

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 50-483
License No.: NPF-30
Report No.: 50-483/98-23
Licensee: Union Electric Company
Facility: Callaway Plant
Location: Junction Hwy. CC and Hwy. o
Fulton, Missouri
Dates: October 13-15, 1998
Inspector(s): Gail M. Good, Senior Emergency Preparedness Analyst
Approved By: Blaine Murray, Chief, Plant Support Branch
Attachmer t: Supplemental Information

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EXECUTIVE SUMMARY

Callaway Plant NRC Inspection Report 50-483/98-23

A routine, announced inspection of the operational status of the licensee's emergency preparedness program was conducted. The inspection included the following areas: emergency plan and implementing procedures, training (drills), audits, effectiveness of licensee controls, and followup on one open item.

Plant Support

- In general, effective improvements were made to the emergency plan review and evaluation process. However, drill frequencies were not clearly described in the emergency plan and implementing procedures (Section P3).
- During an unannounced, off-hours exercise, the inspector observed that emergency response facilities were staffed and activated in a timely manner. Emergency classifications, offsite agency notifications, and protective action recommendations were correct and timely. Several opportunities for improvement were identified during the off-hours exercise and rapid-responder drill. During the exercise, wind direction was incorrectly determined in the control room simulator. Problems with offsite agency notifications were identified during the off-hours exercise and a rapid-responder drill. Notification forms were delayed because projected release duration times changed, and forms contained conflicting and confusing information. The emergency operations facility ventilation system was not returned to the proper mode after the off-hours exercise because a checklist was not completed. Self-critical critiques were conducted following the exercise and drill (Section P4).
- The emergency preparedness drill program was unstructured and poorly controlled and documented in the past; however, program shortcomings were recognized and appropriate improvements were planned or in progress. Management has increased its support of the emergency preparedness training program by increasing the number of training drills. Program visibility and credibility have improved (Section P5).
- Program surveillances (audits) were thorough and effective (Section P7.1).
- The emergency preparedness department conscientiously used the suggestion occurrence solution system to document and track issues that needed correction. There were no patterns of longstanding issues (Section P7.2).
- The process for augmenting the emergency response organization was significantly improved by issuing pagers to all emergency response personnel (Section P8).

Report Details

IV. Plant Support

P3 Emergency Preparedness Procedures and Documentation

a. Inspection Scope (82701-02.01)

The inspector reviewed the emergency plan and procedures to determine if they were properly maintained and distributed. The inspector reviewed: (1) the process used to revise the emergency plan and procedures, and (2) selected portions of the emergency plan and implementing procedures for continuity.

b. Observations and Findings

Following a reactive inspection conducted in March 1998 (NRC Report 50-483/98-06), during which two violations were identified for making emergency plan changes that decreased the plan's effectiveness, the licensee revised its process for making emergency plan changes. The process described in Departmental Procedure KDP-ZZ-00400, Revision 6, dated June 23, 1998, was comprehensive and detailed.

The inspector reviewed the procedure change package for EIP-ZZ-00102, "Emergency Implementing Actions," Revision 021. The appropriate forms were completed and the procedure was distributed as required by 10 CFR Part 50, Appendix E.V. The inspector concluded that continued attention to detail was needed in the area of emergency implementing procedure revisions because some change bars were omitted from the revised procedure. The licensee acknowledged this comment.

Section 8.2 of the Callaway Plant Radiological Emergency Response Plan, Revision 21, and Emergency Implementing Procedure EIP-ZZ-A0020, "Maintaining Emergency Preparedness," Revision 015, were reviewed for consistency concerning emergency preparedness drills. The inspector found several discrepancies. Examples included: (1) the emergency plan did not specify communication drill(s) frequency, (2) where frequencies were specified, the corresponding frequencies were not always specified in the emergency implementing procedure, and (3) the emergency implementing procedure only referenced the surveillance program. The examples represented instances where the emergency plan was incomplete, the emergency plan and procedure were inconsistent, or the frequency of drills could be changed via the surveillance program without an evaluation of its effect on the emergency plan (implementation of the drill program is discussed in Section P5 below). The licensee acknowledged the inspector's findings and issued Suggestion Occurrence Solutions 98-3619 and 98-3627 to address the discrepancies. This matter will be reviewed during a future inspection to ensure that the provisions of 10 CFR 50.54(q) and Planning Standard 50.47(b)(14) continue to be met (50-483/98023-01).

