

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/84-10(DRMSP)

Docket No. 50-483

License No. CPPR-139

Licensee: Union Electric Company
P. O. Box 149 - Mail Code 400
St. Louis, MO 63166

Facility Name: Callaway Nuclear Power Plant, Unit 1

Inspection At: Callaway Plant, Reform, MO

Inspection Conducted: March 19-23, and May 9-11, 1984

Inspectors: <i>T. Ploski</i> T. Ploski Team Leader	<u>5/24/84</u> Date
<i>D. Rohrer</i> D. Rohrer NRC Headquarters	<u>5/25/84</u> Date
<i>L. Kers</i> L. Kers	<u>5/25/84</u> Date
<i>J. Patterson</i> J. Patterson	<u>5/25/84</u> Date
<i>M. Smith</i> M. Smith	<u>5/25/84</u> Date
<i>W. Snell</i> W. Snell	<u>5/25/84</u> Date
Approved By: <i>M. P. Phillips</i> M. P. Phillips, Chief Emergency Preparedness Section	<u>5/25/84</u> Date

Inspection Summary

Inspection on March 19-23, and May 9-11, 1984 (Report No. 50-483/84-10(DRMSP))

Areas Inspected: Routine, announced follow-up inspection on Open Items identified during the January, 1984 Emergency Preparedness Implementation Appraisal and inspection of the Callaway Plant Emergency Preparedness Exercise, involving observations by eleven NRC representatives of key functions and locations during the exercise. The inspection involved 522 inspector-hours onsite by eight NRC inspectors and four consultants.

Results: No items of noncompliance were identified. All Open Items identified during the Emergency Preparedness Implementation Appraisal (EPIA) were closed.

DETAILS

1. Persons Contacted

NRC Exercise Observers and Areas Observed

T. Ploski, Control Room, Technical Support Center (TSC), Operational Support Center (OSC), and Emergency Operations Facility (EOF)
P. Brown, Control Room, TSC
M. Good, Control Room
M. Phillips, TSC
M. Smith, OSC (Lunchroom Area)
W. Thomas, OSC (Access Control Area), and Inplant Health Physics Teams
J. MacLellan, Medical Drill, OSC (Access Control Area) and Inplant Health Physics Teams
W. Snell, EOF
D. Rohrer, EOF
J. Patterson, Field Monitoring Teams
R. Marabito, Joint Public Information Center (JPIC)

Union Electric Personnel

¹²D. Schnell, Vice President, Nuclear
¹²J. McLaughlin, Assistant to the Vice President, Nuclear
¹²³R. Schukai, General Manager, Nuclear Engineering
¹²³S. Miltenberger, Manager, Callaway Plant
¹²³M. Stiller, Manager, Nuclear Safety and Emergency Preparedness
¹²³A. White, Supervisor, Emergency Preparedness
¹²A. Passwater, Superintendent of Licensing
¹N. Slaten, Supervising Engineer
¹R. McAleenan, Manager, Nuclear Information
¹²J. Peevy, Superintendent, Health Physics
¹P. Appleby, Assistant Manager, Support Services
¹M. Taylor, Superintendent, Operations
¹A. Neuhalfen, Assistant Manager, Operations and Maintenance
¹R. Leuther, Superintendent of Maintenance
¹J. Price, Superintendent of Training
¹T. Bell, Engineer, Nuclear Safety
¹³M. Faulkner, Administrator, Nuclear Affairs
¹G. Nevels, Training Supervisor
¹M. Evans, Senior Training Supervisor
¹D. Lewis, Training Supervisor
¹J. Gearhart, Supervising Engineer, Quality Assurance
¹R. Powers, Assistant Manager, Quality Assurance
¹F. Field, Manager, Quality Assurance
¹³S. Harvey, Administrator, Nuclear Affairs
¹³R. Grundstrum, Health Physicist
¹M. Cleary, Supervisor, Nuclear Information
¹C. Morrison, Video Communications Technician
¹R. Miller, Video Communications Technician
¹R. Thorsen, Impell Corp.

N. Reed, Engineer, Computers and Controls Department
³J. Clark, Assistant Superintendent, Security
¹R. Sullivan, Impell Corp.
¹A. Bonino, Impell Corp.
¹³D. Young, Impell Corp.
¹³W. Otto, Impell Corp.
¹C. Groff, Impell Corp.
¹W. Razlaff, Impell Corp.
¹ Webster, Impell Corp.
¹D. Crosnan, Impell Corp.
¹³R. Wolfe, Energy Consultants
 J. Polchow, Rad Chem Foreman
 R. Allen, Fire Protection Supervisor
 S. Chomos, Fire Protection Supervisor
 P. Walsh, Health Physics Supervisor
 C. Wohlers, Rad Chem Foreman
 G. Hughes, Assistant Manager, Technical Services
 D. Bono, Rad Chem Technician
 P. Wentzel, Rad Chem Technician
 D. Collins, Rad Chem Technician
 J. Corrigan, Chemistry Foreman
 S. Leach, Chemistry Foreman
 M. Rybold, Chemistry Technician
²R. Dettenmeier, Quality Assurance Engineer
 R. Farnam, Health Physics Foreman
 J. McLaughlin, Document Control
 J. Davis, Technical Compliance
 R. Greathouse, Reactor Operator
 C. Coffin, Reactor Operator
 J. Walker, Reactor Operator
 J. Baker, Reactor Operator
 R. Fisher, Reactor Operator
 J. Patterson, Senior Reactor Operator
 S. Putthoff, Senior Reactor Operator
 W. Lacefield, Senior Reactor Operator
 J. Cunningham, Senior Reactor Operator
 W. O'Connell, Equipment Operator
 S. Langdon, Equipment Operator
 R. Holt, Equipment Operator
 R. Rule, Equipment Operator
 B. Schoenbach, Operations Supervisor
 R. Beerman, Shift Supervisor
 C. Langton, Engineer
 G. Schindler, Engineer
 R. Jones, Chemistry Technician
 C. Rowe, Rad Chem Technician
 C. Riggs, Chemistry Foreman
 T. Carter, Startup Engineer
 C. Brewer, Test Program Coordinator
 R. Butler, Shift Technical Advisor
 B. Holderness, Corporate Health Physicist
³J. Veatch, Quality Assurance Supervisor

E. Oddo, Startup Engineer
J. Tunnik, Shift Technical Advisor
R. Lamb, Shift Supervisor

Non-Union Electric Personnel

J. Bates, Dispatcher, Callaway County
³G. Hills, Burns Security

¹Denotes those present at March 22, 1984, exercise exit meeting.

²Denotes those present at March 23, 1984, Open Item exit meeting.

³Denotes those present at the May 11, 1984, Accountability Drill and Open Item exit meeting.

2. Applicant Actions on Previously Identified Items

a. Open Items

(Closed) Open Item No. 483/84-02-01: Provide Quality Assurance (QA) auditors with additional guidance to enable them to access the adequacy of the emergency preparedness training program. The inspectors reviewed the contents of the applicant's Operations Quality Assurance Instructions (OQAI) document; a March, 1984 revision to the QA audit instructions; and discussed the emergency preparedness audit program with cognizant QA Department personnel. OQAE-1 identified twenty-eight areas to be audited by the QA staff, area number twelve being titled Emergency Planning. QA audit instructions require that twenty-one aspects of the emergency preparedness program are to be audited annually, specifically including the effectiveness of training given members of the emergency organization. This item is considered closed.

(Closed) Open Item No. 483/84-02-02: The Emergency Telephone Directory (ETD) must be developed and implemented to ensure staff augmentation is accomplished as described in Table 5-1 of the Emergency Plan. The inspector reviewed the ETD issued on April 26, 1984; procedure EIP-ZZ-A0020, "Maintaining Emergency Preparedness," Revision 1; EIP-ZZ-00202, "Callout of Emergency Organization," Revision 1; and discussed the ETD with cognizant personnel. Procedure EIP-ZZ-A0020 provided for the quarterly updating of the ETD, and assigned responsibility for maintaining this document to the Emergency Preparedness Staff. Procedure EIP-ZZ-00202 indicated that portions of the ETD would be filed in emergency packets for distribution to various coordinators in the applicant's emergency response facilities and in Emergency Callout Folders (ECFs) to be used by emergency organization personnel to implement shift augmentation. The list of all persons and facilities assigned complete and partial controlled copies of the ETD and ECFs is maintained by the Emergency Preparedness Staff and distribution is made through the applicant's document control system. Since each partial copy of the ETD utilized in the ECFs is different, this type of distribution system for quarterly ETD updates may become an administrative burden. The April 26, 1984, version of the ETD identified onsite personnel assigned to the interim EOF organization who would

staff this facility prior to the arrival of corporate personnel from St. Louis. The ETD does not list all primary and alternate emergency response personnel in the order of least travel time to the site, in some cases the same person is listed to fill more than one position, and Shift Technical Advisors are also assigned to counties Emergency Operations Centers besides their plant duties. The licensee has no procedure or plan requirement to conduct staff augmentation drills to ensure that the augmentation will be accomplished as described in Table 5-1 of the applicant's Emergency Plan. In view of the above-described method for listing personnel in the ETD and ECFs, semi-annual augmentation drills should be specified in the plan and appropriate drill procedures.

Based on the above findings, this Open Item is considered closed; however, the following items should be considered for improvement:

- . The applicant should re-evaluate the assignment of STAs as technical representative to the counties EOCs in addition to their normal plant duties.
- . The applicant should evaluate the administrative burden of updating the various partial distributions of the ETD, i.e., the Emergency Callout Folders.
- . The Emergency Plan and appropriate procedure should be revised to specify that shift augmentation drills will be held on a semi-annual basis to ensure that augmentation can be accomplished as described in Table 5-1 of the Callaway Plant Emergency Plan.

