DMB

JUL 16 1984

Docket No. 50-483

Union Electric Company
ATTN: Mr. Donald F. Schnell
Vice President - Nuclear
Post Office Box 149 - Mail Code 400
St. Louis, MO 63166

Gentlemen:

We have received the attached Federal Emergency Management Agency (FEMA) letter dated June 26, 1984, and associated exercise evaluation on the offsite emergency preparedness exercise conducted on March 21, 1984, and the April 19, 1984 remedial exercise of the Alert and Notification System for the State of Missouri and the Counties of Callaway, Gasconade, Montgomery, and Osage. The exercise evaluation lists several recommendations (which are referred to in the FEMA exercise report as deficiencies other than those which would lead to a negative finding, e.g., those not affecting public health and safety) regarding the offsite emergency response plans for the area around the Callaway Nuclear Power Plant. The evaluation also indicates that for the two deficiencies which were identified that would result in a negative finding, the remedial exercise on April 19, 1984, demonstrated that these deficiencies had been satisfactorily corrected.

The final FEMA findings with respect to the status of plans and preparedness in the vicinity of your facility have not been received at this point in time; however, based on the performance of the offsite agencies during the exercise and remedial exercise, FEMA Region VII stated that there is reasonable assurance that, in the event of an actual emergency, appropriate measures can and will be taken to protect the health and safety of the public.

We fully recognize that the recommendations to be implemented may involve actions by other parties and political institutions which are not under your direct control. Nonetheless, we would expect the subject of offsite preparedness for the area around the Callaway Nuclear Power Plant to be addressed by you as well as others.

IE35
1/1

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and the enclosures will be placed in the NRC's Public Document Room.

Sincerely,

C. J. Paperiello, Chief
Emergency Preparedness and
Radiological Protection Branch

Attachments: As stated

cc w/attachs:
W. H. Weber, Manager, Nuclear
Construction
S. E. Miltenberger, Plant Manager
R. L. Powers, Assistant Manager
Quality Assurance
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Region IV
K. Drey
Chris R. Rogers, P.E.
Utility Division, Missouri
Public Service Commission
M. Carroll, FEMA, Region VII

RIII	RIII	RIII	RIII
Patterson/ld	Phillips	Forney	Paperiello
07/13/84			

Federal Emergency Management Agency

Washington, D.C. 20472

JUN 26 1984

MEMORANDUM FOR: Edward L. Jordan
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission

FROM: Richard W. Krimm
Assistant Associate Director
Office of Natural and Technological
Hazards Programs

SUBJECT: Exercise Report of the March 21, 1984, Joint Exercise of the Offsite Radiological Emergency Preparedness Plans for the Callaway Nuclear Power Plant

Attached are two copies of the Exercise Report of the March 21, 1984, full participation joint exercise of the offsite radiological emergency preparedness plans for the Callaway Nuclear Power Plant. Also, in accordance with 44 CFR 350.9(c)(5), the report contains an evaluation of the April 19, 1984, remedial exercise to correct deficiencies observed in the March 21, 1984, exercise of the alert and notification system. The State of Missouri and the Counties of Callaway, Gasconade, Montgomery, and Osage participated in the exercise. The May 8, 1984, report was prepared by Region VII of the Federal Emergency Management Agency (FEMA) and reflects the comments resulting from the Regional Assistance Committee review.

FEMA Region VII staff has furnished a copy of this report to the State of Missouri and will request a schedule of actions for correction of deficiencies. As soon as we receive and analyze the State's response, we will send you our determination.

If you have any questions, please contact Mr. Robert W. Wilkerson, Chief, Technological Hazards Division, at 287-0200.

Attachments
As Stated

Federal Emergency Management Agency

Region VII 911 Walnut Street Kansas City, Missouri 64106

MAY 14 1984

MEMORANDUM FOR: Samuel Speck, Associate Director
State & Local Programs & Support

FROM: Patrick M. Breheny, Regional Director - FEMA Region VII

SUBJECT: Submission of the Exercise Report for the Evaluation of the Implementation of State and Local Radiological Emergency Response Plans for the Callaway Nuclear Power Plant.

In compliance with 44 CFR Part 350 and your memo of August 5, 1983, I hereby submit three copies of the Exercise Report, dated May 8, 1984, for the evaluation of the implementation of State and Local Radiological Emergency Response Plans for the Callaway Nuclear Power Plant exercise, March 21, 1984, and the April 19, 1984 Remedial Exercise of the Alert and Notification System for your review and approval.

A Table of Contents is provided to assist in your review. Further documentation and related materials are retained and may be requested from FEMA Region VII, which is the office of record for this exercise evaluation.

In my opinion, there is reasonable assurance that, in the event of an actual emergency, appropriate measures can and will be taken to protect the health and safety of the public.

#197

EXERCISE EVALUATION

March 21, 1984, Exercise of the Radiological Emergency Response Plans and the April 19, 1984, Remedial Exercise of the Alert and Notification System for the State of Missouri, and the Counties of Callaway, Gasconade, Montgomery, and Osage for the Union Electric Company's CALLAWAY NUCLEAR POWER PLANT near Fulton, Callaway County, Missouri

May 8, 1984

Federal Emergency Management Agency

Region VII

PATRICK J. BREHENY
Regional Director

911 Walnut Street
Kansas City, MO 64106

EXERCISE EVALUATION

March 21, 1984, Exercise of the Radiological Emergency Response Plans and the April 19, 1984, Remedial Exercise of the Alert and Notification System for the State of Missouri, and the Counties of Callaway, Gasconade, Montgomery, and Osage for the Union Electric Company's CALLAWAY NUCLEAR POWER PLANT near Fulton, Callaway County, Missouri

May 8, 1984

Federal Emergency Management Agency

Region VII

PATRICK J. BREHENY
Regional Director

911 Walnut Street
Kansas City, MO 64106

EXERCISE EVALUATION OF THE IMPLEMENTATION OF STATE AND LOCAL RADIOLOGICAL EMERGENCY RESPONSE PLANS

CONDUCTED MARCH 21, 1984

and the

REMEDIAL EXERCISE EVALUATION OF STATE AND LOCAL PUBLIC ALERT AND NOTIFICATION PROCEDURES

CONDUCTED APRIL 19, 1984

for the

CALLAWAY NUCLEAR POWER PLANT

Fulton, Callaway County, Missouri
Union Electric Company, Licensee

PARTICIPANTS:

State of Missouri
County of Callaway
County of Gasconade
County of Montgomery
County of Osage

(All jurisdictions with inhalation pathway responsibilities participated)

prepared by
Federal Emergency Management Agency
Region VII

May 8, 1984

CONTENTS

ABBREVIATIONS AND ACRONYMS

BRH	Missouri Division of Health, Bureau of Radiological Health
CCEOC	Callaway County/Fulton Emergency Operations Center
CNPP	Callaway Nuclear Power Plant
EBS	Emergency Broadcast System
ECC	Emergency Communication Center
ECCS	Emergency Core Coolant System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPD	Emergency Preparedness Director
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
FCP	Forward Command Post
GCEOC	Gascanade County Emergency Operations Center
GOIC	Union Electric Company's General Office Information Center
JPIC	Joint Public Information Center
KI	Potassium Iodide
LOCA	Loss-of-Coolant Accident
MCEOC	Montgomery County Emergency Operations Center
NUREG-0654	Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants (NUREG-0654/FEMA-REP-1, Rev. 1)
OCEOC	Osage County Emergency Operations Center
PIO	Public Information Officer
RAC	Regional Assistance Committee

RCS	Reactor Coolant System
RHR	Residual heat Removal
SEMA	Missouri Department of Public Safety. State Emergency Management Agency
SEOC	State Emergency Operations Center
TLD	Thermoluminescent Dosimeter
UE	Union Electric Company

FORWARD

The results of the exercise of the implementation of the state and local radiological emergency response plans for the Callaway Nuclear Power Plant (CNPP) conducted on March 21, 1984 are presented in Sections 1 through 4 of this report. As a result of deficiencies identified in the areas of public alert and notification, a remedial exercise was scheduled within thirty (30) days to test the state and local procedures to alert the public of an emergency at the CNPP and notify them of appropriate protective actions. The remedial exercise was conducted on April 19, 1984. At that time, the state and local jurisdictions successfully demonstrated their ability to alert the public and effectively provide protective action recommendations. The results of the remedial exercise are presented in the Appendix, Section 5. The successful completion of the remedial exercise for public alerting and notification corrected the related deficiencies observed during the March 21, 1984 exercise.

MISSOURI OPERATIONS

State Emergency Operations Center (SEOC)

The SEOC was activated promptly according to the planned procedures. The Operations Officer was effectively in control, conducted periodic briefings, and consulted with other state agency representatives in decision making. All representatives appeared to be knowledgeable and well-trained. The primary communication link to all locations was by commercial telephone. No inability to reach any location was observed, however a dedicated line with conferencing capabilities would greatly enhance the efficiency of information flow between key locations.

The SEOC participated in public alerting and notification. But the state neglected to instruct the counties to sound the siren system and inform them an EBS message was imminent. For this exercise, SEMA was designated as the clearinghouse for protective action recommendations implemented by the counties and, as such, the primary contact with EBS. This is an intentional departure from the existing planned procedures and was not adequately demonstrated by the state. It should be noted, however, that this was a last minute change which had not been previously drilled to identify problem areas.

Other actions performed by the SEOC included the control of river and rail traffic, and notification of the transient population. The SEOC was prepared to assist the counties in the implementation of ingestion pathway protective actions upon request. There was little recovery/reentry activity played at the SEOC due to a premature exercise termination by the controller.

Emergency Operations Facility (EOF)

The state Forward Command Post was staffed with four representatives from the State Emergency Management Agency (SEMA). The SEMA staff was alerted according to the planned procedures and dispatched to the EOF at the Alert stage. The FCP was activated promptly, and was fully operational within 45 minutes of the Alert designation. The SEMA representatives were well-trained and knowledgeable in their assigned duties. SEMA representatives demonstrated an excellent ability to interact with the Bureau of Radiological Health (BRH) staff while assessing each situation and formulating protective action recommendations. A 24-hour staffing capability was demonstrated by the presentation of a duty roster. Although the staff had been issued permanent-record dosimeters, no direct-reading dosimeters were worn initially. Additional training is indicated to familiarize them with the correct procedures for using and recording dosimeter values.

Overall the facilities at the EOF/FCP were very good. Work space was ample and all necessary visual aids, graphics and maps were clearly visible. It was observed that protective action recommendations were made, in some cases, for smaller units of the subareas described in the public information brochure. It is suggested that some of the subareas be re-examined for possible permanent subdivision. The primary communication system between the FCP with the state and county EOCs was commercial telephone. The telephone system was extremely cumbersome for transmission of protective action recommendations and obtaining followup information regarding what actions were implemented by the respective EOCs. Consideration should be given to replacing the system with a more efficient one, e.g., teleconference line.

The public information function was performed by two representatives from the state. Staffing and mobilization was performed promptly. The PIOs were familiar with the facility and were knowledgeable of their functions and responsibilities. Overall, the facilities were adequate. The utility and state PIOs interacted well and shared resources and information. Information releases were prepared jointly. The releases were understandable and complete, except that the PIOs were not aware of the content of messages prepared for EBS broadcast. Particularly outstanding was the monitoring of TV and radio broadcasts to ensure factual information was reaching the public. This was accomplished by videotaping and recording aired messages at both the EOF and the JPIC. This activity comprised a joint rumor control function between the state and utility, but separate from the public rumor control activities at the JPIC.

Radiological assessment activities were performed by the Missouri Division of Health, Bureau of Radiological Health (BRH). At the EOF, after some delay in dispatch and access, set up was performed promptly. All personnel were aware of their respective responsibilities and demonstrated adequate knowledge. The facilities and visual displays were appropriate and adequate. The state and licensee personnel were stationed next to each other, facilitating an excellent interface. Commercial telephones provided the primary communication between the BRH with the state and county EOCs. Coordination of the field teams was accomplished by radio. The radio system worked well. Dose projections were made using both source term information from the plant and field team data. Dose assessments were made by state personnel using manual techniques. The results agreed well with computer-generated projections made by the licensee. Good interaction and discussions were noted between all parties.

Radiological Monitoring Team

The state field monitoring team was dispatched to the EOF from BRH headquarters following a slight delay in notification. All equipment was checked and tested prior to deployment. All appropriate dosimetry was issued and exposure control procedures were good. The equipment used was adequate,

however a field kit for a second field team was incomplete. This kit should be completed as soon as possible to comply with the planned procedures to outfit and deploy at least two state field teams. Field team members were well-trained and performed their assignments in a professional manner. Radio communication between the field team and the EOF was good. Delays were encountered in reaching some of the prescribed field monitoring locations due to inadequate vehicles to traverse the poor roads. Anti-contamination suits worn by the team were paper. The requirement for team members to get in and out of vehicles and to collect samples may likely cause failure of the paper suits. The use of cloth suits should be considered.

Joint Public Information Center (JPIC)

Activation and set up of the JPIC was prompt and very well organized. The facilities were adequate for the exercise. Good displays and charts were available and used during briefings. The briefings were videotaped for replay and four court reporters provided transcripts of the briefings. Communication resources were demonstrated to be adequate. Hard copy transmissions were made to the EOF, SEOC, and the utility's GOIC. Information kits were provided for the media. SEMA enlisted an independent technical representative to assist their PIO in accurately answering press inquiries and to verify information presented by the utility. The main shortcoming of the briefings was a general lack of information, revealing a need for a systematic procedure for information gathering and synthesis prior to press briefings. The quantity and variety of information sources is too great to gather information informally. JPIC staff should remain at the briefings until each briefing is concluded rather than exiting at the close of their respective segment. A rumor control line was activated and effectively monitored by SEMA operators. However, the rumor control operators were hampered by the same informational problems as the PIOs. The regular briefing system recommended for the PIOs would also benefit the rumor control staff.

