

NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/93019(DRSS)

Docket No. 50-483

License No. NPF-30

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

Facility Name: Callaway Nuclear Power Plant

Inspection At: Callaway Site, Steedman, MO

Inspection Conducted: November 29 through December 1, 1993

Inspectors: T. Reidinger 12/7/93
T. Reidinger Date

J.W. McCormick-Barger for 12/8/93
R. Jickling Date

J.W. McCormick-Barger for 12/8/93
J. Foster Date

Approved By: J.W. McCormick-Barger 12/8/93
J. W. McCormick-Barger, Chief Date
Radiological Programs Section 1

Inspection Summary

Inspection on November 29 through December 1, 1993 (Report No. 50-483/93019 (DRSS))

Areas Inspected: A regional initiative inspection was performed involving the use of the control room simulator in evaluating emergency response personnel knowledge and performance of duties (IP 82701). The inspection involved three NRC inspectors.

Results: This inspection focussed on shift crew emergency preparedness performance using the control room simulator. During walkthrough evaluations, the performance of three control room crews was excellent in responding to a challenging scenario with respect to operational activities and emergency responses. Proficiencies were observed in the following areas: emergency classifications; notifications; emergency plan implementing procedures (EIPs); dose projections; and onsite and offsite protective action decision making. No violations were identified.

DETAILS

1. Persons Contacted

G. Randolph, Vice President, Nuclear Operations
J. Laux, Manager, Quality Assurance
M. Stiller, Manager, Nuclear Services and Emergency Preparedness
M. Evans, Superintendent, Health Physics
B. Jessup, Superintendent (Acting), Training
G. Hamilton, Supervising Engineer, Quality Assurance
A. White, Supervisor, Emergency Planning
J. Barbour, Quality Assurance Engineer
S. Halverson, Senior Training Supervisor
M. Taylor, Assistant Manager, Work Control
D. Young, Operations Superintendent
J. Damp, Operating Supervisor
G. Hughes, Operating Supervisor
M. Hicks, Operating Supervisor
K. Gross, Emergency Planner
D. Lewis, Administrator Nuclear Affairs

The above licensee staff attended the exit interview on December 1, 1993. The inspectors also contacted other licensee personnel during the inspection.

2. Background

As a regional initiative, the inspectors conducted a series of walkthroughs on the plant specific control room simulator to evaluate knowledge and abilities of shift personnel assigned emergency response duties in the control room and the plant. The scenario used in the evaluations was developed by the licensee to determine whether the control room teams were able to classify events accurately, perform the required notifications in a timely manner, perform offsite dose assessments, and make adequate protective action recommendations. The licensee voluntarily agreed to participate in this inspection effort.

3. Simulator Walkthrough Evaluation (IP 82701)

The inspectors observed three operating crews during the walkthroughs using the control room simulator in the dynamic mode. The scenario consisted of a sequence of events requiring an escalation of emergency classifications, culminating in a General Emergency. A narrative description of the scenario is contained in attachment 1 to this report. Each walkthrough lasted approximately two hours. During the walkthroughs, the inspectors were able to observe the interaction of the crews to verify that their authorities and responsibilities were clearly defined and understood. The walkthroughs also allowed the evaluation of the crews' abilities to assess and classify accident conditions, perform dose assessments, develop protective action recommendations, and make timely and complete notifications to offsite authorities. The simulator was considered a highly effective tool for evaluating crew emergency response capabilities.

Each crew consisted of a shift supervisor (SS), control room supervisor, shift technical advisor, health physics supervisor, health physics technician, two reactor operators and two equipment operators. The equipment operators were called into the control room during the emergency to perform as shift communicators.

Operationally, the crews responded with an excellent performance to a challenging scenario. Extensive use of operating procedures, abnormal procedures, Technical Specifications, and Emergency Plan Implementing procedures (EPIPs) was observed. Communications were excellent, information was provided to plant personnel on current plant status and projected radiation hazard areas.

Command and control by the SSs (emergency coordinators) was observed to be inconsistent. In some instances, the SSs' coordination of activities in the control room during the exercise was less than desirable. The SSs would focus on the completion of the required emergency notification forms while perfunctorily providing overall supervisory control of the crew executing the emergency operating procedures (EOPs). As a result, the control room supervisor (CRS) had to frequently stop and consult with the SS either for further directions in mitigating the emergency or for acknowledgement of significant changes in plant status prior to continuing EOP steps. Abnormal and emergency operating procedures were properly executed to mitigate the numerous malfunctions and major transients in the scenario. Although, the occasional lapse in overall supervision did not have an impact during this exercise, it potentially could allow the CRS to make an incorrect mitigation decision without proper authorization from the SS during an actual plant emergency.