(Closed) Open Item No. 483/84-02-03: Provisions for ensuring that the EOF is operational within about one hour after declaration of any Site Area or General Emergency must be developed and implemented. The inspector reviewed Section 5 of the Radiological Emergency Response Plan (RERP), Revision 7; Revision 0 to EIP-ZZ-00502, Callout of the Interim Emergency Organization; Revision 1 to EIP-ZZ-C0010, EOF Operations; and the Emergency Telephone Directory issued March 15, 1984. The inspector also discussed provisions for activating the nearsite EOF with cognizant personnel. The applicant has developed an Interim EOF Organization, comprised of persons based at the Callaway Plant, who would activate and staff the nearsite EOF such that this facility would become fully operational within about one hour after the declaration of any Site Area or General Emergency. Personnel based at the site would carry out all appropriate EOF duties, responsibilities, and authorities pending proper relief by corporate staff arriving from locations remote from the plant site. This item is considered closed.

(Closed) Open Item No. 483/84-02-04: The inclusion, into the offsite support agency annual training program, of a review of Emergency Action Levels (EALs); the completion of initial training of these organizations; and the final assignment of responsibility for their annual retraining must be completed. The inspector reviewed records of training provided offsite support agencies and interviewed Training Department personnel

who were involved in this training effort. Initial training of all offsite support agency personnel was completed prior to the March 21, 1984 emergency preparedness exercise. Records indicated that initial training addressed the plant's Radiological Emergency Response Plan (RERP), emergency classification and related onsite and offsite responses; sample Emergency Action Levels, and emergency communications. Attendance records indicated that this training was given to representatives of the State Emergency Management Agency (SEMA) and all four counties within the plume exposure EPZ. Section 16 of the Training Department's manual regarding offsite support agency training indicated that the State of Missouri would be responsible for the annual re-training of offsite agencies having emergency response roles for the Callaway Plant. The applicant's Training Department staff informed the inspector that the applicant would assist State officials, as requested, in the annual retraining efforts. This item is considered closed.

(Closed) Open Item No. 483/84-02-05: The General Employee Training (GET) Program must be completed by all onsite personnel who would have unescorted access. The inspector examined training records for the GET Program. Approximately 4000 applicant and construction personnel have successfully completed this training during January and February, 1984. Those individuals who have not completed the training were readily identifiable from the records system and would be denied unescorted access while onsite. For the purposes of tracking, this item is considered closed.

(Closed) Open Item No. 483/84-02-06: Retraining on the current revision to the RERP and any resulting procedural revisions, for all members of the emergency organization whose duties and responsibilities have been impacted by revisions beyond Revision 5A to the plan and related procedures, must be completed. The inspector examined all records related to the retraining of emergency response personnel on revisions of the RERP and related procedures. The retraining effort began in March, 1984, and covered Revision 7 to the RERP and procedure revisions approved at the time of the retraining. The inspector's review included a random check of various individuals known to have emergency response duties. Only those personnel who would respond to an emergency and who have been appropriately retrained have been listed in the March 15, 1984 version of the Emergency Telephone Directory (ETD). Personnel within the emergency organization who had not yet completed retraining were not listed as available for emergency response in the ETD.

In addition to records reviews, a sampling of emergency response personnel was interviewed to determine the adequacy of their retraining. Topics addressed in these walkthroughs included specific changes to the plan and implementing procedures, the required reading program, dedicated communications lines in the Control Room, core damage assessment, Emergency Action Levels (EALs), protective action decisionmaking, and Emergency Coordinator's non-delegatable responsibilities. The inspectors determined that Shift Supervisors' knowledge of EALs and protective action decisionmaking had improved since the January, 1984 inspection. However, some Control Room personnel exhibited some unfamiliarity with dedicated telephone circuits in the Control Room and core damage estimation procedures.

Based on the above findings, this Open Item is considered closed; however, the following items should be considered for improvement:

- . Control Room personnel should receive additional familiarization training on dedicated communications equipment in the Control Room.
- . Shift Supervisors and Shift Technical Advisors should receive additional training on core damage assessment procedures.

(Closed) Open Item No. 483/84-02-07: Full operability of the ventilation system and inclusion of a copy of the Technical Specifications must be completed in the Control Room. The inspector verified that a controlled copy of the proposed Technical Specifications (post proof and review copy) is currently maintained in the Control Room. The inspector toured the Control Room, examined the emergency ventilation system, reviewed the Joint Test Group meeting notes of April 24, 1984, and discussed the system's status with the lead engineer. Full operability of the ventilation system had not been attained. This item is also being tracked as 483/83-32-06. Since this item is completed with the exception of the ventilation system which is being tracked separately, for the purposes of tracking this item is considered closed.

(Closed) Open Item No. 483/84-02-08: The Technical Support Center must have a fully operable emergency ventilation system, radioiodine monitoring and direct radiation monitoring capabilities, offsite monitoring communications capability, copies of proposed Technical Specifications, and procedures for operation of the diesel generator, electrical bus transfer equipment, and emergency ventilation system. The inspectors examined the communications equipment, diesel generator, radiation monitoring and radioiodine monitoring equipment, and the emergency ventilation system; toured the facility; and reviewed the applicant's procedure for operation of the diesel generator and electrical bus transfer and the procedure for switchover to the emergency ventilation system. Walkthroughs with Equipment Operators revealed that personnel had been trained in these procedures and were capable of performing them. Two copies of the proposed Technical Specifications were available. Two radios were available and operationally tested. These radios were used to communicate with offsite monitoring teams during the exercise. During walkthroughs the emergency ventilation system was activated and functioned properly. Direct area radiation monitoring instrumentation was available and had been calibrated. Although the permanent iodine monitoring instrumentation was not operational, EIP-ZZ-00240, Attachment 7 had been revised to reference the procedure to collect grab air samples and monitor for iodine. The inspectors verified that the TSC emergency kits contained appropriate collection and analysis equipment to determine radioiodine concentrations in the TSC. This item is considered closed.

(Closed) Open Item No. 483-84-02-09: The EOF must have a fully operable emergency ventilation system, radioiodine monitoring and direct radiation monitoring capabilities, offsite monitoring communications capability, copies of the Final Safety Analysis Report (FSAR),

Technical Specifications, Missouri Nuclear Accident Plan, and the four counties' emergency plans and procedures; and inclusion of and training on approved operating procedures for the EOF's diesel generator, emergency ventilation system, and bus transfer equipment. The inspectors toured the applicant's EOF; reviewed EIP-ZZ-C0010, Duties of the Corporate Emergency Organization; and reviewed EIP-ZZ-00250, EOF Operations. The EOF had copies of the FSAR, proposed Technical Specifications, and the State's and counties' emergency plans and implementing procedures. Operating procedures for the EOF's diesel generator, emergency ventilation system, and bus transfer equipment were also available in this facility. Walkthroughs with EOF personnel revealed that they had been trained in these procedures and were capable of performing them. During these walkthroughs the emergency ventilation system, diesel generator, and bus transfer equipment functioned properly. The EOF's radio equipment associated with directing offsite monitoring teams had been installed and was fully operational. The EOF's area radiation monitor was also operable and had been calibrated. Although the facility's airborne radioiodine monitor was not fully operational and had not been calibrated, the applicant had implemented adequate interim compensating measures, as indicated in EIP-ZZ-00250, by utilizing portable radioiodine detectors. This item is considered closed.

(Closed) Open Item No. 483/84-02-10: Acceptance testing, in-house calibration, and operator training on the Post-Accident Sampling System (PASS) for in-line and grab sample collection and analysis of reactor coolant and containment air samples must be completed. Factory acceptance testing of the PASS was completed in May, 1983. Onsite acceptance testing and calibration activities were completed during January and February, 1984. Eight of sixteen chemistry technicians and five chemistry foremen have completed all training on the system. The remaining eight technicians have been scheduled to receive training during August, 1984 with the goal of becoming fully qualified on the system by October 1, 1984. The number of technician and supervisory personnel who have completed all training on the PASS is sufficient to provide adequate onsite post-accident sampling and analysis capabilities. The inspectors reviewed the classroom and hands-on training given qualified technicians and conducted walkthroughs with four technicians and two foremen. All personnel demonstrated adequate knowledge of sampling and analysis procedures and were knowledgeable in measures necessary to compensate for system malfunctions, including loss of onsite power or the system's computer. This item is further discussed in Inspection Report No. 50-483/84-16. For the purposes of tracking this item is considered closed.

(Closed) Open Item No. 483/84-02-11: Installation, acceptance testing, and operator training on equipment used for the collection and analysis of post-accident gaseous, particulate, and radioiodine effluent samples must be completed. Installation and acceptance testing on the General Atomics Wide-Range Gas Monitors (WRGM) to sample the radwaste building and unit vents has been completed. Operator training on equipment used for the collection and analysis of post-accident gaseous, particulate, and radioiodine effluent samples has been completed. The inspectors

determined that sampling systems were operational and readouts were available in the Control Room. In the event that in-line systems were inoperable, grab samples can be obtained. Procedures for grab sampling from the WRGM, contained in EIP-ZZ-00210, Revision 1, appeared to be adequate and addressed manual operation of the sampling system, sample procurement, analysis procedures for high activity samples, high activity sample transport, and precautions for sampling under accident conditions. This item is discussed further in Inspection Report No. 50-483/84-16. For the purposes of tracking, this item is considered closed.

(Closed) Open Item No. 483/84-02-12: The final selection of normal reporting stations (in-plant assembly areas), taking into account their habitability, availability of radiological monitoring equipment, availability of emergency lighting, and accessibility under accident conditions, along with acceptable posting of directions to these areas, must be completed. The applicant has specified the onsite assembly areas which are as follows: first and second floor of the Startup Building, the two access control facilities, and several areas on both floors of the Service Building. The inspector toured these facilities and determined that emergency lighting was available in the hallways. Assembly area habitability is addressed in procedure EIP-ZZ-00210, which requires the assembly areas to be verified as habitable prior to conducting the assembly. Signs or arrows had not been posted in the plant to indicate how to leave the power block and proceed to the appropriate assembly area. Non-essential or non-UE personnel would go to the access control facility and evacuate the site if an assembly were required, such as upon the declaration of an Alert.