Medical Drill

The emergency response capability of the Callaway Memorial Hospital was observed during this exercise. Upon notification, the hospital dispatched an ambulance to the plant and began emergency room preparation for receiving an injured, contaminated patient. Emergency room staff were well-trained in correct procedures and all necessary equipment was available. All participants had proper dosimetry. Precautions were taken to contain contaminated materials and to isolate the room. All procedures were correctly performed to evaluate, stabilize and decontaminate the patient. A call was simulated to the University of Missouri-Medical Center when it was determined that it was necessary to transfer the patient. In the event of a critical injury at the plant, consideration should be given to procedures for transporting a victim by helicopter directly to UM-MC. Samples and swabs were collected for

laboratory analysis. After the patient had been provided for, the ambulance and crew were screened for possible contamination. The exercise adequately tested the ambulance facilities and procedures for transporting contaminated individuals. The adequacy of hospital facilities and procedures for treating injured, contaminated persons was also demonstrated.

COUNTY OPERATIONS

Callaway County/Fulton

The EOC was activated and staffed promptly. Management of emergency operations was effectively demonstrated. All staff displayed adequate knowledge and training and were actively involved in decision making. Facilities at the EOC were generally adequate with the exception of the need for a backup power supply. Communication equipment were generally adequate except that no device was available for the transmission or receipt of hard copy materials. Protective action decisions were carefully made and based on both internal decision-making processes and external recommendations. Recovery/reentry activities were performed well.

A deficiency was observed in the County's ability to perform the public alerting function. Attempts to activate the siren system were unsuccessful. A remedial drill will be scheduled to test the County's ability to activate the siren system in coordination with public instructions to be aired over the EBS network.

Field activities involving access and traffic control were well-coordinated. However, emergency workers in the field require more training regarding radiological exposure control and the location of reception and congregate care centers.

Gasconade County

The EOC was activated and staffed in a timely manner. The center was well managed and the staff appeared to be well trained and knowledgeable. Overall, the facilities were adequate; however, a need exists for a backup power source to assure uninterrupted operation. Communication equipment, although just installed, was adequate except that a hard copy device is needed. Some confusion was observed between the state and county regarding siren activation for public alerting. Broadcast of an initial instructional message to the public was not accomplished within 15 minutes. Additional coordination between the state and county is required to correctly implement public alerting and EBS message broadcasts. In general, protective action decisions were effectively implemented; however, the EOC staff was not aware of the locations or special needs of mobility-impaired residents. Radiological exposure control capabilities were adequately demonstrated. The staff was well-prepared to participate in recovery/reentry activities.

Montgomery County

The EOC was activated promptly and adequately staffed. Effective management of the facility was demonstrated. Briefings were held and staff were involved in decision making. The staff was very well prepared and strong in their activities. The EOC facilities were considered inadequate, however. The facility was small, had inadequate lighting, and lacked a backup power supply. A lack of coordination and communication between the state and county was observed. The EOC never received verification from the state that protective action recommendations were transmitted to the public, although the EOC was equipped with a tone alert radio to monitor the EBS messages. Field activities were effectively simulated by activating traffic control points and the evacuation of onsite individuals. The EOC was aware of the locations and needs of mobility-impaired residents. Recovery and reentry activities were generally performed in an adequate manner.

Osage County

Activation and staffing of the EOC was performed in an orderly and timely manner. Most of the EOC staff were not involved in decision making and received no periodic briefings. The lack of interaction between the decision-makers and staff casts some doubt on the overall effectiveness of the centers management. Facilities at the EOC were adequate, but could be improved. A backup power supply is needed and the accessibility of telephones for staff members should be improved. Communication with the other counties was excellent, but it was poor with the state. No hard copy device was available for the transmission or receipt of messages. The county did an excellent job in general public alerting and instruction, however improvement is needed in alerting handicapped residents and the seasonally high transient populations. In addition, adequate siren volume needs to be verified. Activation of traffic control points was adequate. Radiological exposure control training is required for emergency field workers. The EOC staff also requires additional training in recovery/reentry procedures. FEMA will provide the state with additional recovery/reentry guidance for local dissemination when it becomes available.

1 INTRODUCTION

1.1 EXERCISE BACKGROUND

On December 7, 1979, the President directed the Federal Emergency Management Agency (FEMA) to assume lead responsibility for all off-site nuclear planning and response.

FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

- Taking the lead in off-site emergency planning and in the review and evaluation of radiological emergency response plans developed by state and local governments.

- Determining whether such plans can be implemented, on the basis of observation and evaluation of exercises of the plans conducted by state and local governments.

- Coordinating the activities of federal agencies with responsibilities in the radiological emergency planning process:

  - U.S. Department of Commerce (DOC)
  - U.S. Nuclear Regulatory Commission (NRC)
  - U.S. Environmental Protection Agency (EPA)
  - U.S. Department of Energy (DOE)
  - U.S. Department of Health and Human Services (HHS)
  - U.S. Department of Transportation (DOT)
  - U.S. Department of Agriculture (USDA)
  - U.S. Department of Administration (FDA)

Representatives of these agencies serve as members of the Regional Assistance Committee (RAC), which is chaired by FEMA.

Formal submission of the radiological emergency response plans for the Callaway Nuclear Power Plant (CNPP) to the RAC by the state of Missouri and affected local jurisdictions was followed by a critique and evaluation of these plans.

The first joint radiological emergency preparedness exercise was conducted for CNPP on March 21, 1984, and the results of that exercise are presented in this report. The exercise was conducted between the hours of 0800 and 1630 to assess the capability of state and county emergency preparedness organizations to (1) implement their radiological emergency preparedness plans and procedures, and (2) protect the public during a radiological emergency at the Union Electric Company's (UE's) CNPP.

An observer team consisting of personnel from FEMA Region VII, the RAC, FEMA's contractors, and federal and state agencies evaluated the March 21, 1984 exercise. FEMA, Region VII assigned seventeen federal observers to evaluate the activities in the state of Missouri and affected jurisdictions. Team leaders coordinated team operations.

Following the exercise, these federal observers met to compile their evaluations. Team leaders consolidated the evaluations of individual team members and furnished them to the RAC chairman. A public critique of the exercise for exercise participants and the general public was held by the Exercise Leader at 3:30 p.m. on Thursday, March 22, 1984, at the Joint Public Information Center, 801 Armory Drive, Jefferson City, Missouri.

The findings presented in this exercise report are based on the evaluations of the federal observers, and have been reviewed by FEMA Region VII. FEMA requests that state and local jurisdictions submit a schedule of remedial actions for correcting the deficiencies discussed in this report. The Regional Director of FEMA is responsible for certifying to the FEMA Associate Director of State and Local Programs and Support, Washington, D.C., that all negative findings observed during the exercise have been corrected and that such corrections have been incorporated into state and local plans, as appropriate.

1.2 EXERCISE EVALUATORS

Seventeen federal observers evaluated off-site emergency response functions. These individuals, their affiliations, and their exercise assignments are given below.

Observer	Agency[a]	Assignment
F. Begley	FEMA	Exercise Overview
W. Biedenfeld	PHS	Medical Emergency
W. Brinck	EPA	EOF-Radiological Assessment
M. Carroll	FEMA	Exercise Overview
T. Hogan	FEMA	EOF-Public Information Officer
G. Jacobson	FDA	State EOC
E. Jenkins	FEMA	Osage County EOC
J. Keller	INEL	Field Monitoring
S. Kinser	FEMA	Montgomery County EOC
R. Leonard	FEMA	Callaway County EOC
K. Lerner	ANL	JPIC
J. Levenson	ANL	EOF-State Forward Command Post
D. Nevitt	USDA	State EOC
T. Seidel	FEMA	JPIC
D. Sinclair	DOT	Callaway County EOC; Traffic Control & Access

F. Tyler	EPA	EOF-Radiological Assessment
K. Waller	FEMA	Gasconade County EOC

---

[a]EPA = U.S. Environmental Protection Agency
FDA = U.S. Food and Drug Administration
USDA = U.S. Department of Agriculture
ANL = Argonne National Laboratory
INEL = Idaho National Engineering Laboratory
PHS = Public Health Service
DOT-FHWA = U.S. Department of Transportation-Federal Highway Administration

1.3 EVALUATION CRITERIA

The exercise evaluations presented in Sec. 2 are based on applicable planning standards and evaluation criteria set forth in Section II of NUREG-0654/FEMA-REP-1, Rev. 1 (November, 1980). Following the overview narrative for each jurisdiction, deficiencies are presented with accompanying recommendations. Deficiencies can be presented in two categories. The first category includes those deficiencies that would cause a finding that off-site emergency preparedness was not adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public living near the site in a radiological emergency. These are "Class A" deficiencies that lead to a negative finding. A negative finding must be based on at least one deficiency of this type. There were two deficiencies in this category observed at the exercise of the Callaway Nuclear Power Plant.

The second category includes "Class B" deficiencies where demonstrated (and observed) performance during the exercise was considered faulty and corrective actions are considered necessary, but other factors indicate that reasonable assurance could be given that, in the event of a real radiological emergency, appropriate measures can be taken to protect the health and safety of the public.

1.4 EXERCISE OBJECTIVES

The licensee, Union Electric Company, the State of Missouri, and Callaway, Gasconade, Montgomery, and Osage Counties planned a coordinated exercise of their respective emergency plans for both on the on-site and off-site support agencies on March 21, 1984. The exercise involved activation and participation of the staff and response facilities of CNPP as well as emergency organizations and emergency facilities of the State of Missouri, and the four counties.

The exercise was intended to demonstrate many, but not necessarily all, of the CNPP capabilities to respond to a wide range of emergency conditions. This scenario was designed to activate the radiological emergency response plans (RERPs) for CNPP and UE's corporate radiological emergency response plan through their various levels. Although the scenario accurately simulates operating events, it was not intended to assess all of the operator's diagnostic capabilities, but rather to provide sequences that ultimately demonstrated the operator's ability to respond to events and that resulted in exercising both on-site and off-site emergency procedures. The exercise demonstrated a number of primary emergency preparedness functions. At no time was the exercise permitted to interfere with the safe operations of CNPP, and the plant management at its discretion could have suspended the exercise for any period of time necessary to ensure this goal. Free play was encouraged and the referees interfered only if operator or player action prematurely terminated the exercise or deviated excessively from the drill schedule.

Federal agencies were to be notified during the exercise according to existing emergency response procedures but were not. This resulted from a misunderstanding by the state pertaining to a FEMA request not to be notified during a drill, but to be notified during an exercise or an actual event. Federal agencies with radiological emergency preparedness responsibility did not actively participate in the play of this exercise. Federal representatives, however, did act as exercise evaluators.

The state of Missouri, in a communication to FEMA Region VII dated December 21, 1983, identified the following formal objectives for the state, to be accomplished at the March 21, 1984 emergency response exercise for the Callaway Nuclear Generating Station.

EXERCISE OBJECTIVES

State of Missouri	Relevant NUREG-0654 Criteria
a. Demonstrate the ability to activate, staff, and operate the State EOC and the State Forward Command Post at the Callaway Plant EOF.	E.1,E.2 E.2
b. Demonstrate the ability to initiate 24 hour EOC and FCP operations.	A.2.a,A.4
c. Demonstrate ability to make decisions and to coordinate emergency activities.	A.1.d, A.2.a
d. Demonstrate adequacy of facilities and displays to support emergency operations.	G.3.a, H.2,H.3

e.	Demonstrate ability to communicate with all appropriate locations, organizations, and field personnel.	F (all)
f.	Demonstrate the State's ability to conduct off-site field radiological surveys in coordination with the utility.	E.2,I.8
g.	Demonstrate the ability of State radiological assessment personnel to monitor environmental conditions and provide information to the appropriate decision makers.	I.8,I.11
h.	Demonstrate appropriate equipment and procedures for measurement of airborne radioiodine concentrations as low as 10^{-7} uCi/cc in the presence of noble gases.	I.9
i.	Demonstrate ability to project dosage to the public via plume exposure, based on plant and field data, and to determine appropriate protective measures, based on PAG's available shelter, evacuation time estimates, and all other appropriate factors.	I.10, J.10.m
j.	Demonstrate the State's ability to consider and recommend long term protective actions.	J.9,J.11
k.	Demonstrate the ability to control the radiological exposure of emergency workers.	K.3.a,b
l.	Demonstrate the ability of public officials to determine appropriate protective actions.	I.10, J.10.m
m.	Demonstrate the ability to coordinate timely and accurate news releases with State, utility, and other local emergency organizations.	G.3.a, G.4.a
n.	Demonstrate ability to provide advance coordination of information released.	G.4.b
o.	Demonstration ability to establish and operate rumor control in a coordinated fashion.	G.4.c
p.	Demonstrate ability to identify need for, request, and obtain Federal assistance.	C.1.a,b
q.	Demonstrate decision making process and procedures to determine the appropriate measures for controlled recovery and reentry.	M.1
r.	Demonstrate the ability to assess and critique the exercise in order to determine areas requiring additional improvement.	N.5

Local Emergency Organization

a.	Demonstrate the ability to alert, notify, and mobilize emergency response personnel.	E.1,E.2
b.	Demonstrate ability to fully staff facilities and maintain staffing around the clock.	A.2.a,A.4
c.	Demonstrate ability to make decisions and to coordinate emergency activities.	A.1.d, A.2.a
d.	Demonstrate adequacy of facilities and displays to support emergency operations.	G.3.a, H.2, H.3
e.	Demonstrate ability to communicate with appropriate locations, organizations, and field personnel.	F (all)
f.	Demonstrate the operational capability of local EOCs.	G.3.a, H.2, H.3
g.	Demonstrate the ability to request outside support when local capabilities are exceeded.	A.1.d, A.2.a
h.	Demonstrate ability to alert the public within the 10-mile EPZ, and disseminate an initial instructional message, within 15 minutes.	E.6
i.	Demonstrate the ability to control the radiological exposure of emergency workers.	K.3.a,b
j.	Demonstrate the ability of public officials to determine appropriate protective actions and to alert the public.	I.10, J.10.m
k.	Demonstrate the ability to coordinate timely and accurate news releases with State, utility, and other local emergency organizations.	G.3.a, G.4.a
l.	Demonstrate decision making process and procedures to determine the appropriate measures for controlled recovery and reentry.	M.1
m.	Demonstrate the ability to assess and critique the exercise in order to determine areas requiring additional improvement.	N.5
n.	Demonstrate the organizational ability and resources necessary to control access to an affected area.	J.10.j

o. Demonstrate the adequacy of ambulance and hospital facilities and procedures for handling contaminated and injured individuals. This will be demonstrated by the handling of an injured and contaminated on-site individual from the Callaway Plant. L (all)

1.5 EXERCISE SCENARIO

This exercise scenario was 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 established that the unit was operating at full power with all plant parameters being normal and stable. Several plant components were undergoing scheduled maintenance.