c. Conclusions

Effective improvements were made to the emergency plan review and evaluation process. Drill frequencies were not clearly described in the emergency plan and implementing procedures.

P4 Staff Knowledge and Performance in Emergency Preparedness

a. Inspection Scope (82701-02.01)

The inspector observed an unannounced, off-hours exercise on October 13, 1998, and a rapid-responder drill on October 14, 1998. For the off-hours exercise, the inspector observed the performance in the control room (CR) simulator and the emergency operations facility (EOF). The rapid-responder drill was conducted using the CR simulator (staffed by the operations shift crew in training); all emergency response facilities were activated with selected key managers and coordinators. The inspector observed the EOF portion of the rapid-responder drill. The off-hours exercise scenario started at about 6:50 p.m. with an unusual event and escalated to a general emergency. The exercise was terminated at 9:37 p.m. The rapid-responder drill started at about 7:30 a.m. with an alert that escalated to a general emergency. The drill was terminated at 8:53 a.m. The inspector observed the post-exercise/drill critiques.

b. Observations and Findings

Off-hours Exercise

The CR simulator crew quickly recognized and classified emergency conditions (the unusual event and alert). Security personnel were contacted within minutes of the alert declaration to initiate the emergency response organization call-out system to begin emergency response facility activation.

Offsite agency notifications were initiated promptly following the emergency declarations; however, one county failed to acknowledge receipt of the SENTRY electronic notification message for the unusual event. The county was contacted 16 minutes after the event declaration using the backup method (telephone). The licensee agreed that the backup system should have been initiated earlier. Subsequent notifications to the county using the backup system were conducted in a more timely manner.

The health physics technician in the CR simulator who prepared the notification forms incorrectly obtained the meteorological information. The technician averaged the 10, 60, and 90-meter wind directions from both the primary and secondary meteorological towers instead of using the primary tower 10-meter wind direction (preferred sensor). EOF personnel used the correct sensor for subsequent notifications and dose projections. There was a difference of about 15 degrees between the data used by the CR simulator and EOF. The licensee issued Suggestion Occurrence Solution 98-3626 to address this training issue.

The first EOF responder arrived 16 minutes after the alert declaration (12 minutes after pager activation). All rapid responders in the EOF arrived within 30-45 minutes, and the remaining positions arrived within about 60-75 minutes. The licensee reported similar results in the technical support center (TSC) (included operations support center functions).

The EOF was quickly activated after the alert declaration (within about 1 hour). There was a slight delay due to portal monitor warm-up. The dose assessment and offsite agency notification responsibilities were transferred to the EOF prior to full facility activation. The transfer was conducted in a systematic fashion.

The TSC properly classified the site emergency condition; however, there were some complications encountered while preparing the corresponding offsite agency notification form. The form was ready for transmission when the projected release duration increased to 4 hours (the time needed to cool down and depressurize the plant following a steam generator tube rupture). A default release duration time of 1 hour had been used. Since the projected released duration changed, the dose assessment staff recalculated the offsite dose projections. The notification form was delayed while these discussions and activities occurred.

The increase in release duration time caused the offsite doses to exceed the protective action guides at the site boundary (a general emergency condition). The form was revised to include the increased projected release duration and offsite doses. Although the site emergency notification was made within 15 minutes, and the event was promptly reclassified as a general emergency (with corresponding offsite protective action recommendations on the notification), the fact that the site emergency form included conflicting information (a site emergency with dose projections corresponding to a general emergency) could have been confusing to those who received the form.