Based on the above findings, this item is considered closed; however, the following item should be considered for improvement:

Signs or arrows should be posted in the plant to indicate how to leave the facility and proceed to the appropriate assembly area.

(Closed) Open Item No. 483/84-02-13: The onsite medical treatment/first aid facility must be supplied and fully operable. The inspector toured this facility accompanied by a Health Physics foreman. Since the January 1984 appraisal, additional equipment and supplies have been placed in this treatment facility, including: a treatment table, bandages, splints, fracture boards, stretchers, surgical collars, first aid kits, anti-contamination supplies, surgical gloves, shoe covers, and plastic bags. Decontamination supplies and radiation survey instrumentation were readily available from the Health Physics Access Control Area. A telephone has been installed in the medical facility. The plant Gai-Tronics system was operational at the nearby Access Control Area. This item is considered closed.

(Closed) Open Item No. 433/84-02-14: The Joint Public Information Center (JPIC), including its briefing aids and installed telephone and telecopy equipment must be completed. The inspector observed activities at the JPIC during the exercise and discussed provisions for equipping

the JPIC with the applicant's public information staff. The applicant has stored various JPIC supplies in a trailer kept in Jefferson City, Missouri. Upon receiving an order to activate the JPIC, the trailer would be transported to this facility. Equipment stored in the JPIC trailer included: twenty-two telephones for the media; additional telephones for the applicant's rumor control center; press packets; large scale line drawings of the plant's primary and secondary systems; and a telecopy machine for transferring hardcopy information with the nearsite EOF. Public information staff also indicated that all press briefings would be videotaped in order to retain a permanent visual record for both the applicant's and late arriving media's use. Videotaping of press briefings was observed during the exercise. JPIC staff also indicated that additional telephones and a plant site architectural model could be provided to the JPIC if needed. This item is considered closed.

(Closed) Open Item No. 483/84-02-15: Control Room, reassembly areas, and ambulance kits must be placed in the locations designated in the RERP. The inspector ascertained the location of these kits and inventoried their contents. All kits were complete and their contents were in suitable storage cases. The ambulance and reassembly area kits were located at the security access point. Following the exercise, the Control Room's emergency kit was relocated from the simulator to the plant's Control Room. This item is considered closed.

(Closed) Open Item No. 483/84-02-16: The containment high range radiation monitoring system, liquid effluent monitoring system, area and process monitors, and any other radiation monitors utilized for accident assessment must achieve fully operational status, including fully operational Control Room readout capability and related training of Control Room personnel. The area and process radiation monitoring systems described in the applicant's emergency plan were installed and operational. Acceptance testing and instrument calibration activities have been completed. Instrumentation will be made operational in accordance with Technical Specification requirements prior to the plant reaching the mode in which their use is applicable. Installation of instrument readouts in the Control Room has been completed. Based on several walkthroughs, the inspectors determined that Control Room personnel were knowledgeable of the equipment and readout locations. Area and process radiation monitors will be checked and calibrated on a routine schedule in accordance with Procedure HDP-ZZ-04000. Operability of specific component parts of the system will be a Technical Specification requirement depending upon the mode of operation of the plant. The applicant has developed a surveillance tracking system detailing the Technical Specification action statement requirements for each component of the area and process radiation monitoring system. For the purposes of tracking this item is considered closed.

(Closed) Open Item No. 483/84-02-17: The non-radiation process monitoring systems used for emergency classification or accident assessment, including Control Room readouts, must be completed. The non-radiation process monitoring systems used for emergency classification and accident

assessment including Control Room instrumentation readouts were not completely installed. The applicant's Manual Surveillance Tracking System maintained by the Quality Assurance Department had detailed the Technical Specification action statement requirements for each component of these systems. The applicant will track each system component for full operability based on Technical Specification requirements for each mode of plant operation. Walkthroughs conducted with Control Room personnel verified that they were familiar with the instrumentation required for emergency classification or accident assessment, and the locations where instrument readouts were available. For the purposes of tracking, this item is considered closed.

(Closed) Open Item No. 483/84-02-18: The installation of self-contained breathing apparatus (SCBAs) and their storage cases in the fire brigade area, the completion of the respirator cleaning facility, and the completion of the respiratory issuing storage unit must be accomplished. The inspector toured the fire brigade area and determined that the SCBAs had been installed in suitable cases, per Work Request No. 017988. The issuance and return of respiratory equipment was adequately addressed in procedure HTP-ZZ-08002. The permanent respirator cleaning and issuing facility had not been completed. The applicant has implemented an acceptable interim measure by utilizing a mobile cleaning facility. Operation of this interim facility was addressed in procedure HTP-ZZ-08300, MSA Respirator Cleaning, Inspection, and Storage. The inspector determined that fifteen plant personnel had been trained in the operation of the interim respirator cleaning facility and the cleaning, inspection, and storage of respiratory equipment. This item is considered closed.

(Closed) Open Item No. 483/84-02-19: The installation and operational testing of all required dedicated communications equipment in the Control Room, and completion of related training with regard to its usage must be completed. The inspector toured the Control Room and determined that all dedicated communications equipment listed in the Emergency Plan for the Control Room had been installed and functionally tested. The inspector verified the operability of the Control Room's dedicated communications equipment. The inspector reviewed lesson plans addressing use of dedicated communications lines, including those in the Control Room. Actual training of Control Room personnel on communications equipment in their work location was accomplished during off-crew training weeks. The inspectors conducted walkthroughs with Control Room operating crews which included the use of dedicated communications equipment. Several individuals were somewhat unfamiliar with using the equipment (see Open Item No. 483/84-02-06). This item is considered closed.

(Closed) Open Item No. 483/84-02-20: Evacuation alarm, fire alarm, public address system, and supplemental visual alarms must be completed. The public address system (Gai-Tronics) was pre-operationally tested and operational. Its use was demonstrated throughout the inspection. A wailing tone generated over the Gai-Tronics serves as the fire alarm, while a continuous tone serves as the assembly/evacuation alarm. Both of these alarms were tested during the inspection

and found to be operable. The Gai-Tronics system was operational in all buildings onsite, as well as those structures in the owner controlled area which would remain during facility operation. Supplemental visual alarms (flashing blue lights) had been installed in high noise areas. The inspector verified that these alarms were operational by direct observation, review of test documentation, and interviews with facility personnel. This item is considered closed.

(Closed) Open Item No. 483/84-02-21: The elimination of discrepancies in EALs listed in the RERP and EIP-ZZ-00101 must be completed. The inspector compared Emergency Action Levels (EALs) as stated in Revision 7 of the Emergency Plan with those stated in Revision 2 to procedure EIP-ZZ-00101, Classification of Emergencies. The inspector found no discrepancies in EALs provided in the Plan and the implementing procedure. Also, all "to be determined" (TBD) values that had been listed in earlier versions of either document had been replaced by numerical values. This item is considered closed.

(Closed) Open Item No. 483/84-02-22: Completion of an Emergency Implementing Procedure (EIP), or revision of an existing EIP, addressing activation and operation of the backup EOF, including transfer of responsibilities during the period between nearsite EOF evacuation and the backup EOF reaching operational status, must be completed. The inspector reviewed procedure EIP-ZZ-C0015, Activation of the Backup Emergency Operations Facility. The procedure adequately addressed the following: activation of the backup EOF both prior to or after activation of the nearsite EOF; transfer of responsibilities to the TSC between the time of nearsite EOF evacuation and backup EOF activation; and responsibilities of applicant personnel at the Backup EOF. The procedure also included a route map from the nearsite EOF to the Backup EOF and listed the contents of EOF supplies to be maintained at the Backup EOF site. The inspector determined that these supplies had been placed in the workspace of the State Emergency Management Agency of which a portion would serve as the Backup EOF. The inspector also determined that personnel assigned to the nearsite EOF who could be required to relocate to the Backup EOF had been trained on this implementing procedure. This item is considered closed.

(Closed) Open Item No. 483/84-02-23: EIP-ZZ-00102 must be corrected to include the proper interpretation of the initial notification time requirements. The inspector reviewed Revision 2 to the procedure. The note contained in paragraph 4.3 of this procedure has been reworded to state that initial notifications to State and local organizations shall be completed within fifteen minutes after declaration of an emergency. This item is considered closed.

(Closed) Open Item No. 483/84-02-24: Installation and acceptance testing of the Radioactive Release Information System (RRIS) terminal in the Rad/Chem Foreman's office in the Operational Support Center (OSC) must be completed. This inspector toured the Rad/Chem Foreman's office in the OSC and determined that the RRIS terminal had been installed and was functional. This item is considered closed.

(Closed) Open Item No. 483/84-02-25: The Radioactive Release Information System (RRIS) must achieve fully operational status in all intended emergency response facilities, operating procedures for use of the system must be developed, and training on the use of the system must be completed. The inspector conducted a walkthrough of the RRIS and interviewed cognizant personnel. Meteorological data and radiation monitoring system data were hard wired to the RRIS. Terminals were located in the Control Room, computer room, Health Physics Access Control Point, Technical Support Center, and Emergency Operations Facility. The system had been calibrated. The walkthrough indicated that the RRIS was easy to operate. The RRIS is a component of the applicant's Emergency Response Facility Information System. This system is designed to meet the requirements of Supplement 1 of NUREG-0737. Completion and staff evaluation of the Emergency Response Facility Information System, including the RRIS, which meet the requirements of Supplement 1 of NUREG-0737 will be addressed in a separate report. For the purpose of tracking, this item is considered closed.