The initiating event for the scenario occurred when an I & C technician working inside the Residual Heat Removal (RHR) Pump B Room, slipped and fell breaking his leg and tearing his protective clothing. Subsequent examination of the injury confirmed that the individual was contaminated and required immediate medical attention. At that time, a Notification of Unusual Event was declared and the individual was prepared for transport to Callaway Memorial Hospital.

About the same time that the injured technician was transported off-site, Control Room personnel received a call from a radwaste operator that several of the area radiation monitors in the Radwaste Building had started alarming and were trending upward. He also reported that one of the gas decay tanks appeared to have ruptured. Personnel were immediately evacuated from the area. Additionally, an Alert was declared based on an increase in general area radiation levels within the Radwaste Building by a factor of greater than 1000.

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

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

Subsequent failure of the RHR Pump A caused RCS inventory to drop off which eventually led to uncovering of the core and fuel failure. Although a radiological release to the environment had not occurred, Callaway County officials considered sheltering in Sectors K, L and M due to existing and projected wind conditions.

Conditions further degraded when failure of Containment Spray Pump A occurred and operators received positive indication of fuel failure from Containment Radiation Monitors. At that time, a General Emergency was 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 built up causing hydrogen gas to be generated. A hydrogen burn and concurrent pressure spike caused the Containment Purge Exhaust Header penetration seal to fail and forced an Auxiliary Building Ventilation Isolation Damper to partially open providing a direct path from the containment to the atmosphere.

Auxiliary Building area and process radiation monitors and the unit vent radiation monitors alarmed and trended upward providing positive indication of a major release. At that point in the scenario, county officials implemented protective actions for the affected sectors (K, L and M).

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

Major Sequence of Events on Site

Date	Approximate Time	Event
3/21	0800	Initial conditions established.
	0830	Notification of Unusual Event - Technician slipped and fell breaking his leg & tearing protective clothing, becoming contaminated.
	0910	Declaration of Alert classification - Increased general area radiation levels within Radwaste Bldg.
	1005	Declaration of Site-Area Emergency - A significant Reactor Coolant System leak developed.
	1115	Declaration of General Emergency - based on the loss of 2 of 3 fission product barriers with a potential for loss of the third.
	1510	Release terminated.
	1515	Three-hour time jump - Recovery/reentry procedures were discussed.
	1600	Field Exercise activities were terminated.

1.6 MILESTONES FOR EXERCISE OBJECTIVES AND CRITIQUES

Indicated below are milestones for exercise observations and critiques with scheduled and actual completion dates.

Activity	Scheduled	Actual	Comment
State and licensee jointly submit exercise objectives to FEMA and NRC regional offices	1/6/84	12/21/83	
FEMA and NRC regional offices discuss and meet with licensee/state as necessary and prepare response	1/21/84	2/3/84	
State and licensee scenario developers submit exercise scenario to FEMA and NRC regions for review	2/5/84	2/13/84	Detailed scenario rcv'd 2/3: Preliminary rcv'd 1/27; Delay due to participation in Wolf Creek hearing
FEMA and NRC regions notify state and licensee of scenario acceptability	2/15/84	2/28/84	Letter of 2/28 confirms phone conversation of 2/22 & 23
FEMA and NRC regions develop specific post exercise critique schedule with the state and advise FEMA and NRC headquarters	2/20/84	2/29/84	
RAC chairman and NRC team leader meet to develop observer action plan	3/6/84	2/29/84	Phone coordination from 2/22
Meeting in the exercise area, of all federal observers both on-site and off-site to finalize assignments, and give instructions	3/20/84	3/20/84	
Exercise	3/21/84	3/21/84	
FEMA and RAC observers caucus to collate observations. NRC observers also caucus to collate observations	3/21/84	3/21/84	

RAC chairman and NRC team leader meet, as soon after their respective caucuses as practical, to coordinate federal participation in critique	3/21/84	3/21/84
RAC Chairman and Exercise Team headers conduct exit interview with state and local governments	3/22/84	3/22/84
Joint RAC/NRC critique	3/22/84	3/22/84

1.7 STATE AND LOCAL RESOURCES

Indicated below is a list of organizations which planned to participate in the exercise.

Union Electric Company

1. On-site Emergency Organization
2. Emergency Operations Facility Organization
3. Joint Public Information Center
4. General Office Information Center

Federal Government

1. Nuclear Regulatory Commission, Region III

State of Missouri

1. Department of Public Safety, State Emergency Management Agency
2. Division of Health, Bureau of Radiological Health
3. Department of Social Services, Division of Family Services
4. Department of Public Safety, Missouri State Highway Patrol
5. Department of Public Safety, Headquarters Missouri National Guard
6. Missouri Highway and Transportation Department
7. Public Service Commission
8. Missouri State Water Patrol
9. Chemistry Coordinator
10. Dose Assessment Coordinator

Missouri Counties

(1) Callaway County/Fulton
  (a) County Court/Mayor
  (b) Emergency Management Director
  (c) Callaway County Sheriff
  (d) Fulton Police Chief
  (e) Public Information Officer
  (f) Transportation Officer
  (g) County Health Officer
  (h) City Health Officer
  (i) County Road and Bridge Superintendent
  (j) Callaway Ambulance District Supervisor
  (k) Callaway Memorial Hospital

(2) For Gasconade, Montgomery, and Osage Counties:
  (a) Presiding Judge
  (b) Associate Judges
  (c) Emergency Management Director
  (d) Sheriff
  (e) Public Information Officer
  (f) Transportation Officer
  (g) County Health Officer
  (h) County Ambulance District
  (i) County Road and Bridge Superintendent

2 EXERCISE EVALUATION

This section presents the exercise evaluation grouped by state and county jurisdictions. For each jurisdiction, there is an overview section followed by a statement of each specific observed deficiency, referenced to the appropriate planning standard and element of NUREC-0654/FEMA-REP-1, Rev. 1, and accompanying recommendation. This evaluation includes only those planning standards which are appropriate for off-site emergency activities. The evaluation criteria are described in Section 1.3 of this report.

2.1 MISSOURI OPERATIONS

2.1.1 State Emergency Operations Center

Overview

The State Emergency Operations Center (SEOC) was notified of an Unusual Event at the CNPP at 0820. The state neglected to notify FEMA, Region VII, at the Unusual Event as prescribed in the plan. The notification was relayed from the utility to the SEOC by the Highway Patrol as prescribed in the plan. All initial calls were verified with the utility. The SEOC was activated at 0910 when notified of the Alert emergency classification. State Emergency Management Agency (SEMA) and Bureau of Radiological Health (BRH) personnel were dispatched to the near-site Emergency Operations Facility/ Forward Command Post (EOF/FCP) and all state agencies with emergency responsibilities listed in the plan were contacted. The SEMA Deputy Director was dispatched to the EOF and the Radiological Defense Officer was dispatched to the Callaway County/Fulton EOC. The SEOC was notified of a Site Area Emergency at 1002 resulting in a request for state agency representatives to report to the SEOC and to place emergency response personnel on standby for operational instructions. The SEOC was promptly staffed by 1110. A representative from BRH was not present at the SEOC. Although BRH representation at the SEOC is only an option in the plan, it is recommended that a BRH representative be present to interpret data and check for errors. The plan should be changed accordingly. Second and third shift duty rosters were provided to simulate round-the-clock staffing capability.

The Director of SEMA was effectively in charge of the state's overall response. He placed key staff at the SEOC, the EOF, the Joint Public Information Center (JPIC), and at the Callaway County/Fulton EOC. He consulted regularly with these individuals and with the utility.

At the SEOC, the Operations Officer was assigned by the Governor's designee. The Operations Officer was effectively in control, conducted

periodic briefings, and consulted with other state agency representatives in decision making. Often, however, the briefings were not as comprehensive as they might have been because all agencies were not involved. All affected state agencies should provide status reports and briefings to the Operations Officer. Copies of the current state plan and emergency procedures were available and regularly used. Message handling was efficient and all incoming and outgoing messages were recorded. Messages were written in triplicate form and distributed to the appropriate players.

Under normal circumstances, the physical facilities at the SEOC would provide ample space for SEOC staff. During this exercise, actual emergency conditions existed in the Kansas City area as a result of an ice storm, taking precedence over exercise activities. The SEOC is capable of supporting extended operations with sufficient shower, kitchen, and sleeping facilities. Backup power was available but not demonstrated. All necessary displays and maps were posted or available except access control points. The status board was clearly visible, but frequently it did not reflect current conditions, including the current emergency classification level and some protective action items (e.g., sheltering recommendations).

The primary communication link to all locations was by commercial telephone. No inability to reach any of the locations was observed. A dedicated line with conferencing capabilities would greatly enhance the efficiency of information flow between key locations. Backup radio communication systems were available but not demonstrated. A telefax provided hard-copy capability with the JPIC.

The SEOC participated in public alerting and notification. With the declaration of a Site Emergency (1002), the SEOC activated the siren/tone-alert system (1017) and an Emergency Broadcast System (EBS) immediately followed (1019). The tone alert was verified, but the location of the SEOC precluded hearing any sirens. The state neglected to instruct the counties to sound the sirens and inform them that an EBS broadcast was imminent. There was no hard copy available to confirm the content of the EBS message. The role of the SEOC was to assist the counties when requested. For this exercise, SEMA was designated as the clearinghouse for protective action recommendations implemented by the counties and, as such, the primary contact with the EBS. This was a last minute intentional departure from the existing planned procedures, not previously drilled, and was not adequately demonstrated by the state. Specific functions not adequately demonstrated include:

- timely notification of all counties concerning protective action recommendations and coordination of EBS message content with the counties;

- notification of counties that EBS broadcasts were imminent and the coordination/request of siren activation;

- simulation of transmission of all EBS messages to the EBS station;

- dissemination of EBS messages and protective action recommendations, preferably in hard copy form, to the JPIC and the EOF-PIOs.

Other actions performed by the SEOC included the control of river and rail traffic, and notification of the transient population. The SEOC contacted the Coast Guard to simulate the control of barge and other boat traffic by blocking the river against entry into the area. The SEOC contacted the railroads to simulate rerouting of rail traffic. The Highway Patrol simulated the alert and notification of transient populations in rural areas by using helicopters equipped with public address systems.

The SEOC was prepared to assist the counties in the implementation of ingestion pathway protective actions upon request. Current information was available for the location of dairy farms, food processing plants, and water supply intake points. Also available were maps indicating crop information by farm name and location. Trained staff from the Agricultural Stabilization and Conservation Service, and the Extension Service were placed on standby to provide assistance to the counties when requested. However, the decisions were made at the county level to shelter livestock and place them on stored feed and covered water.

There was little recovery/reentry activity played at the SEOC even though recovery and reentry demonstrations were identified as exercise objectives for the state. The SEOC staff were dismissed during this period due to premature exercise termination by the controller. The ability to determine and implement appropriate measures for controlled recovery and reentry were not demonstrated. Final recovery actions were to be based on BRH recommendations as specified in the plan.

The scenario did not allow for the counties to deplete their respective resources. Therefore, the state agencies at the SEOC had little opportunity to enter into decision making or provide protective action recommendations. The performance of SEMA is to be commended for an excellent response to the exercise during an actual ice storm emergency in the Kansas City area. They were able to effectively utilize temporary facilities for the exercise while the permanent EOC was being used for the ice storm response.

Deficiencies That Would Lead to a Negative Finding

1. Deficiency: The ability of the state to promptly alert the public of emergency conditions at the CNPP and coordinate the notification of the public of protective action recommendations was not adequately demonstrated

during this exercise. The procedures implemented for public alerting and notification intentionally departed from the existing planned procedures. Specific functions not adequately demonstrated include: (a) timely notification of all counties concerning protective action recommendations and coordination of EBS message content with the counties, (b) notification of counties that an EBS message was imminent and the coordination of siren activation, (c) simulation of transmission of all EBS messages to the EBS station, and (d) dissemination of EBS messages and protective action recommendations, preferrably in hard copy form, to the JPIC and EOF-PIOs. However, the state did coordinate with the counties by telephone regarding EBS message contact. But there were no hard copies of the messages available to the counties or observers. The counties often encountered difficulties getting through to the state which could be corrected by some type of conferencing system. (NUREG-0654, II, E.5,6,7, Appendix 3).