Although the timeliness of emergency declarations and notifications were in accordance with the licensee EPIPs, a slight delay was noted in a timely notification of onsite personnel. Two SSs concentrated on completing the notification forms, after recognizing the applicable emergency action level (EAL) and emergency classification rather than first notifying onsite personnel of the emergency classification. Once completed, notification forms were then submitted to the shift communicators responsible for offsite notifications and onsite personnel were informed of the classification. The delay in notifying onsite personnel may potentially impact the safety of the onsite staff and unnecessarily impede the onsite response effort.

The crews were proficient in assessing the offsite consequences of a release and initiating onsite protective actions. Additionally, the crews properly formulated offsite protective action recommendations. The operating crews worked well as a group in a coordinated manner during the exercise.

All three crews responded promptly to a rapidly moving scenario. They correctly classified various emergency conditions, identified proper protective actions to address plant radiation hazards, and addressed proper protective actions offsite through accurate dose assessments. Overall, the crews performance was excellent in demonstrating the

capability to effectively implement the emergency plan.

No violations or deviations were identified.

4. Exit Interview

The inspectors held an exit interview on December 1, 1993, with those licensee representatives listed in section 2 to present and discuss the preliminary inspection findings. The licensee indicated that none of the matters discussed were proprietary in nature.

Attachment: Scenario Summary

RERP SHIFT CREW DRILLS

INITIAL CONDITIONS

- Time of Day - 0700 Sunday Morning
- Weather Conditions - Wind 4m/sec from South
19°C - Unseasonably Warm
Partly Cloudy
- Plant Status - 100% Reactor/Turbine Power
On-line for 30 days
EFPD is 75
- Equipment Status - 'B' CCP OOS
RRIS Dose Assessment Calculation Functions
are Inoperable
- EDO - Per attached duty roster
- RM - Per attached duty roster
- Shift Manning - (1) SS (2) I&C Techs
(1) CRS (2) Mechanics
(1) Field OS (2) Electricians
(2) RO's
(5) EO's Normal Security Complement
- (1) HP Supervisor
(1) Chemistry Tech
(2) HP Techs
(2) HP Helpers
(1) Radwaste Tech

Sequence of Events

Scenario Time	Action
H - 00:30	Establish initial conditions.
H + 00:00	Watch relief/turnover.
H + 00:10	Chemistry reports that RCS Dose Equivalent I-131 activity is 326 $\mu\text{ci/gm}$.
~H + 00:11	Crew should commence plant shutdown as required by T/S 3.4.8 action a.
~H + 00:25	The Shift Supervisor should declare an Alert based on EAL 1D and activate the On-Site Emergency Organization.
~H + 00:32	Callout of the On-Site Organization should commence.
H + 00:35	Indications of excessive RCS leakage occur. The crew should respond to the leak in accordance with OTO-BB-00003 and appropriate emergency procedures. A plant trip and safety injection will occur.
~H + 00:40	Notifications to State and Local Agencies should be completed. Callout of the On-Site Emergency Organization should be completed.
~H + 00:50	The Emergency Coordinator should declare a Site Emergency based on EAL 2E, LOCA Greater Than Available Charging Capacity, and activate all emergency organizations.
~H + 00:57	Callout of the EOF Emergency Organization should commence.
H + 01:00	Chemistry reports that RCS activity has increased to 1236 $\mu\text{ci/gm}$ Dose Equivalent I-131.
H + 01:02	Vital bus NB01 trips on fault resulting in a loss of all 'A' train ECCS components.

Sequence of Events

Scenario Time	Action
~H + 01:05	Notifications to State and Local Agencies should be completed. Callout of the EOF Organization should be completed.
~H + 01:17	The Emergency Coordinator should declare a General Emergency based on EAL 2G, Small or Large LOCA with Failure of ECCS Leading to Core Degradation, and make the immediate PAR of shelter two mile radius and 5 miles downwind.
H + 01:20	RCS leakage increases to 1000 gpm. A spare penetration in the South Piping Pen Room ruptures resulting in a release of radioactivity to the Aux Bldg. and the atmosphere through the Unit Vent.
~H + 01:32	Notifications to State and Local Agencies should be completed.
~H + 01:35	Subsequent protective action recommendations of evacuation 2 mile radius and shelter 5 miles downwind should be made based on plant conditions.
~H + 01:50	Notifications to State and Local Agencies should be completed.