After a similar situation occurred during the rapid-responder drill conducted the next morning (i.e., a notification was delayed because the projected release duration changed to 4 hours), the inspector expressed concerns about the existing default release duration time. In response, the licensee issued Suggestion Occurrence Solution 98-3628 to evaluate the default values used for dose projections.

A generally self-critical critique was conducted following the exercise. Good issues involving field team control, communications, and equipment were identified.

Rapid-Responder Drill

Key EOF managers and coordinators quickly responded to the EOF following the alert declaration. The EOF assumed responsibilities for dose assessment and notifications from the CR about the time the site emergency was declared (8:22 a.m.). The conditions were upgraded to a general emergency before the EOF transmitted the site emergency notification form. Due to communication difficulties, some of which were artificially induced because the site public address system was not being used for the drill, the EOF was confused about the site emergency declaration time. As a result, the site emergency declaration time was entered, reviewed, approved, and transmitted as

8:30 a.m., instead of 8:22 a.m. The general emergency declaration time was correctly shown as 8:28 a.m. Due to the confusion, the notification forms indicated that the site emergency was declared before the general emergency. No one in the EOF recognized or questioned the declaration time inconsistencies. Issuing conflicting information would have been confusing to offsite authorities. As discussed above, the site emergency notification was delayed because the projected release duration changed.

One other piece of information was not questioned in the EOF. The release start time provided by the CR simulator was before the alert was declared and before the release started. The release start time entered on the notification form and used for offsite dose projections was 7:40 a.m.; however, the release did not start until about 8:20 a.m. The initiating event (an alert) was declared at 7:54 a.m. Several individuals were aware of the time but did not question its validity.

While preparing the EOF for activation, a participant attempted to transfer the ventilation system to the recirculation mode but found that the system had already been transferred. The system had not been returned to the normal mode following the off-hours exercise conducted the previous night. The licensee stated that there was a checklist to restore emergency response facilities following drills and exercises; however, the checklist was not completed after the exercise because of the late hour (terminated at 9:37 p.m.). In response, the licensee issued Suggestion Occurrence Solution 98-3622.

A thorough critique was conducted following the rapid-responder drill. Participants and controllers openly and constructively discussed critical aspects of participant performance and drill conduct.

c. Conclusions

Emergency response facilities were staffed and activated in a timely manner during an unannounced, off-hours exercise. Emergency classifications, offsite agency notifications, and protective action recommendations were correct and timely. Several opportunities for improvement were identified during the off-hours exercise and rapid-responder drill. During the exercise, wind direction was incorrectly determined in the control room simulator. Problems with offsite agency notifications were identified during the off-hours exercise and a rapid-responder drill. Notification forms were delayed because projected release duration times changed, and forms contained conflicting and confusingly information. The EOF ventilation system was not returned to the proper mode after the off-hours exercise because a checklist was not completed. Self-critical critiques were conducted following the exercise and drill.

P5 Staff Training and Qualification in Emergency Preparedness

a. Inspection Scope (82701-02.04)

The inspector verified that required specialty drills were conducted. Records for the following drills were reviewed: health physics, radiological monitoring, post-accident

sampling system, periodic integrated training, communications, fire protection, and first-aid.

b. Observations and Findings

The inspector found that the drill program was not well structured or documented in the past but that improvements were planned or in progress. Several specific examples were identified. First, Suggestion Occurrence Solution 98-3393 was issued on September 10, 1998, documenting problems with the frequency of semi-annual health physics drills (the frequency ranged from 7-9 months). Second, the licensee indicated that documentation for past health physics and radiological monitoring drills may not be sufficient to show that required sub-elements were accomplished (critiques, environmental sample collection, etc.). Third, documentation for some drills consisted only of suggestion occurrence solutions (to document problems). It was not clear what documentation was or would be prepared if there were no problems identified. Finally, communications drills were conducted as equipment tests and did not include the aspect of understanding message content as specified in NUREG-0654, Evaluation Criterion N.2.a. Fire protection and first-aid drills were conducted and documented in a more methodical, repeatable, and auditable fashion.