Recommendation: A remedial drill will be scheduled on or before April 21, 1984 to test the state's ability to effectively alert the public of emergency conditions at the CNPP. This drill will also test the state's ability to promptly coordinate with the counties siren activation and broadcast of protective action recommendations on EBS. It is assumed the procedures to perform these functions will be documented prior to the drill.

Deficiencies and Recommendations

1. Deficiency: The state, through a misunderstanding of a FEMA memorandum, simulated notification of FEMA Region VII at the Unusual Event rather than actually notifying FEMA Region VII as prescribed in the plan (NUREG-0654, II, A.2.a).

   Recommendation: More training is required to assure all appropriate agencies are contacted in the event of an emergency.

2. Deficiency: The SEOC emergency briefings were not always organized. Appropriate organizations were involved in decision making, but this was accomplished through a one-to-one consultation with the agency involved. Other agencies were not apprised of actions that were taken (NUREG-0654, II, A.1.d, A.2.a).

Recommendation: Although organizations were involved in decision making on a one-to-one consultation basis, a more effective method for information dissemination among the staff should be developed. Agency reports at briefings and/or message distribution to all agencies would be desirable.

3. Deficiency: The status board frequently did not reflect current conditions, including the current emergency classification level and some protective action items (NUREG-0654, II, D.3).

   Recommendation: The status board should indicate the current emergency classification level and important messages to ensure all staff members have the same basic information.

4. Deficiency: The state activated EBS, but neglected to instruct the counties to sound their sirens and inform them that an EBS broadcast was imminent (NUREG-0654, II, E.5,6).

   Recommendation: The state should establish a system with the counties to coordinate siren activation and EBS message release.

5. Deficiency: A map of access control points was not posted in the SEOC (NUREG-0654, II, J.10).

   Recommendation: A map or display indicating access control points should be posted. A map of access control points was posted at the Highway Patrol Headquarters. A copy of the map should be transmitted to the SEOC.

6. Deficiency: The ability to determine and implement appropriate measures for controlled recovery and reentry were not demonstrated at the SEOC. (NUREG-0654, II, M.1).

   Recommendation: The SEOC staff was dismissed early due to premature exercise termination by the controller. Recovery/reentry activities should be fully developed and demonstrated in future exercises. FEMA will also provide recovery/reentry guidance as soon as it becomes available from the National Office.

2.1.2 Emergency Operations Facility

2.1.2.1 State Forward Command Post

The state Forward Command Post (FCP) was staffed by four representatives from SEMA. The SEMA staff was alerted according to the planned procedures at the notification of Unusual Event (0820) and dispatched to the FCP at the Alert stage (0910). The FCP was activated promptly, being fully operational by 1000. The SEOC and each of the county EOCs were notified immediately that the FCP was operational. Each representative was well-trained and knowledgeable of their assigned duties. SEMA representatives demonstrated an excellent ability to interact with BRH staff while assessing each situation and in formulating protective action recommendations. Although the staff wore thermoluminescent dosimeters (TLDs), no direct-reading dosimeters were worn initially. Direct-reading dosimeters were available and worn when recommended by the observer. Additional training is needed to familiarize staff members with correct procedures for wearing, reading, and recording dosimeter values. A 24-hour staffing capability was demonstrated by the presentation of a second shift duty roster.

Overall, the facilities at the FCP were excellent. Ample space was available for the SEMA response personnel to perform the FCP functions described in the plan. All necessary visual aids and maps were clearly visible and effectively used. The displays and maps were kept up-to-date and were referred to continuously. Status boards in the FCP indicated the emergency classification level, protective action recommendations, whole-body and thyroid dose estimates, meteorology, and the sequence of exercise events. Maps included field sampling locations, EPZ sectors and subareas, and siren coverage displays. Early in the exercise, some confusion arose over whether to use EPZ sectors or the subareas defined in the public information brochure for protective action recommendations. This issue was quickly resolved in favor of the use of subareas. Later it was determined that in some cases, the subareas were too large for effective use. Some of these subareas were subdivided into smaller geographic units to provide more appropriate and accurate protective action recommendations. The subareas and smaller units were defined in terms of well-known, geographic boundaries. Consideration should be given to reexamining some of the subareas for possible future subdivision and permanent redesignation.

The primary communication link between the FCP with the state and county EOCs was commercial telephone. Although the system was demonstrated to be operational, it was cumbersome for transmission of protective action recommendations and obtaining follow-up information regarding what actions were actually implemented by each EOC. The system was relatively slow in that each message had to be dictated at least five times and a hard copy of the exact text was lacking at the receiving end. For each protective action recommendation or change in plant status, at least ten separate telephone calls were

required; more when lines were busy. Despite this, SEMA staff did an excellent job in transmitting information promptly, and in follow up procedures. Consideration should be given to another more efficient system. Such systems might include a dedicated land-line, a teleconferencing system, or a telefax system. The secondary, or backup Public Safety Radio was also demonstrated, but was used only on limited occasions.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the EOF-FCP.

Deficiencies and Recommendations

1. Deficiency: SEMA staff at the FCP did not initially wear high- and low-range, direct-reading dosimeters. When issued later, some were unclear on procedures for reading and recording dosimeter values (NUREG-0654, II, K.3.a,b).

   Recommendation: Additional training is needed to familiarize SEMA staff members with correct procedures for wearing dosimeters, and reading and recording dosimeter values.

2. Deficiency: The primary communication link between the FCP with the State and local EOCs was commercial telephone. Although functional, the system was relatively slow, in that each message had to be dictated to five locations, busy signals were often encountered, and message logging was complicated (NUREG-0654, II, Appendix 3, C.1.d,f; C.2.b).

   Recommendation: A more efficient communication system is required which cannot be encumbered by a sequential call down process. Notification should be a one-call process to all assigned organizations to be notified. Dissemination should be rapid and reliable and provide acknowledgment and verification of message content. It is desirable for voice traffic to be supported by hard copy verification.

2.1.2.2 Public Information

Overview

The Media Release Center at the EOF was initially staffed by the utility's Nuclear Information Duty Officer. With the notification of Alert status at the plant, two public information officers (PIOs) from SEMA were dispatched to the EOF. Activation and staffing was accomplished in accordance with the planned procedures. There are 12 to 15 individuals affiliated with various state agencies who are trained to perform the PIO function at the EOF. To simulate a 24-hour capability, the SEMA duty officer had access to the list and agency activation procedures to assure PIO staffing as required. The PIOs arrived at the EOF shortly before 10:00 a.m. They displayed a good knowledge of their roles and responsibilities at the EOF and diligently kept the SEOC and Joint Public Information Center (JPIC) apprised of developments. The SEMA PIOs were not issued dosimeters and were unaware of the need for them. Adequate clerical help and other resources necessary for their function was demonstrated.

The Media Relations Center at the EOF had adequate space, furniture, lighting, typewriters and other resources such as a copier and teleprinter to facilitate the SEMA PIOs. This center could also accommodate about 40 reporters for news briefings. Although the facilities were adequate for reporters, the media center at the EOF did not have private meeting spaces or equipment for reporters. It is intended that such resources would be available at the JPIC. Backup power was available but not demonstrated during the exercise. The SEMA PIOs had unhindered access to the maps, status boards, and other resources in the FCP, UE's Recovery Center, and the Emergency Control Center.

Commercial telephone comprised the primary communication systems to the SEOC and JPIC; telephone conferencing was available on these lines for anyone at the EOF. Secondary communication was available through two telefax machines located in the media relations area and in the utility's PIO office. Hard copies of press releases were transmitted to the SEOC and JPIC. The State EOC's telefax reception equipment took six minutes to receive messages; however, the JPIC received teleprinter messages almost instantaneously. There was good cooperation between the utility and SEMA PIOs in sharing of information and communication resources.

Press releases containing emergency public instructions were drafted at the Media Center and the Utility's PIO office. They were clear, appropriate and released in a timely manner. The two SEMA PIOs and three utility PIOs worked well together sharing information and coordinating press releases. The PIOs used prescripted messages for portions of their releases. Protective actions described in the press releases were in terms of familiar boundaries. The references to taking shelter did not include guidance on sheltering methods nor did they include instructions for transients. The times were

known of the first two EBS messages in the Media Center, but later releases were not recorded by time and content.

Media kits were available and contained information on the utility, nuclear power plants, the local areas and radiation. A press briefing was not held at the EOF; however, procedures and materials for briefings were in place and adequate. Hard copy news releases were made available throughout the EOF five times during the exercise.

The EOF PIOs (state and utility) demonstrated an ability to effectively deal with rumors transmitted by the news media or introduced by controllers. Television and radio stations were monitored and recorded in the EOF. Any nonverified reports were investigated by the PIOs to determine whether the information was factual or rumor. Efforts were made to contact the source of any erroneous information to provide them with a correct account of the situation. These functions were handled as a cooperative effort between the state and utility. They worked well together in this problem-solving capacity. The rumor control activities at the EOF are considered an extension, but separate from the public interface at the JPIC.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the EOF Media Release Center.

Deficiency and Recommendation

1. Deficiency: SEMA PIOs at the EOF Media Release Center did not have dosimeters and were unaware of the need for them (NUREG-0654, II, K.3.a,b).

   Recommendation: Additional training is needed for SEMA PIOs to familiarize them with the need for personal dosimeters and the correct procedures for wearing dosimeters, reading and recording dosimeter values.

2.1.2.3 Radiological Assessment

Overview

Radiological assessment activities were performed by the Missouri Division of Health, Bureau of Radiological Health (BRH). Activation and mobilization was observed at BRH offices in Jefferson City where staff members were performing their normal duties. The BRH was not notified by SEMA at the Unusual Event stage as prescribed by the plan. When the Alert notification

came at 0910, BRH was erroneously instructed to standby. However, the BRH Director ordered immediate deployment since BRH is to deploy to the EOF at the Alert stage according to the plan. Equipment was checked out (using checklists) and loaded promptly. Overall, the late notification caused a deployment delay of about 10 minutes. A second delay of 5 to 10 minutes was encountered at the EOF due to access control procedures. During this period, the plant status escalated to Site Area Emergency. It is recommended that BRH personnel be issued identification passes upon deployment to expedite admission to the EOF.

At the EOF, set-up was performed promptly and the facility was operational by 1010. All personnel were aware of their respective responsibilities and demonstrated adequate knowledge. A 24-hour staffing capability was demonstrated by double staffing and the presentation of a duty roster for extended operation.

The facilities and visual displays were appropriate and adequate. The state and licensee personnel were stationed next to each other, facilitating an excellent interface. Both coordinators used the same map and status board for coordinating field team activities. The single status board of dose assessment information was visible to, and used by both groups. A few recommendations for improvements to an already excellent operation include:

a) stationing the state and licensee team coordinators adjacent to each other and to the status board so that they may better communicate.

b) developing a map with more clearly designated evacuation subareas. The large map present included subarea labels, but they were difficult to read.

c) considering moving SEMA staff into the same room so that SEMA and BRH may more efficiently interact. This would reduce the need for runners between rooms and eliminate the need for maintaining duplicate status boards in separate rooms.

Commercial telephones provided the primary communication between the BRH dose assessment team with the SEOC and county EOCs. The Public Safety radio used by SEMA was used as a backup system and was demonstrated in communicating with the SEOC. Communication between BRH and SEMA staff in the EOF was by runner and written messages. Although this appeared to work, it could be improved by relocating SEMA staff to the same room. Coordination of field teams was accomplished by radio. The radio system worked well, with only a few "dead spots" noted. Field teams understood and were familiar enough with the system to move out of the "dead spots" to a location they could communicate.

Dose projections were made using both source term information from the plant and field team data. These were used to consider the appropriateness of earlier protective action recommendations based on plant conditions. Dose assessments were made by state personnel using manual techniques. The results agreed well with licensee projections using a computer model. Protective action recommendations were discussed between BRH and licensee personnel before forwarding to SEMA. Good interaction and discussions were noted between all parties.

The state field monitoring team was coordinated with the knowledge of the utility's field activities. The state team was used to confirm the utility's field data at some locations. The data received from all teams, collectively, correctly identified the plume location. Data were available for dose projections and displayed well.

Potassium iodide (KI) is to be recommended only for emergency workers according to the plan. The plan indicates KI will be recommended when projected doses exceed 25R. However, it was made available for use by emergency workers whenever each, in his informed professional judgment, wished to take it. The calculations performed indicated 25R would not be exceeded, and no KI was administered. This performance was preferable to the guidelines specified in the plan. The plan should be amended to reflect the actual practice.

The scenario created activity to exercise player capabilities and made them consider factors not usually considered. Due to the fact that the stack iodine monitor was off-scale, default values gave high iodine dose projections, forcing activity. The field data reflected actual source terms and allowed for appropriate dose projections.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the BRH dose assessment operation during this exercise.

Deficiencies and Recommendations

1. Deficiency: Planned procedures to alert and notify BRH of events occurring at the plant were not followed by state dispatchers. As a result, BRH EOF staff and field personnel were deployed late (NUREG-0654, II, E.1, E.2, I.8).

   Recommendation: Additional training of state dispatchers is required to ensure BRH receives prompt notification of plant events.

2. Deficiency: Procedures for administration of KI to emergency workers were acceptable, but different from the procedures described in the plan NUREG-0654, II, J.10.e,f).

   Recommendation: The plan should be amended to reflect current practices and policies for the administration of KI to emergency workers.

2.1.3 Radiological Monitoring Teams

Overview

The state field monitoring team consisted of one representative from BRH and a driver from SEMA. At the Alert notification (0910), the BRH member inventoried the prepacked field kit using a checklist. The monitoring instruments were checked and batteries were installed. According to team members, the equipment had been calibrated during the first week of February, 1984. The BRH representative left the BRH office (0926) and went to the EOF where the SEMA driver was to be met. The delayed notification of BRH (discussed in Sec. 2.1.2.3) resulted in a minor mobilization delay for the field team.

