensee demonstrated the capability to inform the public of the emergency situation by conducting press briefings from the near site news media center and by periodically issuing news releases. It was noted that press release #6 contained erroneous information. The news release stated

that an airborne radiological release of approximately 15 minutes duration had occurred at the Browns Ferry plant when in fact the simulated release was approximately two and one-half hours in duration. The need for increased controls and coordination of news information prior to release was discussed with licensee management (82-38-05).

As mentioned in paragraph 8 above no security was provided at the near site news center. Further, any individual who had registered at the center had access to the TVA staff. A speaker phone located the TVA staff room was in used as a direct line to the CECC. The speaker phone was used extensively during the exercise by the utility spokesman to discuss plant conditions and accident status. Due to the unrestricted access to the TVA staff area, it was easy for members of the press or other non-TVA personnel to have access to uninterpreted plant information and data via the speaker phone. The need for increased controls in this area was emphasized to the licensee.

13. Emergency Facilities and Equipment

This area was reviewed in accordance with requirements of 10 CFR 50.47(b)(8), 10 CFR 50, Appendix E, paragraph IV.E. and specific criteria in NUREG 0654, Section II.H.

The inspector observed the licensee using survey instrumentation and air sampling equipment. Personnel observed appeared to be familiar with approved procedures and were capable of using instrumentation provided. The inspector noted that personnel entering the licensees radiation controlled area were provided with necessary protective equipment.

The licensees emergency facilities (TSC, DNPEC, CECC, and MSECC) appeared to be used effectively from a physical layout and arrangement standpoint. It was noted that the facilities did not appear to be overcrowded, and the noise level in each facility was not disruptive. Each facility appeared to be equipped with adequate communications systems.

Both the CECC and TSC could have used status boards more effectively. Operational parameters and plant status information was not always posted in a timely manner. Some pieces of information were posted on the TSC status boards without providing the time of the event. The TSC dose status boards and offsite maps were not utilized until late in the exercise, although information suitable for posting on the maps and boards was available earlier. The need to use status boards and maps more effectively as a means of conveying information was identified as an area requiring improvement (82-38-06).

The inspector noted that the licensees emergency data systems which has the capability to provide plant operational and radiological information between the plant and emergency response facilities was not used extensively during the exercise. Some summary reports were prepared using the system. A licensee representative indicated that some software modifications were in progress for the system and that the full capability could be demonstrated in a future exercise.

14. Accident Assessment

This area was observed in accordance with the requirements of 10 CFR 50.47(b)(9), 10 CFR 50, Appendix E, Paragraph IV.B, and the specific criteria in NUREG 0654, Section II.I.

The inspectors noted that accident assessment roles were assigned to the TSC, DNPEC, and the KECC. Information flow between the TSC and the DNPEC appeared to be adequate. The KECC provided timely recommendations to the CECC on alternative remedial actions. All personnel performing accident assessment activities in the TSC and DNPEC appeared to be knowledgeable of their functional area.

Plant chemistry personnel were familiar with post accident sampling and analysis procedures. Health physics coverage was provided to the chemistry teams during sample collection activities. Precautions were observed in collection and transport of simulated radiologically contaminated samples. Analyses were performed in a timely manner and results were reported to the TSC.

Detailed dose projections were provided by the TVA staff at the MSECC. The MSECC was delayed in making detailed dose projections because they did not receive timely information on the magnitude, duration, and radionuclide content of the release. As a result the MSECC was forced to make an initial projection based on conservative assumptions. It was noted that information flow between the MSECC and CECC was not timely. Licensee representatives also noted this problem area and agreed to evaluate means for improving communications flow between these facilities.

The licensee did not demonstrate a dose assessment capability from the Control Room or TSC although a means existed through implementation of BFNP-IPD-IP-3. The need to allow Control Room personnel and certain TSC staff members the opportunity to make initial dose projections was emphasized to the licensee. The inspector also noted that licensee representatives in the TSC did not appear to be obtaining or utilizing dose projection information from the MSECC. No briefings were held in the TSC in which offsite dose projection or offsite radiological measurement results were discussed. The dose projection status boards were not maintained until late in the simulated emergency. When questioned about this matter licensee representatives indicated that information was available earlier but was not posted. The representatives also stated that TSC management was kept aware of the situation by verbal reports.