(Closed) Open Item No. 483/84-02-26: EIP-ZZ-01211 and -02211 must be revised to include provisions for all anticipated accident situations, including the following: isotopic mix data for various accident types; monitor correction factors; contingency data for use when radiation monitoring systems are inoperative or off-scale; and dose rate factors for loss of coolant accidents. The inspector reviewed Revision 2 to EIP-ZZ-01211 and determined that it did include isotopic mix data appropriate for various accident types, monitor correction factors, and dose rate factors for loss of coolant accidents. In addition, EIP-ZZ-01212 has been promulgated and contained contingency data for use when radiation monitoring systems are inoperable or offscale. A computer code has also been written for the applicant's HP-1000 computer which can be used to provide estimates of offsite dose. The code, which is the same methodology as that in EIP-ZZ-01211, was determined to be user friendly by the inspector. The applicant's Dose Assessment Coordinators have been trained on using the HP-1000 to generate offsite dose estimates. Personnel observed during the exercise were proficient in the use of this computerized technique. This item is considered closed.

(Closed) Open Item No. 483/84-02-27: EIP-ZZ-00212 must be revised to conform with current guidance regarding the initiating condition for protective action recommendations and must provide guidance regarding content of any advisory messages. Revision 2 to this procedure was issued on March 6, 1984, which eliminated the provisions for making advisory messages. In addition, appropriate but confusing guidance was provided in Attachment 1 for making protective action recommendations. The initiating conditions for entry into the attachment have been revised to include declaration of an emergency requiring dose projections or assessment or an emergency in which plant conditions indicate that a core melt sequence is in progress or projected. The Attachment 1 to the procedure is a flow chart for making the protective action recommendation. Confusion in the layout of this flow chart is due to the lack of definition for the words "substantial" and "large,"

and the placement of the General Emergency decision box. Although the guidance provided conforms with current guidance, the flow chart should be modified to eliminate confusion. IE Information Notice No. 83-28 defined "substantial core damage" as actual or potential for release of 20% of gap activity from the core. Similarly, the Information Notice defined "large fission product inventory in containment" as greater than all gap activity (e.g., indications of fuel degradation or melting besides total cladding failure). During the exercise, the decision was made that substantial core damage was projected with projected large fission product inventory in containment without the corresponding declaration of a General Emergency. This decision was primarily due to the placement of the General Emergency box in the flow chart. Since this flow chart is designed to be used for any emergency classification, the substantial core damage should only be reachable if a "yes" answer has been obtained for the General Emergency, or conversely, substantial core damage should always indicate that a General Emergency has been declared. In addition, if revised, the flow chart should still provide guidance for recommending protective actions if a General Emergency is declared as a result of a security event (see Condition 3 on Page 1-17 of Appendix 1 to NUREG-0654, Revision 1).

Since EIP-ZZ-00212 was revised appropriately, this item is considered closed; however, to help alleviate confusion in using Attachment 1 to this procedure, the following items are recommended:

- . Attachment 1 to EIP-ZZ-00212, "Protective Action Decision Flow Chart," should be revised to reduce confusion in its use by providing definitions for the terms "large fission product inventory" and "substantial core damage."
- . Attachment 1 to EIP-ZZ-00212, "Protective Action Decision Flow Chart," should be revised to clearly indicate that substantial core damage in progress or occurring will always indicate that a General Emergency has been declared while still providing guidance on protective action recommendations for non-General Emergencies and a General Emergency declaration resulting from loss of physical control of the facility (e.g., a security event).

(Closed) Open Item No. 483/84-02-28: The development, implementation, and training on procedures for collecting and handling post-accident liquid effluent samples must be completed. Procedures for collecting and handling post-accident liquid effluent samples have been developed by the applicant. Revision 1 to EIP-ZZ-00210, Radiological Controls During Emergencies, contained procedures for handling and analyzing high-range post-accident liquid effluent samples. Training on this procedure had been provided for all chemistry technicians. This item is considered closed.

(Closed) Open Item No. 483/84-02-29: The emergency radiation work permit program must be completed. The inspector reviewed Revision 1 to EIP-ZZ-00210 and its Attachment 5, Radiation Work Permits. During an emergency, personnel entering the plant's Radiation Controlled Area

would be required to utilize a Radiation Work Permit (RWP). A radiological hazards briefing and/or Health Physics escort would supplement instructions and precautions on the RWP. Personnel exposures would be recorded on the RWP program accessible on the HP-1000 computer, or would be recorded manually if the computerized system was not available. The inspector determined that all Health Physics technicians had been trained on the RWP program. This item is considered closed.

(Closed) Open Item No. 483/84-02-30: The locations of offsite reassembly areas must be accurately described in both the RERP and relevant EIPs. The inspector reviewed Revision 2 to EIP-ZZ-00230, Assembly and Evacuation, and Revisor 7 to the RERP. Both documents accurately described the location of the offsite reassembly areas, including figures depicting the location of these areas relative to the plant and the primary evacuation route to the offsite alternate assembly area. The procedure also adequately described the locations of onsite assembly areas. This item is considered closed.

(Closed) Open Item No. 483/84-02-31: The Radiological Emergency Response Plan (RERP) and relevant procedures must indicate which type of evacuation (protected area or owner controlled area) is mandatory or optional for each emergency class. Revision 7 of the RERP states that evacuation of non-essential personnel is mandatory for a Site Area or General Emergency unless radiological conditions prohibit. The policy for two types of evacuations has been removed in this plan revision. An evacuation may also be ordered at the discretion of the Emergency Coordinator. Emergency Implementing Procedures EIP-ZZ-00102, Rev. 2, "Emergency Implementing Actions," and EIP-ZZ-00230, Rev. 2, "Assembly and Evacuation," have been revised to be consistent with Revision 7 of the RERP. These procedures accurately describe the method for conducting an evacuation of non-essential personnel. This item is considered closed.

(Closed) Open Item No. 483/84-02-32: Provisions must be developed and implemented to verify complete evacuation of all persons outside the protected area but within the owner controlled area whenever evacuation of non-essential personnel has been ordered. Procedure SDP-ZZ-SF020 includes provisions to ensure that parking lots and roads are cleared of all persons within the owner controlled area upon the issuance of an onsite evacuation order. In addition, permanent buildings within the owner controlled area but outside the protected area are equipped with the plant Gai-Tronics paging system which is the system used to sound the evacuation alarm and make appropriate announcements. The inspectors reviewed SDP-ZZ-SF020 and found that appropriate procedural actions to provide for the evacuation of personnel from the owner controlled area had been described. In addition, a test of the evacuation alarm was conducted and the inspectors determined that this alarm could be heard in all buildings outside the protected area which were to remain at the site upon the completion of construction. This item is considered closed.

(Closed) Open Item No. 483/84-02-33: Provisions must be developed and implemented to ensure capability of continued personnel accountability, including circumstances involving Emergency Response Facility evacuation, after initial accountability had been determined. As specified in Section 6.7.1.2 of Revision 7 to the RERP, the Security Coordinator has overall responsibility for ensuring continuous accountability. In addition to the use of the card reader system, SDP-ZZ-SF020 specifies the system used by security to ensure that accountability at all Emergency Response Facilities is continuously maintained. This system was satisfactorily demonstrated during the exercise. This item is considered closed.

(Closed) Open Item No. 483/84-02-34: Portal monitors must achieve full operational status. The inspectors, accompanied by the technician immediately responsible for the portal monitors, examined the monitors installed at the security access point and secondary access facility and control building. All monitors were operational. Records indicated that all had been calibrated in mid-March, 1984. This item is considered closed.

(Closed) Open Item No. 483/84-02-35: Completion of revision, implementation, and training on revised procedures which accurately describe all functions of the security force upon activation of the Radiological Emergency Response Plan. Procedure SDP-ZZ-SF020, Rev. 0, "Security Responsibilities During Emergencies," was issued on March 5, 1984. The inspectors reviewed this procedure and found that it adequately addressed all activities which are the responsibility of security force personnel during an emergency. Training had been given to security force personnel on the use of this procedure, and procedure implementation was satisfactorily demonstrated during the exercise. This item is considered closed.

(Closed) Open Item No. 483/84-02-36: Procedures must be developed and implemented which describe the duties/responsibilities/authorities assigned to specific coordinators in the offsite emergency organization and managers and supervisors in the recovery organization, following a Recovery declaration; in addition, the RERP and/or procedures must identify trained alternates for each position in the recovery organization, as described in Section 9.2 of the RERP. The inspectors reviewed Chapters 5 and 9 of Revision 7 to the RERP, and Revision 1 to EIP-ZZ-00260, Recovery. Both the plan and procedures addressed the duties/responsibilities/authorities of the applicant's Recovery Organization. The Emergency Coordinator and Recovery Manager would determine the staffing requirements for recovery, and all essential personnel would maintain their same duties as they had in the Emergency Organization. These positions could then be modified, as necessary, to support recovery operations. Key recovery managers were outlined in the plan and procedures, with the lines of succession as indicated in the Nuclear Organization Chart. Trained alternates for each position in the recovery organization, as described in Section 9.2 of the RERP, have been identified in the Emergency Telephone Directory. This item is considered closed.

(Closed) Open Item No. 483/84-02-37: The public information plan and related procedures must be integrated into the RERP and its EIPs; in addition, procedures must identify, by position, primary and alternate individuals who would serve as Technical Spokesperson at the JPIC. The inspector reviewed Revision 7 to the RERP and implementing procedures EIP-ZZ-PR010, "Callout of the Public Information Organization," and EIP-ZZ-PR020, "Activation and Operation of Emergency Public Information Facilities." Based on this review, the inspector determined that the applicant's public information plan and related procedures had been adequately integrated with the RERP and its implementing procedures. Primary and alternate individuals who would serve as JPIC Technical Spokespersons have been identified in Section 5.2 of Revision 7 to the RERP. This item is considered closed.