Upon arrival at the EOF (1003), additional field monitoring instruments were acquired. These instruments were also operationally checked prior to deployment. The team was issued appropriate dosimeters potassium iodide (KI), and briefed on current plant status and meteorological conditions. Since the deployment route between BRH headquarters and the EOF passes through the Emergency Planning Zone (EPZ), direct-reading dosimeters should have been issued to the field team members upon dispatch to the EOF. Following dispatch from the EOF, the team had proper dosimetry and exposure control procedures were good. The team was aware of turn-back values. The team was instructed to take KI either at the time of deployment or whenever they thought necessary (see Sec. 2.1.2.3). The plan should be revised to reflect the practiced procedures with respect to the use of KI.

The equipment used was adequate for the single field team observed. However, the radioiodine instrument used for field monitoring was different from that specified in the plan. The plan should be changed to reflect the actual equipment used. In addition, the field kit for the second field team is currently incomplete. This kit should be completed as soon as possible to comply with the planned procedures to outfit and deploy at least two state field teams. Delays were encountered in reaching some of the monitoring locations due to poor road conditions. Arrangements should be made for the procurement of vehicles capable of traversing roads in adverse condition.

Field team members were well-trained and performed their assignments in a professional manner. They followed the planned procedures and demonstrated taking measurements in a proper manner. However, the times that radioiodine and plume measurements were actually taken should have been reported to the field coordinator at the EOF. On occasion, there were delays of up to 30 minutes between the time samples were actually taken and subsequently reported. Better efficiency in the deployment of state and utility field teams is also suggested since the number of teams was limited. The teams were in close proximity to each other during much of the exercise.

Radio communication between the state field team and the EOF was good. The only means of communication demonstrated was by radio. Spare radios were available at the EOF in the event of equipment failure. Only one communication "dead spot" was observed during the exercise. The field team was aware of potential "dead spot" areas and moved a short distance to reestablish radio contact. The anti-contamination suits worn by team members were paper. The requirements for team members to get in and out of vehicles and to collect samples may likely cause failure of the paper suits. The use of cloth suits should be considered.

Deficiencies That Would Lead to a Negative Finding

No deficiencies were observed during field monitoring activities that would lead to a negative finding.

Deficiencies and Recommendations

1. Deficiency: Delays were encountered in reaching some of the prescribed field monitoring locations due to inadequate vehicles to traverse poor roads (NUREG-0654, II, I.8).

   Recommendation: Arrangements should be made for the procurement of vehicles capable of traversing roads in adverse condition.

2. Deficiency: The field kit for a second field team is currently incomplete. This prevents the deployment of at least two fully-equipped state field teams as specified in the plan (NUREG-0654, II, I.7, I.8, I.11).

   Recommendation: The field kit should be completed as soon as possible to comply with the planned procedures to outfit and deploy at least two state field teams.

3. Deficiency: On occasion, there were delays of up to 30 minutes between the time field measurements were made and subsequently reported. Sample times were not relayed with sample readings to the EOF (NUREG-0654, II, I.8, I.10).

   Recommendation: The time that radioiodine and plume measurements are taken should be reported to the field coordinator at the EOF.

4. Deficiency: The BRH field team member was not equipped with appropriate dosimetry during deployment from BRH headquarters to the EOF (NUREG-0654, II, K.3.a).

   Recommendation: Appropriate dosimetry, including direct-reading dosimeters, should be issued to field team members at BRH headquarters. Such dosimetry is required because the deployment route to the EOF is largely within the EPZ.

5. Deficiency: The radioiodine instrument used for field monitoring was different from that specified in the plan (NUREG-0654, II, H.11).

   Recommendation: The plan should be changed to reflect the actual equipment used.

2.1.4 Joint Public Information Center

Overview

Activation and set up of the Joint Public Information Center (JPIC) was prompt and very well organized. A regular system is in place to call SEMA staff at any hour of the day. SEMA PIOs were notified by the SEMA duty officer at approximately 0900. Overall, staffing levels at the JPIC were excellent and included nine SEMA personnel and representatives from the Missouri Highway Patrol and the Highway and Transportation Department. State representatives were well-trained. The utility provided a large staff to address various aspects of the situation. Four court reporters were also present to record the activities. A 24 hour staffing capability was demonstrated by the state through presentation of a duty roster. However, the lead SEMA PIO did not have a specified second shift replacement.

Nearly all necessary equipment is normally stored at the armory for rapid access and set up. Although the JPIC is a relatively complex facility, only 75 minutes were required for set up. All media activities were located in a single, large area. The facilities were adequate for most needs and acceptable. Good displays and charts were available and used during

briefings. The briefings were video-taped for replay to late arrivals. Telephones were available for media use: five for incoming calls and approximately a dozen for outgoing calls. A separate room was used to monitor local radio and television broadcasts. Recording equipment was used to monitor three television channels and two radio stations.

The PIO area was also well equipped, however, more effective use of displays could have been made in the PIO area. For example, protective action areas and meteorological conditions could have been indicated on the maps for quick reference. Also helpful would have been a status board with a sequential listing of exercise events, especially for briefing on-coming second shift personnel. The area was large enough for the exercise. However, in the event of a real emergency, the presence of PIOs and staff from federal agencies would likely result in overcrowding.

Communication resources were generally demonstrated to be adequate. Commercial telephones were the primary link with the EOF, the SEOC, and county EOCs. Hard copy transmissions were made to the EOF, SEOC, and the utility's General Office Information Center (GOIC) using a telecopy machine. It was noted that communications could be severely hampered if the commercial telephone networks became jammed.

Information kits were available for the media and briefings were held periodically. Briefings were generally jointly presented by the state and utility. The state PIO addressed state and local off-site response activities while the utility PIO covered the on-site activities and any technical issues that arose. On occasion, the utility PIO left the briefing session early, forcing the state PIO to respond to on-site issues.

Displays of the plant design and of evacuation areas were used to illustrate various points during the briefings. A total of seven press briefings were conducted during the exercise. The second briefing (at 1115) contained some difficult technical terminology concerning plant conditions, but subsequent briefings were presented in understandable terms. SEMA enlisted the services of an independent technical representative to inform the SEMA PIO of the technical aspects of the exercise and to provide verification of information presented by the utility. Also, some inaccuracies were presented. For example, during the third briefing (at 1235) a utility spokesperson stated that the latest series of events at the plant (hydrogen burn in containment) had not been accompanied by a release to the atmosphere. This information was later retracted when a reporter indicated that it contradicted the third press release. The main shortcoming of the briefings was a general lack of information. Specifically, reporters' questions concerning radiological monitoring, the location of the injured employee, siren activation, and placement of roadblocks could not be answered by the PIO's. Although the questions were recorded and addressed at the next briefing, this revealed a lack of a systematic procedure for information gathering and synthesis prior to the press briefings. The quantity and variety of information sources is

too great to gather information informally. A number of steps can be implemented to assure the latest, most complete updates at press briefings.

- A regular schedule for press briefings should be established.

- The PIOs should receive thorough briefings prior to meeting the press. These briefings should include and coordinate;
  a) EBS messages from the SEOC received by telecopy.
  b) hard copy releases from the EOF.
  c) County protective action responses provided by county liaison officers assigned at the JPIC.

Consideration should be given to providing an area for private interviews with press representatives which occurred in an impromptu fashion in the press area. Recordings of the most recent press briefing might be used to satisfy off-site press who call the JPIC on the telephone. Overall, the exercise play was greatly enhanced by the presence of numerous well-informed, and vocal members of the press.

Four SEMA representatives handled the rumor control function and monitored a five-line telephone search system. The staff responded promptly to several simulated rumors inserted by controllers. They effectively demonstrated information authentication techniques and simulated calls back. However, the rumor control operators were hampered by the same informational problems as the PICs. The regular briefing system recommended for the PIOs would also benefit the rumor control staff. It was also noted that the rumor control number at the JPIC was never publicized.

Deficiencies That Would Lead to a Negative Finding

No deficiencies were observed at the JPIC that would lead to a negative finding during this exercise.

Deficiencies and Recommendations

1. Deficiency: Although an alternate for the lead state PIO was identified, no second-shift replacement was specified (NUREG-0654, II, A.2.a, A.4).

   Recommendations: The state should specify the key persons responsible for state PIO functions for continuous operations over a protracted period.

2. Deficiency: During the course of press briefings, all designated spokespersons did not remain available to the press (NUREG-0654, II, G.3.a).

Recommendation: Designated spokespersons from all principal organizations should remain available to the press for the duration of the briefing.

3. Deficiency: An area was not set aside or designated for private interviews of key spokespersons by the press (NUREG-0654, II, G.3.a).

   Recommendation: Consideration should be given to formally designating times and places where media representative can conduct private interviews within the JPIC.

4. Deficiency: A systematic procedure for information gathering and synthesis prior to the press briefings was not demonstrated (NUREG-0654, II, G.4.b).

   Recommendation: Procedures should be established for the timely exchange of information between designated EOF, SEOC, and county spokespersons with the JPIC PIOs prior to press briefings.

5. Deficiency: The rumor control telephone number was not publicized. According to the public information brochure, the number was to be announced in EBS messages (NUREG-0654, II, G.4.c).

   Recommendation: The rumor control telephone number should be announced over the EBS stations or included in the public information brochure.

2.1.5 Medical Emergency

Overview

The emergency response capability of the Callaway Memorial Hospital (Fulton, MO) was observed during this exercise. At approximately 0835, the hospital was notified by the plant that an accident had occurred at the plant involving injuries and contamination. The call was verified and an ambulance was dispatched. The plant indicated they would provide an update of patient status. Hospital personnel readied the emergency room for an injured, contaminated person by;

- covering the floors with plastic,
- placing a decontamination tray on the emergency room table, and

- connecting the contaminated liquid retainer

In addition, normal medical preparations for receiving a patient with injuries and potential shock were initiated. The hospital recontacted the plant for an update of patient status. Finally at about 0945, when the hospital called again, they were provided with patient status and notified that the patient and ambulance were leaving the plant. More frequent communication from the plant to the hospital would be desirable.

Upon arrival at the hospital, the utility's health physicist inspected the treatment room preparations while the crew removed the patient from the ambulance and brought him in. The entry area and treatment room were blocked off. Containers for contaminated solid and liquid materials were present and a rinse decontamination tray was placed on the treatment table. The patient was wrapped in heavy duty plastic and moved in a Stokes litter basket. Normal isolation and wound treatment techniques were demonstrated. The patient was evaluated, stabilized, and decontaminated to practical limits. The patient was repeatedly monitored for contamination levels. A call to the University of Missouri Medical Center (UM-MC) was simulated when it was determined that it was necessary to transfer the patient there. In the event of a critical injury at the plant, consideration should be given to procedures for transporting a victim by helicopter directly to the UM-MC. Based on the condition of area roads, it might be more practical than the lengthy ambulance transport to Fulton for stabilization, with subsequent transport to th UM-MC.

The ambulance driver was not wearing protective clothing, except for a pair of gloves. The observer was informed that the driver's protective clothing had been removed at the plant to prevent contamination of the ambulance's driver compartment. To assist in moving the patient onto the decontamination tray, the driver put on protective clothing. All members of the treatment team and the health physicist wore protective clothing. All personnel wore ring, permanent recording, and direct-reading dosimeters. The dosimeters were read and values were recorded on a log. Samples and swabs were collected for laboratory analysis. The utility provides arrangements with a radiological laboratory for the analysis of samples.

After the patient had been provided for, the ambulance crew was screened for possible contamination. The ambulance was also monitored by a second health physicist. All clothing was removed in an acceptable manner. Recording dosimeters were gathered, read, and values recorded. When all surveys were completed, the ambulance crew was released.

The scenario was adequate to test the adequacy of ambulance facilities and procedures for handling contaminated individuals. The adequacy of hospital facilities and procedures for handling contaminated persons was also demonstrated. Examples of particularly good performance included;

- a health physicist was dispatched to the hospital to precede the patient and inspect/assist in hospital preparations.

- the hospital has placed trained nurses on every shift in anticipation of an accident.

- there is an isolated emergency treatment room, with a separate entrance, to accommodate an injured, contaminated person. During the exercise, five regular patients were treated without being affected by the drill activities, and vice versa.

- the staff appeared committed to learning and participating in the drill.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the Callaway Memorial Hospital during this exercise.

2.2 COUNTY OPERATIONS

2.2.1 Callaway County/Fulton EOC

Overview

Activation and staffing of the Callaway County/Fulton EOC (CCEOC) was well demonstrated and in accordance with the planned procedures. The call initiating activation of the CCEOC was received by the County/City Emergency Communication Center (ECC) dispatcher at the notification of Alert (0909) from the plant control room. The ECC dispatcher verified the call and then notified key County/City emergency response staff and the other risk counties. The CCEOC was fully staffed by representatives of key organizations by 0927. All representatives displayed adequate training and knowledge. A round-the-clock staffing capability was demonstrated by presentation of a duty roster. With notification of a Site Area Emergency (1008), a liaison was dispatched to the EOF.

The Director of Emergency Management was effectively in charge and assisted the Mayor and County Judges. Periodic briefings were conducted, however, the CCEOC staff would benefit from additional briefings. Appropriate staff were involved in decision making. A current copy of the plan and written procedures were available for reference. Messages were reproduced and

distributed to appropriate representatives efficiently. Message logs were maintained.

Overall, the CCEOC facilities were adequate in terms of space, furniture, lighting, and telephones. The facility can support extended operations, however sleeping and kitchen facilities would be provided at nearby commercial establishments. Only the absence of a backup power capability is a concern at this facility. All necessary maps and displays, including status boards, were posted and clearly visible. Each was kept up-to-date.