In addition to the suggestion occurrence solutions that had already been issued, as a result of this inspection, the licensee issued Suggestion Occurrence Solutions 98-3619 and 98-3625 to address the aforementioned program shortcomings. The licensee also explained that efforts were in progress to identify evaluation criteria for specific emergency response organization positions and functions. The licensee planned to incorporate the criteria into the drill program. Other improvements were made to drill and exercise objectives to make them more specific. The draft drill package for a recently conducted health physics drill was reviewed. Although the draft report was more complete than previous documentation, there was still room for improvement. Drill conduct and documentation will be reviewed in a future inspection to ensure that emergency plan requirements are being met and critical drill sub-elements are captured (50-483/98023-02).

The inspector noted an increase in management support for the emergency preparedness program. Since June 1998, 13 rapid-responder, 2 integrated team, and 2 emergency response organization call-out drills were conducted. The efforts to improve performance and response times stimulated the emergency response organization and increased program visibility and credibility. However, the results of the rapid-responder drill discussed in Section P4 above indicated there was still room for improvement in drill performance and control.

c. Conclusions

The emergency preparedness drill program was unstructured and poorly controlled and documented in the past; however, program shortcomings were recognized and appropriate improvements were planned or in progress. Management has increased its support of the emergency preparedness training program by increasing the number of training drills. Program visibility and credibility have improved.

P7 Quality Assurance in Emergency Preparedness Activities

P7.1 Independent and Internal Reviews and Audits (82701-02.05)

a. Inspection Scope

The inspector examined the latest emergency preparedness program surveillance reports prepared by the quality assurance department to determine compliance with NRC requirements and licensee commitments.

b. Observations and Findings

Audits (surveillances) of the emergency preparedness program were conducted in accordance with 10 CFR 50.54(t). The audits were performed at least every 12 months by quality assurance department personnel who had no direct responsibility for program implementation. The lead engineer had received "in-house" emergency response organization training and nuclear industry emergency preparedness training. Other team members had health physics and engineering expertise. No significant problems were identified in either the 1996 or 1997 surveillances, although several good suggestion occurrence solutions were identified during those periods. The surveillances tended to focus on drill performance. The most significant occurrence identified during the 1997 year-end surveillance involved a delay in making notifications from the EOF. Quality assurance also identified weaknesses in drill documentation and inconsistencies between the final safety analysis report and radiological emergency response plan that prompted additional corrective actions. A thorough and meaningful evaluation of the offsite interface was performed. The results of the evaluation were appropriately provided to state and local authorities.

c. Conclusions

Program surveillances were thorough and effective.

P7.2 Effectiveness of Licensee Controls (82701-02.06)

a. Inspection Scope

The inspector reviewed an independent program assessment and emergency preparedness tracking items on the suggestion occurrence solution system.

b. Observations and Findings

Following the emergency preparedness reactive inspection conducted in March 1998 (NRC Report 50-483/98-06), the licensee contracted an outside consultant to conduct an independent review of the emergency preparedness program. The review focused on the emergency response organization augmentation process and the radiological emergency response plan review process. The report identified many good ways in which the organizational effectiveness could be improved.

As a result of a recent quality assurance surveillance, emergency preparedness corrective action documents were moved from a department-level tracking system to the site-wide tracking system (the suggestion occurrence solution system). A historical review of the system showed a significant increase in the number of issues placed on the system in 1998. Issues placed on the system were being closed in a timely manner. There were no patterns of longstanding issues.

c. Conclusions

The emergency preparedness department conscientiously used the suggestion occurrence solution system to document and track issues that needed correction. There were no patterns of longstanding issues.

P8 Miscellaneous Emergency Preparedness Issues

(Closed) IFI 50-483/95003-03: acceptable augmentation response times. The need to followup on actions to resolve problems with augmentation response times was identified during an NRC inspection in January 1995. As discussed in NRC Report 50-483/98-14 dated July 17, 1998, the licensee implemented a number of hardware and process changes to improve the response times. The licensee's actions had mixed results.