(Closed) Open Item No. 483/84-02-38: The communications drill procedure must be completed. The inspector reviewed the applicant's dedicated communications links test procedure EIP-ZZ-A0023, issued in March, 1984. This procedure assigned responsibility for conducting and documenting communications tests, and specified test frequencies in accordance with 10 CFR 50, Appendix E, Paragraph E and the applicant's RERP. This item is considered closed.

(Closed) Open Item No. 483/84-02-39: The list of State, county, and local organizations provided with controlled copies of the RERP, and copies of relevant implementing procedures must be expanded to at least include the EOCs of all counties within the plume exposure EPZ, the Callaway Memorial Hospital, the Callaway County Ambulance District, and other State and local organizations which may respond onsite to a radiological emergency at the Callaway Plant. The inspector reviewed the applicant's expanded distribution lists for controlled copies to the RERP and implementing procedures and discussed these lists with the Supervisor, Emergency Preparedness. The RERP and relevant implementing procedures have been provided to the EOCs of all counties within the plume exposure EPZ and the Callaway Memorial Hospital, whose building complex also houses the County Ambulance District. The applicant has made provisions for periodically reviewing the adequacy of the offsite distribution of the RERP and relevant procedures, and has intended to verify this review in the annual emergency preparedness audit. This item is considered closed.

(Closed) Open Item No. 483/84-02-40: Agreements with offsite support organizations must be made and kept current, such that no Letters of Agreement are more than two years old. The inspector reviewed the applicant's Letters of Agreement with Federal, State, local governmental organizations, and private organizations. Appropriate letters had been updated such that none were more than two years old. Several of the updated Letters of Agreement have not been included in Revision 7 to the RERP. The licensee indicated that all recently updated Letters of Agreement would be added to the next Plan revision. This item is considered closed.

(Closed) Open Item No. 483/84-02-41: Distribution of the emergency preparedness pamphlet to cover all segments of the permanent and transient populations within the plume exposure pathway EPZ must be completed. The inspector discussed with cognizant personnel the applicant's provisions for the initial distribution of the emergency preparedness pamphlet. The initial distribution covering all permanent and transient locations within the plume exposure EPZ had been completed. The distribution list had been prepared from utility customer mailing lists for the geographic area of concern. The inspector telephoned a public library and a campground located within the EPZ and verified that the emergency pamphlet had been received. The applicant has made provisions to distribute additional copies of the pamphlet upon request from residents within the plume exposure EPZ. This item is considered closed.

(Closed) Open Item No. 483/84-02-42: Installation and testing of the prompt public notification system equipment (sirens and tone alert radios) and training to offsite support groups on the use of the system must be completed. The inspectors reviewed documentation regarding the implementation of the system, discussed the system with cognizant personnel, and conducted a walkthrough with the Callaway County Dispatcher regarding system activation. Sirens were installed at the locations specified in Revision 7 to the Callaway Emergency Plan. Local testing of all sirens was completed prior to the exercise. Encoders for operating the sirens were installed in each of the four counties' EOCs. Training of appropriate offsite agency personnel on encoder operation was completed prior to the exercise. Procedures had been developed for monthly siren system testing and quarterly preventive maintenance. During the April 19, 1984 siren test, representatives of the Federal Emergency Management Agency (FEMA) observed the systems operation, and in an April 27, 1984 letter to the Missouri State Emergency Management Agency FEMA stated that "Information was transmitted, decisionmaking was demonstrated, all 15 sirens were sounded simultaneously, tone alerts were activated, and the EBS message reached the public within the prescribed fifteen minutes." In addition, the inspectors conducted a walkthrough with the Callaway County Dispatcher and determined that the dispatcher could properly activate the system. Tone alert radios, preset to the local EBS station, had been delivered to households and transient gathering places within the plume exposure EPZ who may not hear the sirens. The applicant had developed a procedure for replacing defective radios or dead batteries, and for ensuring that new residents were provided tone alert radios. This item is considered closed.

b. TMI Items

(Closed) Item II.F.1.1, 483/83-32-16: The applicant shall install noble gas effluent monitors with an extended range designed to function during normal and accident conditions, per NUREG-0737, Item II.F.1, Attachment 1. The applicant has installed noble gas effluent monitors capable of operating under normal and accident conditions. Two monitors, one low range and one high range, have

been installed to monitor each gaseous effluent pathway (Radwaste Building Vent and Unit Vent). The instrumentation was capable of measuring noble gas effluent from normal conditions to 10^5 $\mu\text{Ci/cc}$ of Xe-133. The installed instrumentation had been acceptance tested, calibrated, and was operational. Detection efficiencies had been determined and the instrumentation was powered from a vital bus. Should the in-line monitoring system become inoperable, the applicant has made provisions for taking grab samples and analyzing them onsite or at the nearsite EOF. This item is considered closed.

(Closed) Item II.F.1.2, 483/83-32-17: The applicant shall have the capability for effluent monitoring of radioiodines, per NUREG-0737, Item II.F.1, Attachment 2. The applicant's capability to sample and analyze high range radioiodine samples was examined. The installed instrumentation appeared to have the capability to quantitatively determine releases of radioiodines and particulates for use in accident assessment and offsite dose calculations; however, the sampling lines were long and contained numerous bends and diameter changes. Procedures for taking and analyzing high range samples have been developed; however, it was not clear that these procedures had been evaluated to ensure that the exposure limits to GDC-19 would be met. Provisions for reducing personnel exposures during sampling and analysis activities had been incorporated in the procedures. Further examination of this system is addressed in Inspection Report No. 50-483/84-16. For the purposes of tracking, this item is considered closed.

3. General

An exercise of the applicant's Radiological Emergency Response Plan (RERP) was conducted at the Callaway Plant on March 21, 1984. The exercise tested the applicant's, State's, and local organizations' integrated responses to a simulated accident scenario resulting in a major radioactive release. Attachment 1 describes the scenario. The exercise was integrated with a test of the State of Missouri, Callaway County, Montgomery County, Osage County, and Gasconade County Emergency Plans.

4. General Observations

a. Procedures

This exercise was conducted in accordance with 10 CFR Part 50, Appendix E requirements using the applicant's RERP and related implementing procedures.

b. Coordination

The applicant's response was generally coordinated, orderly, and timely. Had these events been real, actions taken by the applicant would have been sufficient to permit State and local authorities to take appropriate actions to protect the public's health and safety.

c. Observers

The applicant's observers monitored and critiqued this exercise along with eleven NRC observers and a number of Federal Emergency Management Agency (FEMA) observers. FEMA observations on the responses of State and local organizations will be provided in a separate report.

d. Exercise Critiques

The applicant held a critique following the exercise on March 21, 1984. The NRC critique was conducted on March 22, 1984 at the nearsite Emergency Operations Facility (EOF). A public critique was held later that day at the Joint Public Information Center (JPIC) in Jefferson City, Missouri, to present the preliminary onsite and offsite findings of the NRC and FEMA exercise observers, respectively. The NRC and the applicant identified weaknesses in their respective critiques. Weaknesses identified by the NRC are provided in the following text of this report.

5. Specific Observations

a. Medical Drill

Although the simulated injury was promptly and accurately reported to Control Room personnel by the technician who had accompanied the victim, the request for offsite medical assistance was not made until almost fifteen minutes after the accident had been reported. Once notified by the Control Room, several Health Physics (HP) personnel were quickly dispatched from the Access Control Area to assist in caring for the injured electrician. Prior to the arrival of the ambulance onsite, HP personnel left the victim unattended for several brief periods. Personnel who had donned protective clothing in order to retrieve the victim from the contaminated accident scene paused enroute to the ambulance in order to remove protective clothing articles, which resulted in unnecessary delay. Security personnel escorted the ambulance crew and vehicle while onsite. A HP technician was also available to survey the ambulance for contamination and to accompany the casualty to the hospital. Later in the exercise, Technical Support Center (TSC) staff remained aware of the victim's treatment status at the hospital. However, the HP Coordinator did not initially have the telephone number for the hospital treatment area to which the injured, contaminated person had been brought.

Based on the above findings, the following items should be considered for improvement:

Search and rescue team members should be retrained in the care of injured, contaminated personnel. Emphasis should be placed on avoiding leaving casualties unattended and the need to expedite transport of casualties to medical treatment facilities even at the expense of potentially spreading contamination onsite.

Control Room personnel should be retrained on the procedure for requesting offsite medical assistance.

The HP Coordinator's emergency packet should include telephone numbers of local medical facilities to which injured, contaminated personnel may be transported.

b. Assembly/Accountability and Evacuation Drill

The inspectors observed the response by the applicant organization during a scheduled assembly/accountability and evacuation drill, separate from the exercise, which was conducted on May 11, 1984. This drill consisted of sounding the assembly/evacuation alarm and accounting for all personnel remaining onsite using appropriate procedures. The drill began at 2:15 a.m. with the handing of a message to the Shift Supervisor to initiate assembly/evacuation. The on shift acting Health Physics Coordinator was promptly notified to determine the radiological status of assembly areas and the main parking lots. At 2:16 a.m., Security was notified to initiate their activities and the assembly/evacuation siren was sounded. Union Electric personnel reported to their designated assembly area and all other personnel evacuated the site through one of the two access facilities. Accountability was manually determined by security personnel. All individuals were accounted for within 25 minutes of the initial message transmittal to the Shift Supervisor to conduct the drill. The drill was terminated at 2:45 a.m. with approximately 90 onsite personnel accounted for and 420 non-essential personnel evacuated.

c. Control Room

The applicant conducted the Control Room portion of the exercise from the simulator, which enhanced the realism of responses to changing plant conditions from this facility and allowed an entire operating crew to demonstrate their capabilities. Initial notifications to offsite authorities were done promptly and per procedures for the Unusual Event and Alert declarations. Control Room staff generally functioned well as a team in recognizing and responding to changing scenario events. Throughout the exercise, the Shift Supervisor (SS) demonstrated an excellent understanding of plant systems and operations. For example, he correctly verified increasing Radwaste Building radiation levels before declaring the Alert. However, prior to TSC activation, the SS allowed himself to become overburdened with tasks that could better have been delegated to available staff. Early in the scenario he became too personally involved with logkeeping, troubleshooting public address (PA) system audibility problems, and in telephone conversations with offsite medical support personnel. Throughout the exercise, the Shift Technical Advisor (STA) correctly monitored plant conditions to detect changes necessitating emergency reclassifications; however, prior to the gas decay tank rupture, he could have provided more assistance to the overburdened SS. Later, he should have been more dynamic when informing an operator of a panel indication of a partially open damper.