Communication facilities were adequate and utilized very well. The primary system was commercial telephone to the SEOC, EOF, county EOCs, and the licensee. Backup communications by radio were not demonstrated. In addition no hard copy device was available for transmission or receipt of messages to or from the JPIC or SEOC. Primary and backup communications to the following locations were;

- State EOC — Primary: commercial telephone; Backup: radio (not demonstrated)
- Local EOCs — Primary: commercial telephone; Backup: radio
- Licensee — Primary: commercial telephone; Backup: (not demonstrated)
- EOF — Primary: commercial telephone; Backup: radio relayed through SEOC
- Media Center — Primary: commercial telephone; Backup: (not available)
- Local Schools — Primary: commercial telephone; Backup: tone-alert radio (not demonstrated)
- Hospitals — Primary: commercial telephone; Backup: radio
- Ambulances — Primary: Commercial telephone

Protective action decisions were made by the CCEOC based on recommendations from the plant with subsequent BRH/SEMA concurrence. Decisions made by the County Judges/Mayor were well thought out and carefully considered. For example, the utility and the state recommended evacuation at 1315. The CCEOC felt the recommendation was not supported by technical data and declined to implement the evacuation recommendation. The CCEOC subsequently issued a recommendation to shelter.

The CCEOC did participate in public alerting activities. The SEOC had activated the EBS for general public notification of the Site Area Emergency at 1018. However, the CCEOC was not requested by the SEOC to activate the sirens at that time. The CCEOC did not activate (or simulate) the sirens until the evacuation decision was made at the declaration of the General Emergency. The notification of a General Emergency was received from the licensee (1032) and the FCP (1035-40). At 1050, the evacuation recommendation was accepted by the County Judges/Mayor. At 1053, the evacuation decision was issued to the SEOC by the CCEOC PIO with a request for EBS activation to follow the siren sounding at 1100. Siren activation was not adequately demonstrated during this exercise for two reasons. First, the sirens were to be activated for the entire area, not just selected sirens for the areas affected by the protective action recommendation. Second, attempts to sound the sirens were unsuccessful. Later attempts to activate the system also failed. A remedial drill will be scheduled on or before April 21, 1984 to test the County's capability to sound all sirens. With a successful demonstration during the remedial drill, it is expected that this deficiency will be deleted.

Public alerting and notification were also demonstrated when an evacuation extension was recommended by the utility and state (1315). At 1345, the recommendation was rejected by the County Judges/Mayor as unsupported by technical data and they decided on the sheltering option instead. By 1350 the message was transmitted to the state with a request for an EBS broadcast to follow the siren simulation at 1400.

Access and traffic control were well-coordinated by the sheriff's department. Activation of traffic control points were ordered promptly and estimates of expected traffic volume were discussed. According to CCEOC staff, all appropriate resources are available to keep evacuation routes clear during bad weather or in the event of stalled or wrecked vehicles. Appropriate actions were taken to control highway and water access to the contaminated area. In the field, a Callaway County deputy sheriff simulated traffic control on county road 459. The deputy arrived promptly at the access control point (1132). The officer was familiar with the evacuation routes, but did not know the locations of reception/congregate care centers. The deputy was able to communicate by radio with the CCEOC and personnel at other control points. This was demonstrated with the receipt of periodic updates. Procedures for clearing traffic obstructions were not demonstrated, but the sheriff's department has agreements with local tow truck operators to provide prompt service. The officer was equipped with low- and high-range direct-reading dosimeters, but no permanent record devices. Forms for recording dosimeter readings were provided but were not used. The officer was not issued KI but was aware of the planned procedures for its administration.

Coordination of transportation for persons with special needs was well demonstrated. This included the identification of those in need, and determination and verification of the resources available to transport them. The

location of mobility-impaired individuals was available in written form. A bus was requested for general population transportation at 1110. The driver arrived at the CCEOC at 1126 to acquire dosimetry. If school children are to be evacuated by bus, the drivers are contacted by the individual school principals or administrators following notification from the county sheriff.

Ingestion pathway protective actions were not demonstrated. However, the Emergency Management Director reported that the county extension agent at the courthouse was coordinating with the State Department of Agriculture on ingestion pathway protective actions.

Field workers were issued low- and mid-range dosimeters and TLDs. The supply of dosimeters was adequate. Instructions were given for reading and recording values every thirty minutes. The maximum allowable dose was specified on the field record cards. An adequate supply of KI was also available. Field workers were aware of the proper procedures concerning the administration of KI.

Interaction with the media was expected to be at the JPIC during the exercise. No media briefings were demonstrated at the CCEOC.

The County/City emergency response organization discussed and simulated public instructions for recovery/reentry. The relaxation of protective actions were based on monitor data which indicated safe levels of radioactivity. Consideration was given to the removal of access control but retaining traffic control activities. Notification of reentry was also passed on to reception and congregate care facilities.

Deficiencies That Would Lead to a Negative Finding

1. Deficiency: Siren activation was not adequately demonstrated during this exercise for two reasons. First, the sirens were to be activated for the entire area, not just selected sirens for areas affected by the protective action recommendation. Second, attempts to sound the sirens were unsuccessful. Subsequent attempts to activate the system also failed (NUREG-0654, II, E.6; Appendix 3, C.3).

   Recommendation: A remedial drill will be scheduled on or before April 21, 1984 to test the County's capability to activate the siren system under drill conditions.

Deficiencies and Recommendations

1. Deficiency: The CCEOC is not equipped with a backup power supply (NUREG-0654, II, H.3).

Recommendation: An emergency generator of appropriate capacity should be procured to assure uninterrupted operation of the CCEOC.

2. Deficiency: No hard copy device was available for transmission or receipt of messages to or from the SEOC or JPIC (NUREG-0654, II, Appendix 3, C.1.f).

   Recommendation: Dissemination of messages between the SEOC or JPIC with the CCEOC should be rapid and reliable. It is desirable for voice traffic to be supported by hard copy verification.

3. Deficiency: The sheriff's deputy at the traffic control point did not know the location of the reception/congregate care center (NUREG-0654, II, J.10.j).

   Recommendation: Uniformed officers along evacuation routes or at traffic control points should be able to direct persons to the reception/congregate care facilities. More training on the location of these centers is required.

4. Deficiency: The sheriff's deputy at the traffic control point did not periodically read and record his dosimeter readings. The officer was not issued a permanent record device (NUREG-0654, II, K.3.a,b).

   Recommendation: The sheriffs department should ensure that both self-reading and permanent record devices are issued and that self-reading dosimeters are read at appropriate frequencies and the values recorded.

2.2.2 Gasconade County EOC

Overview

Activation and staffing of the Gasconade County EOC (GCEOC) was accomplished in a timely and effective manner. The call initiating the activation of the EOC was received from the CNPP control room at 0855. The call was received by the Gasconade County sheriff's dispatcher by commercial telephone and was subsequently verified. The county sheriff's dispatch is monitored 24 hours a day with radio backup. Seven dispatchers are available and a different dispatcher is used at each exercise and drill to ensure each has on-the-job training. The dispatcher phoned the presiding judge notifying him of the emergency. The Emergency Management Director notified other key

staff members of the emergency. A written, up-to-date call list was used for contacting the staff. Necessary personnel reported to the EOC and staffing was completed at 1002, slightly over one hour after receiving the initial notification call. The GCEOC was staffed by all agencies identified in the plan. The first shift personnel displayed adequate training and knowledge. Capability for 24-hour continuous staffing was demonstrated by presentation of a roster. The Emergency Management Director obtained the roster of names at the beginning of the exercise.

The Presiding Judge, as planned, was effectively in charge at the GCEOC. Periodic briefings were held with all staff involved in the decision-making process. All staff members had specified written procedures and forms for reference. Although message logs were maintained and distributed, minor improvement on the message log is needed and was recognized by the County staff. Controlled access to the GCEOC was not maintained and thus needs to be addressed. All messages regarding plant status were received from the EOF in a timely manner.

The facility was well organized for the first exercise. Sufficient furniture, space, lighting, and telephones were available at the GCEOC. However, backup power to support 24 hour operations still needs to be added. This need was recognized by the staff. Additions and changes to the facility are already in the planning stages. Required maps were posted in the GCEOC with the exception of the map illustrating population by evacuation area. This latter map was available, although not posted.

The installation of the communications system at the GCEOF had just been completed on Monday, March 19, 1984, two days before this exercise. Although most of the equipment performed adequately during the exercise, the staff was aware of needed improvements. In addition, the Presiding Judge felt that more communication with the state was needed.

Primary and backup communications were available with most organizations, but were not demonstrated or not yet available with others. These communications systems are as follows:

- State EOC — Primary: commercial phone; Backup: radio
- Local EOCs — Primary: sheriff's radio; Backup: telephone
- Licensee — Primary: commercial phone; Backup: not demonstrated
- EOF — Primary: commercial phone; Backup: not demonstrated

• Media Center	Primary:	commercial phone
	Backup:	not applicable
• Local Schools	Primary:	commercial phone
	Backup:	not demonstrated
• Support hospitals, Ambulances, Radiological Monitoring Teams	Primary:	not demonstrated
	Backup:	not demonstrated

In addition, conferencing capability was not available on any of the above systems, nor was there a hard-copy device available to and from the media center.

Since only a small portion of Gasconade County is included within the 10 mile EPZ, the GCEOC accepted the recommendations of the EOF and the Callaway plant regarding evacuation out to 10 miles. The use of potassium iodide (KI) was not recommended by the GCEOC for emergency workers. This was consistent with the plan.

Some confusion was evident in the sounding of the sirens and the release of the EBS message. Public alerting was initiated by a call from the licensee and the EOC at 1230. This call was verified by the GCEOC at 1235. At 1238 the GCEOC called the EOC to release the EBS message before the county sounded the sirens. The EOC instructed the GCEOC to simulate the sirens. However, the GCEOC understood the message to actually sound the sirens. The sirens were sounded and the EBS message activated at 1244. At 1249 the Emergency Management Director called the Morrison Fire Department to verify that the sirens were sounded. The local PIO acknowledged that there were problems with the message releases and more coordination was needed. The siren activation and the EBS message release were not performed until evacuation was ordered rather than at the time of the initial notification of a General Emergency.

Additional public alerting activities were performed by the GCEOC. At 1250 two buses were dispatched to evacuate the disabled and those needing transportation. At 1322 the Emergency Management Director contacted the Morrison Fire Department by radio to simulate the sounding of the sirens and instruct over the speaker that buses would be leaving for the relocation center at 1430.

In general, the GCEOC effectively implemented required protective actions. Activation of traffic control points was promptly ordered. The GCEOC staff reported that resources were available to keep evacuation routes clear during bad weather and in the event of stalled or wrecked cars. However, these resources were not activated for this exercise. The EOC staff were not aware of the locations or special needs of mobility-impaired individuals in the area. However, transportation for these people was provided. The Controller inserted an unplanned special needs person to test the response.

Ingestion pathway protective actions were based on state recommendations. The GCEOC staff discussed the evacuation recommendations of the state EOC and the licensee. Actions were based on plant conditions and assistance from the plant's representative. Hermann, Missouri is the county seat for Gasconade County and is an evacuation reception center. Receipt of evacuated persons at the high school is coordinated with the state. The staff is versed in receiving evacuees and in furnishing transportation.

Radiological exposure control was adequate. Dosimetry equipment was maintained and supplied by the state EOC. Hermann Hospital had potassium iodide (KI). A representative from the hospital is on the emergency staff and has been trained in the procedures regarding the use of KI.

Since all media relations were handled at the JPIC, no briefings to the media were given at the GCEOC, nor was any space set aside for that purpose.

The GCEOC staff appeared to be well prepared for recovery and reentry activities. Arrangements were made to secure evacuated areas and procedures had been developed to allow entry into the evacuated areas for essential services. Communications with other response organizations and with the public concerning reentry decisions and precautions were simulated. The GCEOC staff discussed the Callaway plant conditions at the time of the termination of the exercise and the actions that they would take in the event of a real emergency. The staff appeared to be knowledgeable of the required actions.

During the first exercise for the Callaway plant, Gasconade County demonstrated adequate response to actions created in the scenario. Several deficiencies were observed and were acknowledged by staff of the GCEOC.

Deficiencies That Would Lead to a Negative Finding

No deficiencies were observed at the GCEOC that would lead to a negative finding.

Other Deficiencies

1. Deficiency: The EOC requires a back-up power supply as well as facilities for round-the-clock operation (e.g., bunks, shower, kitchen) (NUREG-0654, II, A.4, H.3).

   Recommendation: Gasconade County should continue with its plans to provide back-up power and facilities for 24-hour operations at the GCEOC.

2. Deficiency: The GCEOC does not have the capability to transmit or receive hard copy documents (NUREG-0654, II, Appendix 3, C.1.f).

Recommendation: Dissemination of messages between the SEOC or JPIC with the GCEOC should be rapid and reliable. It is desirable for voice traffic to be supported by hard copy verification.

3. Deficiency: Public alerting and notification was not accomplished within the prescribed 15 minute period. Coordination with the SEOC was confused (NUREG-0654, II, E.6, Appendix 3).

   Recommendation: The GCEOC staff should participate in the remedial drill with the state to improve the coordination of public alert and instruction.

4. Deficiency: GCEOC staff were not aware of the location or special needs of mobility-impaired individuals in the EPZ (NUREG-0654, II, J.10.d).

   Recommendation: The County should know the locations and requirements of mobility-impaired and other special needs persons.