15. Protective Response

This area was observed to determine that guidelines for protective actions during an emergency are developed and in place, and protective actions for emergency workers including evacuation of nonessential personnel are implemented as required by 10 CFR 50.47(b)(10) and as specified in NUREG 0654, Section II.J.

The inspector observed the response of licensee personnel following the site evacuation alarm. Personnel moved promptly to designated assembly areas in the east and west parking lots. Accountability actions were initiated promptly. Accountability for personnel assigned to the east parking lot was accomplished in less than 30 minutes. However, accountability in the west lot took close to one hour. Accountability in this area appeared to be complexed by the need to account for a large member of personnel exempted from the accountability drill due to essential work assignments on a unit outage which occurred just prior to initiation of the radiological exercise. In an actual event this artificial exemption situation would not have existed.

The inspector noted that during the accountability drill some confusion existed as to who the accountability results should be provided to once initial accountability was complete. Some individuals thought that results should be provided to plant security while others thought that results should be provided to the administrative services organization. The licensee should clarify procedures and provide necessary instruction to unit supervisors concerning reporting of accountability results. The licensee acknowledged the inspectors concern on this matter (82-38-07).

16. Radiological Exposure Control

This area was reviewed pursuant to the requirements of 10 CFR 50.47(b)(11) and the specific criteria in NUREG 0654, Section II.K.

The licensee's means for exposure control were evaluated in the TSC, OSC, and various work areas within the plant. Health physics personnel were assigned to provide health physics coverage for the TSC. The inspector noted that the initial airborne assessment capability at the TSC consisted of an air sampler with a particulate filter only. No silver zeolite cartridges were available. As the simulated accident progressed an air sampling capability which used silver zeolite filter was obtained.

The inspector noted that a plastic protective wrapping was placed around surveymeters when entering potentially contaminated areas. The inspector observed in one case that the protective wrapping obscured the meter face and the instrument range scales. This interfered with the proper use of the instrument. Licensee contamination control measures were also observed. During the initial entry into the reactor building several contamination control problems were noted. Selected examples of the problem are specified as follows:

- a. No step off pads were available or established.
- b. No containers for disposal of contaminated article were provided.
- c. No one was provided to assist entry teams in putting on or removing contaminated clothing.

- d. Personnel unmasked in the air lock which could have been a high airborne area.
- e. Subsequent RWPs were not upgraded based on radiological information gained from previous entries.

The inspectors pointed out the need for placing emphasis on radiological contamination control. The need for improvement in this area was discussed with licensee management (82-38-08).

The inspector noted that TVA emergency exposure limits for lifesaving actions appear to be inconsistent with U.S. EPA guidelines. The licensee agreed to review current procedures in this area and to determine what corrective means were appropriate.

17. Medical and Public Health

This area was not observed. The licensee's scenario did not call for a medical drill as part of the annual exercise. According to a licensee representative, the medical drill was held separately in June 1982.

18. Exercise Critique

The licensee critique of the emergency exercise was observed to determine that deficiencies identified as a result of the exercise were formally presented to licensee management as required by 10 CFR 50.47(b)(14), 10 CFR 50, Appendix E, Paragraph IV.F., and as specified by NUREG 0654, Section II.N.

A formal critique was held on November 4, 1982 with exercise controllers, key participants, licensee management, NRC personnel, and representatives from the State of Alabama. Weaknesses identified as a result of the exercise were discussed. The licensee discussed problems noted in the areas of direction and control, accident assessment, and communications. The licensee also used the critique to lay the groundwork for further meetings to develop action plans and schedules for solving the problems observed during the exercise. The licensee has established a formal system for tracking exercise and drill identified problem areas. Licensee action on these matters will be reviewed during a subsequent inspection.