The Plant Manager arrived at the simulator shortly after the Unusual Event declaration. His initial briefing by the SS was fragmented over about a ten-minute period as the latter left the briefing to personally check with Control Room staff on the casualty, offsite notifications, PA system problems, and the EALs. The manager should have accompanied the SS on these discussions to expedite the in-briefing process. Had the SS remained too busy attending to various operational details, the Plant Manager, once adequately aware of the overall situation, could have relieved the SS of Emergency Coordinator responsibilities prior to TSC activation. Plant Manager and SS interface in the Control Room improved by the time scenario events necessitated the Alert declaration.

Control Room staff followed procedures throughout the exercise, with two exceptions. The procedure for placing the Residual Heat Removal Pump A on the containment sump was not referenced when this action was taken, and an operator repositioned Post Accident Sampling System valves using handwritten instructions that had been verbally transmitted from the TSC. Communications with offsite agencies were promptly completed and adequately documented on the appropriate forms. While the reactor operator's log was properly maintained throughout the exercise, the SS's log had no new entries for about two and one-half hours between approximately 1030 and 1300 hours.

Based on the above findings, the following items should be considered for improvement:

- . The role of the STA during emergencies should be re-evaluated in order to make full use of the talents and capabilities of these individuals.
- . Procedural provisions should exist that allow a senior plant manager to relieve the SS of Emergency Coordinator responsibilities in the Control Room following proper in-briefing of the former, even if the TSC is not activated.

d. Technical Support Center

Reconfiguration and staffing of the TSC proceeded smoothly and efficiently. The facility was operational within one hour of its activation. When the TSC was nearly operational, the Plant Manager left the Control Room, walked to the TSC, and relieved the SS of Emergency Coordinator (EC) duties after receiving a final briefing from the SS and assuring himself that TSC personnel were ready to assume their duties. Throughout the exercise, the EC demonstrated excellent leadership skills in the TSC. He kept all personnel informed of major events and discussions, effectively delegated tasks to appropriate work groups, and remained fully aware of changing scenario events and staffs' progress on assigned tasks. The Health Physics (HP) Coordinator kept the EC informed of changing in-plant radiation levels, offsite dose projections, field monitoring teams' results, and Emergency Response Facilities (ERF) habitability. The

Technical Assessment Coordinator (TAC) and his staff demonstrated their capabilities to devise creative solutions to the technical problems confronting them and to trend key plant parameters; however, the TAC's staff did exhibit difficulty in estimating the extent of reactor core damage. Security personnel maintained proper accountability within the TSC and other ERFs.

While the EC kept aware of all staff activities, several TSC work groups could have interfaced better during the exercise. Interface problems could have been partly caused by the physical locations of the work groups in the TSC. The HP and Operations and Maintenance (O&M) staffs had to coordinate in planning and monitoring in-plant repair activities; however, the HP and O&M Coordinators and their staffs were separated by the EC and the TAC's staff. Other than during periodic meetings with the EC, the HP and O&M Coordinators did not appear to be frequently interacting. After the Site Area Emergency declaration, the HP and TAC Coordinators and their staffs arrived at different conclusions regarding the need to declare a General Emergency. Closer interfacing between the personnel, facilitated by their coordinators being seated closer in the TSC, could have resulted in better coordination on this important issue. The disagreement was quickly resolved when the EC and his principal staff recognized that the loss of the remaining Residual Heat Removal train warranted a General Emergency declaration.

Initial notifications to offsite authorities were promptly made after the Site Area and General Emergency declarations; however, offsite authorities were not properly advised of the need for no protective measures following the former declaration. They were only assured that a decision on a recommendation would be made shortly. No recommendation decision was transmitted to offsite officials until a General Emergency had been declared. This initial protective action recommendation for the General Emergency was proper and was promptly communicated to offsite authorities.

TSC status boards were generally well maintained; however, they did not contain information on both protective measures recommended by the applicant and those implemented by offsite authorities. Internal message distribution within the TSC was inadequate. Only the sender and the recipient retained copies of internal messages. Although the EC utilized a scribe to record his activities, sufficient clerical staff were not available to accomplish internal message distribution and to compile a complete chronology of all TSC activities. Insufficient provisions were made by the Administrative Coordinator for the shift relief of TSC staff. Provisions were only made for relieving technical and administrative staffs, and not for relieving principal coordinators.

Offsite dose projections were rapidly accomplished using an HP 1000 computer and software that was user friendly. Offsite dose estimates were plotted with up to five significant digits; however, such projections may only be reasonable estimates to an order of magnitude due to limitations inherent in the methodology. Also, the program required flowrates in units of cubic feet per minute while input data were available in cubic centimeters per second.

Based on the above findings, the following items should be considered for improvement:

- . The applicant should develop and implement improved provisions for estimating the extent of core damage.
- . The applicant should re-evaluate the seating arrangement for HP, TAC, and O&M Coordinators to facilitate their interface with each other and with the EC.
- . Appropriate coordinators should be retrained that offsite protective measures beyond the immediate vicinity of the owner controlled area should only be warranted for General Emergency and not Site Area Emergency classifications.
- . TSC status boards should contain information on both protective measures recommended and those implemented.
- . Internal messages should be routed to all TSC Coordinators. Adequate clerical staff should be available for this task and for compiling a real-time chronology of all TSC events.
- . Dose projection software should require for input the same units of measure as are available from instrument readouts to avoid human errors in conversion calculations.

e. Operational Support Center

The OSC was comprised of two areas: the Access Control Area manned by the Rad Con Coordinator and HP staff, and the Service Building lunchroom manned by the OSC Supervisor and foremen and technicians having varied specialities. Both portions of the OSC were promptly staffed with adequate numbers of personnel following the Alert declaration.

The Rad Con Coordinator provided excellent supervision to personnel in his work area. Personnel under his control were kept advised of changing scenario events. All teams arriving at the Access Control Area were adequately briefed and debriefed on assigned tasks and hazards. Emergency Radiation Work Permits were utilized in addition to verbal briefings. Plant diagrams were effectively utilized to plot changing in-plant radiation levels and to determine the optimum routes from Access Control to work locations. Personnel exposure records were kept current by use of the HP 1000 computer. Post accident sampling tasks were efficiently accomplished per procedures and results were promptly transmitted to the TSC. Contamination control was adequate at Access Control throughout the exercise.

Foremen typically conducted briefings and debriefings given in-plant teams dispatched from the lunchroom portion of the OSC. Coordination between the Rad Con Coordinator and OSC Supervisor was generally good. Accountability was well maintained in the OSC lunchroom. While a

frisker station was established at the OSC lunchroom, it was located such that potentially contaminated personnel would have to enter and walk across the lunchroom to reach the frisker.

Teams dispatched from the lunchroom were equipped with hand-held radios. One team dispatched from the lunchroom failed to report to Access Control for HP support. Team members were quite knowledgeable in acquiring data from diagrams in the I&C trailer needed to complete their assigned task. However, after calling the OSC controller to state that they were ready to proceed to the Control Room, the team traveled outdoors after the major release had begun. The team chose a route from the turbine building to the Control Room that should have minimized its exposure. At no time, however, was the team provided with HP support. Although they had traversed an outdoor area where exposure risk was high due to building wake effects and had been within the power block, the team was not checked for contamination prior to entering the lunchroom area of the OSC.

Based on the above findings, the following items should be considered for improvements:

- Survey equipment provided for the OSC lunchroom area should be located such that potentially contaminated personnel do not have to traverse the room in order to determine if they had become contaminated.

- OSC foremen of in-plant teams should periodically contact their teams to verify their locations and to ensure that teams have heard PA announcements or have otherwise been informed of changing conditions which could impact their ability to accomplish assigned tasks.

f. Emergency Operations Facility

The Offsite Liaison Coordinator efficiently prepared the nearsite EOF for use by emergency staff. Transfer of responsibilities from the TSC to the EOF was orderly and timely. The EC and Recovery Manager (RM) interfaced appropriately during the exercise. EOF staff were kept adequately informed of scenario events and major decisions. The RM reviewed all press releases prior to their transmittal to the Joint Public Information Center (JPIC).

Protective action recommendations made in the EOF were conservative and in accordance with procedures. The RM properly took time to explain the rationale behind these recommendations to offsite agency representatives within the EOF and with other offsite decisionmakers. At one point, the RM and county officials appropriately divided the Osage County emergency subarea to avoid initiating unnecessary protective measures in western portions of the broad subarea. Later, the RM correctly ascertained the implementation status of the current protective action recommendation while deciding on whether a modified recommendation was needed. On several occasions the RM would have

benefitted from additional inputs from his Rad Assessment and Technical Support Coordinators during the recommendation decisionmaking process. While current and forecast meteorological data were available in the EOF, conditions forecast about three hours earlier were not checked for continued accuracy prior to issuing a revised recommendation; however, evacuation time estimates were factored into the recommendation formulation process. While the RM kept aware of differences between recommendations issued and those implemented by offsite officials, both types of data were not plotted on status boards in the EOF's Recovery Center and Emergency Control Center rooms. Also, recommendations were not always plotted in terms of both 22.5 degree sectors and the irregularly-shaped emergency subareas. Otherwise, status board usage in the EOF was adequate.