Since the July 1998 inspection, a decision was made to issue pagers to all emergency response organization personnel. The system had been in place since September 1, 1998. Hardware tests were run prior to system implementation, and subsequent tests were run on September 24 and 29, 1998, to verify coverage and user familiarity. Test messages were being run weekly to announce the change in the duty response team. Two off-hours call-out tests were conducted on October 8 and 13, 1998. Reasonable acceptance criteria were established to measure the success of the augmentation process during call-out tests: 90 percent of rapid responders within 30-45 minutes/remaining within 60 minutes, and 80 percent of other positions within 60-75 minutes. The acceptance criteria were not met during the October 8, 1998, test. Three TSC center rapid responders were late (3-16 minutes) because a local highway was flooded and alternate routes had to be used. Suggestion Occurrence Solution 98-3595 was appropriately issued to evaluate corrective actions that could be implemented during periods of known flooding.

As discussed in Section P4 above, positive results were achieved during the October 13, 1998, unannounced, off-hours exercise. The augmentation process was activated promptly and acceptance criteria were met. All of the rapid responders arrived within 30-45 minutes, and all of the remaining positions arrived within about 60-75 minutes.

V. Management Meetings

X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on October 15, 1998. The licensee acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Affolter, Plant Manager
J. Blosser, Manager, Operations Support
M. Evans, Superintendent, Emergency Preparedness
J. Laux, Manager, Quality Assurance
D. Neterer, Assistant Superintendent, Operations
J. Peevy, Manager, Emergency Preparedness
G. Pendergraff, Engineering Evaluator
G. Randolph, Vice President and Chief Nuclear Officer
M. Reidmeyer, Engineer, Quality Assurance/Regulatory Support

NRC

D. Passehl, Senior Resident Inspector

LIST OF INSPECTION PROCEDURES USED

82701 Operational Status of the Emergency Preparedness Program
92904 Followup - Plant Support

LIST OF ITEMS OPENED AND CLOSED

Opened

98023-01	IFI	Verify that drill frequencies are specified in the emergency plan and implementing procedures (Section P3)
98023-02	IFI	Verify that drill documentation meets emergency plan requirements and captures critical sub-elements (Section P5)

Closed

95003-03	IFI	Acceptable staff augmentation response times (Section P8)
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LIST OF DOCUMENTS REVIEWED

Emergency Implementing Procedures

EIP-ZZ-00102	Emergency Implementing Actions	Revision 021
EIP-ZZ-A0020	Maintaining Emergency Preparedness	Revision 015

Other Procedures

KDP-ZZ-00400	Emergency Preparedness Radiological Emergency Response Plan Evaluations	Revision 006
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Other Documents

Callaway Plant, Radiological Emergency Response Plan, Revision 21

Suggestion Occurrence Solutions: 96-1830, 97-0820, 97-0833, 97-0847, 98-2866, 98-2944, 98-3393, 98-3595, 98-3619, 98-3622, 98-3625, 98-3626, 98-3627, 98-3628, and status lists

Final Report - Independent Review for the Ameren UE Callaway Plant, Bartlett Nuclear, Inc., April 29 through May 30, 1998

Surveillance Reports: SP96-099, SP97-061, SP98-007, SP98-014, SP98-051, SP98-066, SP98-073, SP98-075, SP98-081, SP98-082, SP98-093

Surveillance Task Sheets: S623191, S624685

Quality Assurance Department Audit Report AP98-C06

Fire Brigade Planning and Authorization Drill Nos. 98-005 and 98-006

Fire Brigade and Medical Emergency Response Team Drill Summary 98-002

Health Physics Drill Package, October 8, 1998

Emergency Preparedness Status Presentation, dated October 12, 1998

Integrated Drill Packages: August 31 and September 30, 1998