2.2.3 Montgomery County EOC

Overview

Activation and staffing of the Montgomery County EOC (MCEOC) was accomplished promptly. The call initiating the activation of the MCEOC was received from the Callaway County EOC at 0913. The call was received by the county sheriff's dispatcher who monitors the phone 24-hours per day. The call was subsequently verified. Upon receipt of the call, the plan specifies that the dispatcher call the County Judge and the Emergency Management Director. This was done at 0914. Additional staff was called using a written, up-to-date call list. The MCEOC was opened at 0930 and staffing was completed by 1016. The MCEOC was staffed by all agencies identified in the plan. The first shift personnel displayed adequate training and knowledge. Capabilities for around the clock staffing were demonstrated by presentation of a roster listing the additional personnel.

The Emergency Management Director was effectively in charge at the MCEOC. However, according to the plan, the Presiding Judge was to be in charge. Periodic briefings were held to update the MCEOC staff on the status of the situation. Staff were involved in the decision making as appropriate. Staff members had an excellent set of detailed procedures and checklists. The Emergency Management Director knew the procedures and did a good job in directing the county response program. Message logs were maintained and

messages were distributed as necessary. Although there was a simulation of security measures at the MCEOC, access to the facility was not controlled.

Facilities at the MCEOC were not adequate. The MCEOC was too small and crowded and lacked sufficient lighting for night operations. The basic telephone service was adequate, but additional equipment is required to handle more than one call simultaneously. The facilities were inadequate to support round-the-clock operations. In addition, a back-up power source was not available. All required maps and displays were either posted or were available for reference.

Primary and back-up communications were available with the following organizations:

- State EOC — Primary: ommercial phone; Backup: sheriff's radio (not demonstrated)
- Local EOCs — Primary: commercial phone; Backup: sheriff's radio (not demonstrated)
- Licensee — Primary: commercial phone; Backup: (not demonstrated)
- EOF — Primary: commercial phone
- Media Center — Primary: commercial phone (not demonstrated)
- Ambulances — Primary: commercial phone

Conferencing capabilities were available on the commercial telephone lines. No hard-copy device was available at the MCEOC for transmitting hard copy documents to and from the JPIC. In addition, the back-up radio equipment was not located in the EOC. Messages had to be hand-carried or phoned to the MCEOC from the sheriff's office where the radio equipment was located.

Dosimeters were available to county workers. The workers were instructed to monitor the dosimeters every 30 minutes. If a reading greater than pre-established levels occurred, the workers were directed to report to their supervisors for instructions. This directive is vague. The use of potassium iodide (KI) was not recommended by the MCEOC for the emergency workers.

Lack of coordination and communication between the SEOC and the MCEOC was evident. It was intended for the local EOC to transmit requests for EBS message broadcasts to the SEOC which would coordinate the other county EOCs before issuing the message. However, during the exercise there was no apparent coordination or feedback to the MCEOC. There was no confirmation of messages. The MCEOC was given no instructions to activate sirens or to coordinate the sirens with the EBS messages.

The staff of the MCEOC had a good understanding of the required actions and procedures regarding protective actions. However, because of the previously mentioned communications problem, it was not clear if required information was being transmitted to the public. Activation of traffic control points was promptly ordered. According to the MCEOC staff, appropriate resources were available to keep the evacuation route clear during bad weather and in the event of stalled or wrecked cars. In addition, the MCEOC staff indicated that local resources were adequate to handle traffic and access control functions simultaneously. The traffic access control plan excluded one road that should have been blocked to prevent access to the EPZ.

The reception center were ordered to be activated in a timely manner. Evacuation of on-site individuals was demonstrated in an organized and timely manner. The MCEOC staff was aware of the locations and special needs of mobility-impaired individuals in the area by means of written information. Transportation arrangements were made for these people.

Since all media relations were handled at the JPIC, no briefings to the media were given at the MCEOC, nor was any space set aside for this purpose.

Recovery and reentry activities were generally performed adequately. Arrangements were made to secure evacuated areas and some procedures were in place to allow entry to evacuated areas for essential services. Relaxation of protective actions and recovery/reentry decisions was based on radioactivity monitoring data and were communicated to other organizations in a timely manner. However, no arrangements were made to inform the public about safety and health during reentry.

The scenario for this first exercise for the Callaway plant was adequate to provide a realistic test of the capability of Montgomery County to respond to a radiological emergency.

Deficiencies that Would Lead to a Negative Finding

No deficiencies were observed at the MCEOC that would lead to a negative finding.

Other Deficiencies

1. Deficiency: The facilities at the MCEOC are not adequate. The facility is too small, has no back-up power, has inadequate lighting and communications, and is not equipped for extended 24 hours per day operations (NUREG-0654, II, A.4, H.3).

   Recommendation: Montgomery County should either move its EOC to a new larger location, or expand the space at the

existing EOC. The facility also needs improvements to lighting, communications, and the addition of a back-up power source.

2. Deficiency: There was a demonstrated lack of coordination and communication from the SEOC to the MCEOC (NUREG-0654, II, E.1, E.5, E.6, E.7).

   Recommendation: Improvements in communications between the SEOC and MCEOC are required to insure feedback to the local EOC regarding public information messages. The MCEOC staff should participate in the remedial drill with the state to improve the coordination of public alert and instruction.

3. Deficiency: It was not clear whether workers using dosimeters actually had adequate instructions to know what to do if specific exposure readings on dosimeters were reached, or if a system to recall workers actually exists. Procedures were not demonstrated (NUREG-0654, II, K.3.a, K.3.b, K.4).

   Recommendation: Specific written procedures should be prepared to more clearly specify what actions should be taken at established dosimeter readings.

4. Deficiency: One road was not accounted for in the access control plan (NUREG-0654, II, J.10.j).

   Recommendation: The access control plan should be revised to include the road which was not accounted for in the exercise.

2.2.4 Osage County EOC

Overview

The activation and staffing of the Osage County EOC (OCEOC) was performed in an orderly and timely manner. Upon receipt of the notification of unusual event by the CCEOC, the county Sheriff's dispatcher contacted the county Presiding Judge and Emergency Management Director. At Alert status, the county transportation officer, county health officer, and PIO were contacted. Partial staffing was complete by key staff at 0930. Final staffing was ordered by the Presiding Judge at Site Emergency and staffing was completed by 1000. The OCEOC was staffed by all agencies identified in the plan. Communication checks were made between the OCEOC with Gasconade,

Montgomery, and Callaway Counties and the state EOC. Some of the county staff were well prepared, others were not. The dispatcher, PIO, and County Health official were best prepared.

The Presiding Judges worked closely with the PIO and the Emergency Management Director. However, the remainder of the staff were largely uninvolved. There were no general staff meetings or briefings. Even though there was very little interaction with the support staff, the Presiding Judge and Associate Judge did effectively coordinate the county's emergency response activities. They followed the plan procedures with the help of a well prepared checklist. Organization and coordination of the staff was weak, possibly due to lack of experience as a team. Command and control was not clearly demonstrated. There was no access control demonstrated at the OCEOC.

The facilities at the OCEOC were adequate but could use improvement. Space was limited and layout of the seating and phone lines prevented effective communications. The five phone lines were all situated on a table directly behind the decision makers. Because of the awkward placement of the phones, the staff appeared reluctant to use the phones. The only staff members observed using the phones were the Emergency Management Director and the PIO. In addition, the Sheriff's dispatcher, located upstairs, served as the message center. In order to use a phone or deliver a message, the dispatcher had to leave the radio unattended. The facilities at the OCEOC were sufficient to support extended around the clock operations. A backup power source was available but not operational due to a need for a new battery. The status boards at the OCEOC were excellent and were kept updated. All required maps were either posted or were available for reference.

The primary communication system available for contact with other response organizations was commercial telephone. Ambulance service was handled through the State Highway Patrol. With the exception of backup radio relay communications with the state and local EOCs, no backup communications systems were available for the other response organizations. Communications between the OCEOC and the other counties was demonstrated to be excellent during the exercise. However, communication with the SEOC was difficult since telephone lines into the state EOC were almost always busy. Backup radio communications through the County Sheriff and State Highway Patrol would be cumbersome under emergency conditions. Primary and backup communications to the following locations were;

- State EOC — Primary: commercial phone; Backup: radio relay
- Local EOCs — Primary: commercial phone; Backup: radio relay
- Licensee — Primary: commercial phone

- EOF — Primary: commercial phone; Backup: radio
- EBS — Primary: commercial phone
- Media Center — Primary: commercial phone
- Schools — Primary: commercial phone
- Hospitals — Primary: commercial phone
- Ambulances — Primary: relay through Highway Patrol

No hard copy telefax device was available for use at the EOC.

Overall the dose assessment and protective action activities of the exercise were handled adequately. The county judges did a good job in considering radiological data and recommendations provided to them. Serious thought and effort was given in reaching decisions on in-home sheltering and evacuation. A cautious attitude was maintained. The distribution and use of potassium iodide (KI) was not given consideration, even though a supply of KI was demonstrated to be available at the EOC.

The OCEOC decision makers and the PIO did an outstanding job of alerting and providing instructions to the general public. However, for more specific notification requirements, there was no preparation or activity, e.g., (1) Osage County experiences a large influx of sportsmen for deer and turkey hunting and fishing. Provisions for alerting and informing this transient population were non-existent; (2) locations of handicapped persons were not identified and no plans for alerting, instructing or evacuating them have been developed.

The sirens were used and a public address was made. The principal of the local school verified the public address message, but the siren was on low power and could not be heard at a sufficient distance. This was attributed to the sirens being checked by crews only a few days prior to the exercise. The assumption was made that the volume was not turned back up. The notification message for the EBS broadcast was not coordinated well at the state EOC when the evacuation message was called in. The state discovered the error 45 minutes after the sirens had sounded.

Activation of traffic control by Osage County was adequate. A State Highway Maintenance representative was present to provide additional capability for road blocks, bad weather, road clearance, and other assistance. The reception centers were activated by the state's receipt of the EBS message for evacuation. This is not practical and a more direct notification method is needed.

The County Health Officer was well-trained, knew the radiological exposure control plan, and was prepared to carry it out. However, the Public Health Officer indicated reluctance to administer the KI without the direction of a physician. Required dosimetry was also available during the exercise. However, the emergency workers and their supervisors were not trained in the use of dosimeters or recording doses. It was acknowledged by the staff that this problem had already been identified.

No media relations activities were conducted by the OCEOC during the exercise since all media activities have been delegated to the JPIC.

The Osage County decision makers and the staff at the OCEOC had no prior practice at reentry procedures. Other than the previously prepared reentry messages provided for in the plan, the county was not knowledgeable about how to initiate, coordinate, or manage a reentry. Additional training in this area is needed. Additional guidance will be provided by FEMA when it becomes available from FEMA Headquarters.

The scenario provided a sound basis for testing the local response capability with the exception that it did not provide for an opportunity to demonstrate the ability to request outside help or to conduct reentry.

Deficiencies That Would Lead to a Negative Finding

There were no deficiencies observed that would lead to a negative finding at the Osage County EOC.

Other Deficiencies

1. Deficiency: There was difficulty in communicating with the SEOC due to constant busy signals on the state phone lines (NUREG-0654, II, F; Appendix 3, C.1.d,f, C.2.b).

   Recommendation: A more efficient communication system is required which cannot be encumbered by a sequential call down process. Notification should be a one-call process to all assigned organizations.

2. Deficiency: No provisions exist for alerting and instructing the hearing-impaired or mobility-impaired residents or the large transient population anticipated during the hunting season (NUREG-0654, II, E.6, J.10.c,d).

   Recommendation: The locations of hearing-impaired and mobility-impaired residents need to be identified and a supplemental means of alerting these people developed.

Practical methods of alerting and instructing the transient hunters in the field also need to be developed.

3. Deficiency: Emergency workers and their supervisors have not yet been trained in the monitoring and control of radiological exposure. No dates have been set for this training (NUREG-0654, II, K.3.a, K.3.b).

   Recommendation: A training program should be established for the emergency workers, and a specific target date should be established as to when the training will be complete.

4. Deficiency: No coordination was observed for the county Presiding Judge's decision to sound sirens and issue an EBS message on sheltering. The decision was based on county information only; no recommendation was received from external sources (NUREG-0654, II, E.1,5,6,7; Appendix 3).

   Recommendation: Additional communications with the state and other local EOCs is recommended to secure additional input prior to issuing information to the general public.

5. Deficiency: The OCEOC staff could not demonstrate that they were able to implement appropriate measures for controlled recovery and reentry (NUREG-0654, II. M.1).

   Recommendation: Additional training of the OCEOC staff is required to provide them with the capabilities to adequately implement reentry.

6. Deficiency: Command and control was not clearly demonstrated. OCEOC staff were generally uninvolved in the play of the exercise and were not participants in general staff meetings or briefings (NUREG-0654, II, A.1.d, A.2.a).

   Recommendation: The individual in charge should be identified. Each member of the staff should receive additional training on their specific functions and responsibilities. Periodic briefings involving the staff should be conducted to assure continuity of the county's response.

7. Deficiency: Security and access control to the OCEOC was not demonstrated (NUREG-0654, II, H.3).

   Recommendation: Additional staffing is required to assure security at the OCEOC.

8. Deficiency: The OCEOC message center was located on another floor. The radio dispatcher was required to leave the radio unattended to deliver messages (NUREG-0654, II, F.1.a, H.3).

   Recommendation: A messenger is required to handle messages between the OCEOC and the message center so the radio is not left unattended.

9. Deficiency: The OCEOC was not equipped with an operational backup power supply (NUREG-0654, II, H.3).

   Recommendation: The emergency generator needs to be placed back into operation with the installation of a new starter battery.

10. Deficiency: No hard copy device was available for transmission or receipt of messages to or from the SEOC or JPIC (NUREG-0654, II, Appendix 3, C.1.f).

    Recommendation: Dissemination of messages between the SEOC or JPIC with the OCEOC should be rapid and reliable. It is desirable for voice traffic to be supported by hard copy verification.