The RM's scribe kept a detailed, current log of his activities. While desk space was allocated for the NRC Site Team Leader beside the RM, the former's table was not equipped with a telephone for use in making onsite and offsite calls. There were provisions for several such telephones in the NRC office within the EOF. Only the Recovery Center room was provided with a clock.

Based on the above findings, the following items should be considered for improvement:

- . The applicant should consider permanently dividing the single Osage County subarea into two subareas, since Highway 89 is roughly along the border between 22.5 degree sectors H and J.
- . The roles of the EOF's Technical Support and Rad Assessment Coordinators should be re-evaluated such that these individuals can better advise the RM on matters related to protective action recommendation decisionmaking.
- . Previously forecast meteorological conditions should be doublechecked for continued accuracy when formulating revised protective action recommendations.
- . EOF status boards should contain information on both protective action recommendations made and implemented. Information should be plotted both in terms of sectors and subareas.
- . The NRC workspace in the Recovery Center room should be provided with telephones for making onsite and offsite calls.
- . The Emergency Control Center room and State representatives' room should be provided with clocks.

g. Offsite Monitoring Teams

Three teams assembled about one-half hour after the gas decay tank rupture. Teams obtained their vehicles and proceeded to the nearsite EOF to load their field monitoring kits. Kit equipment, including

personal dosimetry, were checked for operability prior to use. Although teams were notified when the major release had begun, they were unaware when the General Emergency had been declared. The transfer of team control from the TSC to the EOF proceeded smoothly. Teams experienced some radio transmission difficulties, especially when transmitting from lower terrain areas. In such cases, teams correctly relocated to higher terrain to complete their transmissions. Teams did not always include units of measure when reporting their sampling results to their coordinators.

The teams and their coordinators demonstrated proper techniques when accomplishing plume traverses to ascertain its approximate borders and maximum concentrations. Teams donned full face respirators prior to entering the plume. Coordinators periodically requested time-in-plume and accumulated dose information. Teams generally demonstrated good techniques when obtaining air samples; however, one team failed to utilize gloves when replacing air sampler filter cartridges. Although air samples, open/closed window measurements, and smear samples were obtained, soil and vegetation samples were not requested until shortly before the exercise was terminated. Thus, soil and vegetation sampling techniques were not observed.

Based on the above findings, the following items should be considered for improvement:

- . Offsite monitoring team coordinators should keep teams periodically advised on plant status, any changes to emergency classifications, and the status of offsite protection actions.
- . Reports of offsite survey results should include the appropriate units of measure.
- . Gloves should be used when replacing air sampler filter cartridges to reduce the risk of spreading contamination.

h. Joint Public Information Center

The JPIC was activated after the Alert had been declared. A sufficient number of telephones were available for the media. A rumor control center was established with an adequate number of personnel and telephones. There were no apparent voice or hardcopy communications problems between the JPIC and nearsite EOF. Press packets were available which contained copies of the emergency brochure, labeled illustrations of the nuclear steam supply system and its components, a plant photograph, and other information. Drawings of the plant's primary and secondary systems were also available as JPIC briefing aids.

Press briefings were videotaped by the applicant and could later be reviewed on available monitors by the media. An alternate Recovery Manager (RM) acted as the applicant's technical spokesperson. While this individual possessed the desired technical qualifications to be

a spokesperson, his services would be of greater value as an RM during an actual, lengthy, recovery effort at the plant. Although a General Emergency had been declared at about 1030 hours, the initial media briefing did not begin until about 1100 hours. This was essentially an orientation briefing. The first detailed briefing regarding onsite scenario events did not take place until approximately two hours after the General Emergency declaration. Additional briefings by the technical spokesperson occurred at about 1330 and 1500 hours. In general, the inspector concluded that the spokesperson had some difficulty in describing in-plant conditions without resorting to acronyms apparently unfamiliar to many in the audience. He could also have improved his briefings by additional normal and emergency functional descriptions of relevant plant systems. The inspector did not, however, perceive that the spokesperson was being evasive or untruthful in his explanations and responses to media questions.

Based on the above findings, the following items should be considered for improvement:

- . The initial press briefing on onsite activities should be conducted in a more timely manner.
- . The technical spokesperson should volunteer additional descriptive information on affected plant systems and should avoid using acronyms if he perceives that the media has difficulty in understanding his briefings.
- . If prolonged recovery operations are anticipated onsite, a Recovery Manager should be utilized in that capacity rather than as JPIC technical spokesperson.

6. Exit Interviews

The inspectors met with licensee representatives denoted in Paragraph 1 on March 22, 1984, to discuss the results of the exercise, on March 23, 1984, to discuss the status of Open Items related to emergency preparedness, and on May 11, 1984, to discuss the results of the assembly/accountability and evacuation drill and the re-inspection of Open Items. The inspectors summarized the scope and findings of the inspection, namely that all Open Items identified during the Emergency Preparedness Implementation Appraisal had been closed. The licensee agreed to respond to the improvement items identified in the Appendix.

Attachment: Exercise Scenario Narrative Survey

A. NARRATIVE SUMMARY

This exercise scenario is based upon a Loss-Of-Coolant Accident (LOCA) coincident with a degraded Emergency Core Cooling System (ECCS) leading to fuel failure and a breach of containment integrity.

Initial conditions establish that the unit is operating at full power with all plant parameters being normal and stable. Several plant components are undergoing scheduled maintenance.

The initiating event for the scenario occurs when a maintenance electrician working inside Residual Heat Removal (RHR) Pump B Room, slips and falls breaking his leg and tearing his protective clothing. Subsequent examination of the injury confirms that the individual is contaminated and will require immediate medical attention. At this time, an Unusual Event is declared and the individual is prepared for transport to Callaway Memorial Hospital.

At approximately the same time that the injured individual is transported offsite, Control Room personnel receive a call from a Health Physics technician that several of the area radiation monitors in the Radwaste Building have started alarming and are trending upward. He also reports that one of the gas decay tanks may have ruptured. Personnel are evacuated from the immediate area. Additionally, an Alert is declared based on an increase in general area radiation or airborne levels within the Radwaste Building by a factor of greater than 1000.

Later, while maintenance personnel are preparing to reenter the Radwaste Building to affect repairs to the broken line on Gas Decay Tank #6, Control Room personnel receive indication of significant Reactor Coolant System (RCS) leakage. Operation of Centrifugal Charging Pump A is initiated to replace the lost RCS inventory.

Within minutes of the initial indications of a leak in the RCS, the leak rate dramatically increases causing pressurizer level to rapidly decrease and the unit to trip. As a result of the large break LOCA, a Site Emergency is declared.

Subsequent failure of the RHR Pump A causes RCS inventory to drop off which eventually leads to uncovering of the core and fuel failure. Estimated repair time for the RHR pump is 1-2 hours. Although a radiological release to the environment has not occurred, Callaway County officials should consider a precautionary evacuation or sheltering in Sectors E, F and G due to current and projected wind conditions.

Conditions further degrade when failure of Containment Spray Pump A occurs and operators receive positive indication of fuel failure from Containment Radiation Monitors. Estimated repair time for the Containment Spray Pump is 6-8 hours. At this time, a General Emergency is declared based on the loss of 2 of 3 fission product barriers with a potential for the loss of the 3rd barrier.

Without adequate cooling, core decay heat builds up causing hydrogen gas to be generated. A hydrogen burn and concurrent pressure spike cause the Containment Purge Exhaust Header penetration seal to fail and forces

Auxiliary Building Ventilation Isolation Damper GL-D053 to partially open providing an unfiltered atmospheric release path in addition to the Fuel Building Emergency Ventilation discharge.

Auxiliary Building area and process radiation monitors and the unit vent radiation monitors alarm and trend upward providing positive indication of a major release. At this point in the scenario, county officials should implement, if not already implemented, protective actions for the affected sectors (E, F and G).

As the release continues, plant maintenance personnel restore to service some of the previously inoperable safety equipment. Eventually, Containment Spray reduces containment pressure to atmospheric levels, stopping the leakage through the penetration seal and terminating the release.

B. INITIAL CONDITIONS

The unit has been operating at full power with the rod control in "manual" mode. The plant has been at 90% power or above for the last 15 days. All plant parameters are normal and stable.

Component Cooling Water Train B Heat Exchanger is tagged out for repair of a defective relief valve (EG-V049) which has been leaking excessively. The heat exchanger end cover has been removed and a tube sheet inspection is in progress. Maintenance is presently 48 hours into the 72 hour Technical Specification limiting condition.

Gaseous Decay Tank #6 is online and being filled with gaseous waste. Additionally, maintenance personnel are repairing a broken weld on a pipe hanger in the Gas Decay Tank Room.

A maintenance electrician is completing some work on a junction box in RHR Pump B Room.

Auxiliary Building Ventilation System Damper GL-D053 is closed and GL-D052 has been removed from service for repair. The service entrance in the ductwork is open and a maintenance team is inspecting the damper shaft to determine why it has bound up in mid-stream. The Fuel Building Ventilation System is in operation to maintain the normal Auxiliary Building atmosphere.

Containment Shutdown Purge Exhaust Plenum Isolation Damper GT-D012 is tagged out for maintenance of the valve control operator which has been malfunctioning. Containment Spray Train B Isolation Valve EN-HV-12 is tagged out for replacement of the valve. The valve is jammed closed and the motor is burned out because of a motor breaker failure. In addition, Containment Spray Cross-Connect Isolation Valve EN-V025 is tagged out. The valve was leaking excessively and is currently being replaced.

The ERFIS and RRIS computer systems are down for routine maintenance.

Condenser Vacuum Pump A heat exchanger head gasket is being replaced.

The winds are out of the NNW (345°) at 4 miles per hour. It is a cold day with an ambient temperature of 30°F.

C. PLANT EVENT SUMMARY

<u>Time</u>	<u>Message No.</u>	<u>Plant Event Summary</u>
H+00:00 (8:00 AM)	1	Initial conditions established
H+00:15 (8:15 AM)	2	The maintenance electrician inside RHR Pump B Room breaks his leg and becomes contaminated. Shift Supervisor should dispatch a rescue team to assist.
H+00:30+ (8:30+AM)	2C	<u>Contingency Message:</u> The Shift Supervisor should declare an UNUSUAL EVENT, request assistance from Callaway Memorial Hospital, and initiate the appropriate actions per EIP-ZZ-00102.
H+00:40 (8:40 AM)	3SIM	Retrieve SNAP, plant normal at 100% power. Freeze out all balance of plant signals: [FRZ UNS] Set ambient air conditions: [CND1 = 30.0] [CND2 = 28.0] Suppress Radiation Monitor List.
H+00:50 (8:50 AM)	4	A connection on the Gas Decay Tank #6 ruptures. Area radiation monitors in the vicinity of the Gas Decay Tank room begin to alarm locally and in the main Control Room. The Radwaste Building HVAC radiation monitor also begins to alarm.
H+00:55 (8:55 AM)	5	The Health Physics technician who was accompanying the pipe support repair team in the Gas Decay Tank room has determined that a line to Gas Decay Tank #6 has ruptured. His survey instruments have confirmed the local area radiation monitor readouts.
H+01:10+ (9:10+AM)	5C	<u>Contingency Message:</u> The Shift Supervisor should declare an ALERT, initiate the appropriate actions per Procedure EIP-ZZ-00102, and initiate activation of the Technical Support Center (TSC) and Operational Support Center (OSC).
H+01:45 (9:45 AM) (SIM TIME 000 Sec)	6SIM	Start Simulator program to ramp up the mismatch between Letdown and Charging flows to 50 gpm. Ramp is from 0 to 50 gpm over a 300 second time frame. [RCS6, 50, 300, 0]
H+01:49+ (9:49+AM)	7	Annunciators received in the Control Room include: 59-D, CPIS 63-A, CRVIS

Time	Message No.	Plant Event Summary
H+01:50 (9:50 AM) (SIM TIME 307 Sec)	8SIM	Start Simulator program for 25% of DBA on the cold leg of one loop. [RCS 5, 25] Annunciators received in the Control Room include: 87-A, PZR PRESS LO RX TRIP (Red) 113-E, UNIT TRIP TURB TRIP (Red) 31-A, NFO39B LOCA SEQ ACTUATED 30-A, NFO39A LOCA SEQ ACTUATED 32-B, PZR 17% HTRS OFF LTDN ISO 32-C, PZR LO LEV DEV 33-C, PZR PRESS LO HTRS ON 33-E, PZR SURGE TEMP LO 34-C, PZR PORV BLOCK 49-C, RHR LOOP 1 FLOW LO 56-A, RCS SATURATE 56-B, RCS < 50 SUBCOOL 58-A, SI 58-B, CISA 59-A, CSAS 59-B, CISB 60-D, CTMT SUMP A/B LEV HI 60-E, CTMT SUMP C/D LEV HI 81-A, TWO/MORE RODS AT BOTTOM 81-B, ROD AT BOTTOM 84-B, OTΔT RX TRIP 86-B, LO FLOW & P7 RX TRIP 88-A, PZR PRESS SI RX TRIP 88-C, STMLINE PRESS SI RX TRIP 120-A, MFP A TRIP 123-A, MFP B TRIP
H+02:00 (10:00 AM) (SIM TIME 907 Sec)	9SIM	Start simulator program speed reduction to half speed. [SIM SPEED SET = 0.5]
H+02:05+ (10:05+AM)	9C	<u>Contingency Message:</u> The Emergency Coordinator should declare a SITE EMERGENCY, initiate the appropriate actions per Procedure EIP-ZZ-00102, and initiate the activation of the Emergency Operations Facility (EOF).

Time	Message No.	Plant Event Summary
H+02:30 (10:30 AM) (SIM TIME 1890 Sec)	10SIM	Return Simulator program to full speed. RHR Pump A malfunctions and flow rate drops to zero. [SIM SPEED SET = 1], [RHR1] <u>Note 1:</u> Simulator operator should take a SNAPSHOT of plant parameters at 1890 seconds [IC = 46, PCNM = 20 psia, TCNM = 153°F]
H+02:30+ (10:30+ AM)	10C	Attempts by operators to cross-connect the Train A RHR equipment to Train B RHR equipment via piping with valves EJ-HV-8716A and EJ-HV-8716B are not successful.
H+02:50 (10:50 AM) (SIM TIME 3060 Sec)	11SIM	Start Simulator program to indicate a loss of Containment Spray Pump A. Investigations will show a ground fault within the motor circuitry. [RHR 6] <u>Note 1:</u> Simulator operator should take a SNAPSHOT of plant parameters at 3300 seconds [IC = 47, PCNM = 18 psia, TCNM = 122°F] <u>Note 2:</u> A GENERAL EMERGENCY may be declared at this time.
H+02:54 (10:54 AM) (SIM TIME 3300 Sec)	12SIM	Start Simulator program speed reduction to half speed. [SIM SPEED SET = 0.5] <u>Note 1:</u> Simulator operator should fail Reactor Coolant Pumps if plant operators restart them. They should, however, be allowed to run for 5 minutes.
H+03:15 + (11:15+AM)	13C	<u>Contingency Message:</u> The Emergency Coordinator should declare a GENERAL EMERGENCY, if not previously done based on positive indication of fuel damage from core exit thermocouple readings and containment radiation monitors. Post Accident Sampling System (PASS) samples will confirm this situation.
H+03:50 (11:50 AM) (SIM TIME 4860 Sec)	14SIM	Simulator operator should take a SNAPSHOT of plant parameters at 4860 sec. [IC=44], [SIM SPEED SET = 1.0]
H+03:52 (11:52 AM)	15	Maintenance personnel complete repairs on RHR Pump A

Time	Message No.	Plant Event Summary
H+03:52 (11:52 AM) (SIM TIME 5200 Sec)	15SIM	Start simulator program to return RHR Pump A to service. [RHR 1]
H+03:55 (11:55 AM) (SIM TIME 5400 Sec)	16SIM	A hydrogen burn and concurrent pressure spike inside Containment damages penetration seal VI160 at elevation 2047 in the Auxiliary Building. The associated pressure forces open Auxiliary Building Ventilation Isolation Damper GL-D053 as indicated on HIS-28 by the damper position lights indicating mid-position. An unfiltered release path is now provided through the Auxiliary Building Ventilation Exhaust line, and the Filtered Fuel Building Emergency Ventilation Exhaust to the environment (damper GL-D052 is open due to previous maintenance). Simulator operator instructions at this time are: [RAMP ACNMA, 8E5, 10, 0] [RAMP ACNMA, 4E5, 10, 0] [RAMP ACNMA, 3E5, 10, 0] Align the dampers and valves in Containment Purge System: [SET RGT D11 = 1.0, RGT D12 = 1.0, RGT D13 = 1.0, RGT H8 = 1.0, RGT H9 = 1.0] [SET RGT H8 = 0.011] partial damper open [GL-D053 shown part open] [SIM SPEED SET = 0.1]
H+03:55 (11:55 AM)	16	Control Room operators receive positive indication of a release from the effluent monitoring system.
H+04:10+ (12:10+ PM)	16C	Control Room operators should observe a pressure spike of 65 psia inside containment on recorders GN-PI-938 and GN-PI-939.
H+06:53 (2:53 PM) (SIM TIME 6677 Sec)	17SIM	Simulator operator should take a SNAPSHOT of plant parameters at 6677 sec. [IC = 43, PCNM = 29 psia, TCNM = 191°F], [SIM SPEED SET = 1.0]
H+06:55 (2:55 PM)	18	Maintenance personnel complete repairs on Containment Spray Pump A.
H+06:55 (2:55 PM) (SIM TIME 6700 Sec)	18SIM	Start Simulator program to return Containment Spray Pump A to service. [RHR 6]

<u>Time</u>	<u>Message No.</u>	<u>Plant Event Summary</u>
H+07:05 (3:05 PM) (SIM TIME 7400 Sec)	19SIM	<p>Simulator operator should take a SNAPSHOT of plant parameters at 7400 sec. [IC = 48, PCNM = 15 psia, TCNM = 174°F].</p> <p>Simulator operator instructions at this time: [SET TCNMWL = 100] [RAMP ACNMA, 1.55E5, 360, 0] [RAMP CCNMRS, 0.01, 240, 0] [RAMP UCNMG, 6.8E7, 240, 0] Ensure that dampers and valves in Containment Purge Exhaust System are aligned as follows: [SET RGT D11 = 1.0, RGT D12 = 1.0, RGT D13 = 1.0, RGT H8 = 1.0, RGT H9 = 1.0] [SET RGT H8 = 0.011] partial damper open [GL-0053 shown part open]</p>
H+07:10 (3:10 PM)	20	Control Room personnel receive indication of effluent monitor readings decreasing significantly.
H+07:25+ (3:25+ PM)	20C	<p>Containment temperatures and pressures have decreased to normal levels. The release has been terminated.</p> <p>NOTE: Offsite Field Monitoring teams should continue to report elevated radiation readings in Sectors E, F and G.</p>
H+10:15 (3:15 PM)	21	It is now three hours later. The radioactive plume has completely dispersed.
H+10:15+ (3:15+PM)	22	As appropriate, long-term recovery/reentry actions should be discussed by the exercise participants.
H+11:00 (4:00 PM)	23	Field Exercise activities are terminated as directed by the Lead Controller.