11. Deficiency: The Public Health Officer at the OCEOC indicated a reluctance to administer KI in the event it was required without the direction of a physician (NUREG-0654, II, J.10.e,f).

    Recommendation: Additional training is required for public health officials to familiarize them with the planned procedures for administration of KI.

3 SUMMARY OF DEFICIENCIES AND RECOMMENDATIONS: MARCH 21, 1984, EXERCISE

Section 2 of this report lists deficiencies based on the findings and recommendations of federal observers at the radiological emergency preparedness exercise for the Callaway Nuclear Power Plant held on March 21, 1984. These evaluations are based on the appiicable planning standards and evaluation criteria set forth in (NUREG-0654-FEMA-1, Rev. 1 (Nov. 1980) and objectives for the exercise agreed upon by the state, FEMA, and the RAC.

The Regional Director of FEMA is responsible for certifying to the FEMA Associate Director, State and Local Programs and Support, Washington, D.C., that any deficiencies that require corrective actions have been corrected and that such corrections have been incorporated into the plans as appropriate.

FEMA requests that both the state and local jurisdictions submit a schedule of actions they have taken or intend to take to correct these deficiencies. FEMA recommends that a detailed plan, including dates of completion for scheduling and implementing recommendations, be provided if corrective actions cannot be instituted immediately.

Two deficiencies were observed at the state and county level that would lead to a finding that off-site emergency preparedness was not adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public living in the vicinity of the site in the event of a radiological emergency. These and other deficiencies observed at the March 21, 1984, exercise for the CNPP require that a schedule of corrective actions be developed. All deficiencies are summarized in the following table.

CALLAWAY NUCLEAR POWER PLANT EXERCISE-REMEDIAL ACTIONS
MARCH 21, 1984

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	MISSOURI OPERATIONS State Emergency Operations Center					
E.5, E.6, E.7, App.3	1. Deficiency: The ability of the state to promptly alert the public of emergency conditions at the CNPP and coordinate the notification of the public of protective action recommendations were not adequately demonstrated during this exercise. The procedures implemented for public alert and notification intentionally departed from the existing planned procedures. Specific functions not adequately demonstrated include; (a) timely notification of all counties concerning protective action recommendations and coordination of EBS message content with the counties, (b) notification of counties that an EBS message was imminent and the coordination of siren activation, (c) simulation of transmission of all EBS messages to the EBS station, and (d) dissemination of EBS messages and protective action		4/19/84	Satisfactorily demonstrated during the remedial exercise for public alert and notification.	A	C

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	recommendations, preferrably in hard copy form, to the JPIC and EOF-PIOs. However, the state did coordinate with the counties by telephone regarding EBS message content. But there were no hard copies of the messages available to the counties or observers. The counties often encountered difficulties getting through to the state which could be corrected by some type of conferencing system. Recommendation: A remedial drill will be scheduled on or before April 21, 1984 to test the state's ability to effectively alert the public of emergency conditions at the CNPP. This drill will also test the state's ability to promptly coordinate with the counties siren activation and broadcast of protective action recommendations on EBS. It is assumed the procedures to perform these functions will be documented prior to the drill.					

CALLAWAY NUCLEAR POWER PLANT EXERCISE-REMEDIAL ACTIONS
MARCH 21, 1984

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
A.2.a	2. Deficiency: The state, through a misunderstanding of a FEMA memorandum, simulated notification of FEMA Region VII at the Unusual Event rather than actually notifying FEMA Region VI as prescribed in the plan. Recommendation: More training is required to assure all appropriate agencies are contacted in the event of an emergency.					
A.1.d, A.2.a	3. Deficiency: The SEOC emergency briefings were not always organized. Appropriate organizations were involved in decision making, but this was accomplished through a one-to-one consultation with the agency involved. Other agencies were not apprised of actions that were taken.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: Although organizations were involved in decision making on a one-to-one consultation basis, a more effective method for information dissemination among the staff should be developed. Agency reports at briefings and/or message distribution to all agencies would be desirable.					
D.3	4. Deficiency: The status board frequently did not reflect current conditions, including the current emergency classification level and some protective action items. Recommendation: The status board should indicate the current emergency classification level and important messages to ensure all staff members have the same basic information.					
E.5,6	5. Deficiency: The state activated EBS, but neglected to instruct the counties to sound their sirens and inform them that an EBS broadcast was imminent.		4/19/84	Partially satisfied this deficiency through the temporary installation of a conference line. Permanent arrangements still need to be finalized.	I	I

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: The state should establish a system with the counties to coordinate siren activation and EBS message release.					
J.10	6. Deficiency: A map of access control points was not posted in the SEOC. Recommendation: A map or display indicating access control points should be posted. A map of access control points was posted at the Highway Patrol Headquarters. A copy of the map should be transmitted to the SEOC.					
M.1	7. Deficiency: The ability to determine and implement appropriate measures for controlled recovery and reentry were not demonstrated at the SEOC. Recommendation: The SEOC staff was dismissed early due to premature exercise termination by the contoller. Recovery/reentry activities should be fully developed and demonstrated in future exercises. FEMA will also provide recovery/ reentry guidance as soon as it becomes available from the National Office.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	State Forward Command Post					
E.3.a,b	8. Deficiency: SEMA staff at the FCP did not initially wear high- and low-range, direct-reading dosimeters. When issued later, some were unclear on procedures for reading and recording dosimeter values. Recommendation: Additional training is needed to familiarize SEMA staff members with correct procedures for wearing dosimeters, and reading and recording dosimeter values.					
App.3; C.1.d,f C.2.b	9. Deficiency: The primary communication link between the FCP with the State and local EOCs was commercial telephone. Although functional, the system was relatively slow, in that each message had to be dictated to five locations, busy signals were often encountered, and message logging was complicated. Recommendation: A more efficient communication system is required which cannot be encumbered by a sequential call down process. Notification should be a one-call		4/19/84	Partially satisfied this deficiency through the temporary installation of a conference line. Permanent arrangements still require finalization.	I	I

NUREG Elemen:	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	process to all assigned organizations to be notified. Dissemination should be rapid and reliable and provide acknowledgment and verification of message content. It is desirable for voice traffic to be supported by hard copy verification.					
	Public Information					
K.3 a,b	10. Deficiency: SEMA PIOs at the EOF Media Release Center did not have dosimeters and were unaware of the need for them. Recommendation: Additional training is needed for SEMA PIOs to familiarize them with the need for personal dosimeters and the correct procedures for wearing dosimeters, reading and recording dosimeter values.					
	Radiological Assessment					
E.1, E.2, I.8	11. Deficiency: Planned procedures to alert and notify BRH of events occurring at the plant were not followed by state dispatchers. As a result, BRH EOF staff and field personnel were deployed late.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: Additional training of state dispatchers is required to ensure BRH receives prompt notiffcation of plant events.					
J.10. e,f	12. Deficiency: Procedures for administration of KI to emergency workers were exceptable, but different from those procedures described in the plan. Recommendation: The plan should be amended to reflect current practices and policies for the administration of KI to emergency workers.					
	Radiological Monitoring Teams					
K.3.a	13. Deficiency: Delays were encountered in reaching some of the prescribed field monitoring locations due to inadequate vehicles to traverse poor roads. Recommendation: Arrangements should be made for the procurement of vehicles capable of traversing roads in adverse condition.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
I.7, I.8, I.11	14. Deficiency: The field kit for a second field team is currently incomplete. This prevents the deployment of at least two fully-equipped state field teams as specified in the plan. Recommendation: The field kit should be completed as soon as possible to comply with the planned procedures to outfit and deploy at least two state field teams.					
I.8, I.10	15. Deficiency: On occasion, there were delays of up to 30 minutes between the time field measurements were made and subsequently reported. The time samples were taken were not relayed with sample readings to the EOF. Recommendation: The time that radioiodine and plume measurements are taken should be reported to the field coordinator at the EOF.					
K.3.a	16. Deficiency: The BRH field team member was not equipped with appropriate dosimetry during deployment from BRH headquarters to the EOF.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of St[illegible]e/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: Appropriate dosimetry, including direct-reading dosimeters, should be issued to field team members at BRH headquarters. Such dosimetry is required because the deployment route to the EOF is largely within the EPZ.					
H.11	17. Deficiency: The radioiodine instrument used for field monitoring was different from that specified in the plan. Recommendation: The plan should be changed to reflect the actual equipment used.					
	Joint Public Information Center					
A.2.a, A.4	18. Deficiency: Although an alternate for the lead state PIO was identified, no second-shift replacement was could be specified. Recommendation: The state should specify the key persons responsible for state PIO functions for continuous operations over a protracted period.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
G.3.a	19. Deficiency: During the course of press briefings, all designated spokespersons did not remain available to the press. Recommendation: Designated spokespersons from all principal organizations should remain available to the press for the duration of the briefing.					
G.3.a	20. Deficiency: An area was not set aside or designated for private interviews of key spokespersons by the press. Recommendation: Consideration should be given to formally designating times and places where media representative can conduct private interviews within the JPIC.					
G.4.b	21. Deficiency: A systematic procedure for information gathering and synthesis prior to the press briefings was not demonstrated. Recommendation: Procedures should be established for the timely exchange of information between designated EOF, SEOC, and county spokespersons with the JPIC PIOs prior to press briefings.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
G.4.c	22. Deficiency: The rumor control telephone number was not publicized. According to the public information brochure, the number was to be announced in EBS messages. Recommendation: The rumor control telephone number should be announced over the EBS stations or included in the public information brochure. COUNTY OPERATIONS Callaway County/Fulton EOC					
E.6, C.3 App.3; C.3	23. Deficiency: Siren activation was not adequately demonstrated during this exercise for two reasons. First, the sirens were to be activated for the entire area, not just selected sirens for areas affected by the protective action recommendation. Second, attempts to sound the sirens were unsuccessful. Subsequent attempts to activate the system also failed.		4/19/84	Satisfactorily demonstrated during the remedial exercise for public alert and notification.	A	C

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: A remedial drill will be scheduled on or before April 21, 1984 to test the County's capability to activate the siren system under drill conditions.					
H.3	24. Deficiency: The CCEOC is not equipped with a backup power supply. Recommendation: An emergency generator of appropriate capacity should be procured to assure uninterrupted operation of the CCEOC.					
C.1.f	25. Deficiency: No hard copy device was available for transmission or receipt of messages to or from the SEOC or JPIC. Recommendation: Dissemination of messages between the SEOC or JPIC with the CCEOC should be rapid and reliable. It is desirable for voice traffic to be supported by hard copy verification.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
J.10.j	26. Deficiency: The sheriff's deputy at the traffic control point did not know the location of the reception/congregate care center. Recommendation: Uniformed officers along evacuation routes or at traffic control points should be able to direct persons to the reception/ congregate care facilities. More training on the location of these centers is required.					
K.3.a,b	27. Deficiency: The sheriff's deputy at the traffic control point did not periodically read and record his dosimeter readings. The officer was not issued a permanent record device. Recommendation: The sheriffs department should ensure that both self-reading and permanent record devices are issued and that self-reading dosimeters are read at appropriate frequencies and the values recorded.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Gasconade County EOC					
A.4, H.3	28. Deficiency: The EOC requires a back-up power supply as well as facilities for round-the-clock operation (e.g., bunks, shower, kitchen). Recommendation: Gasconade County should continue with its plans to provide back-up power and facilities for 24-hour operations at the GCEOC.					
C.1.f	29. Deficiency: The GCEOC does not have the capability to transmit or receive hard copy documents. Recommendation: Dissemination of messages between the SEOC or JPIC with the GCEOC should be rapid and reliable. It is desirable for voice traffic to be supported by hard copy verification.					
E.6	30. Deficiency: Public alerting and notification was not accomplished within the prescribed 15 minute period. Coordination with the SEOC was confused.		4/19/84	Satisfactorily demonstrated during the remedial exercise for public alert and notification.	A	C

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: The GCEOC staff should participate in the remedial drill with the state to improve the coordination of public alert and instruction.					
J.10.d	31. Deficiency: GCEOC staff were not aware of the location or special needs of mobility-impaired individuals in the EPZ. Recommendation: The County should know the locations and requirements of mobility-impaired and other special needs persons.					
	Montgomery County EOC					
A.4, H.3	32. Deficiency: The facilities at the MCEOC are not adequate. The facility is too small, has no back-up power, has inadequate lighting and communications, and is not equipped for extended 24 hours per day operations.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: Montgomery County should either move its EOC to a new larger location, or expand the space at the existing EOC. The facility also needs improvements to lighting, communications, and the addition of a back-up power source.					
E.1, E.5, E.6, E.7	33. Deficiency: There was a demonstrated lack of coordination and communication from the SEOC to the MCEOC. Recommendation: Improvements in communications between the SEOC and MCEOC are required to insure feedback to the local EOC regarding public information messages. The MCEOC staff should participate in the remedial drill with the state to improve the coordination of public alert and instruction.		4/19/84	Satisfactorily demonstrated during the remedial exercise for public alert and notification. The coordination was enhanced through the temporary installation of a conference line.	A	C

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (-)
K.3.a, K.3.b, K.4	34. Deficiency: It was not clear whether workers using dosimeters actually had adequate instructions to know what to do if specific exposure readings on dosimeters were reached, or if a system to recall workers actually exists. Procedures were not demonstrated. Recommendation: Specific written procedures should be prepared to more clearly specify what actions should be taken at established dosimeter readings.					
J.10.j	35. Deficiency: One road was not accounted for in the access control plan. Recommendation: The access control plan should be revised to include the road which was not accounted for in the exercise.					
	Osage County EOC					
C.1.d,f C.2.b	36. Deficiency: There was difficulty in communicating with the SEOC due to constant busy signals on the state phone lines.		4/19/84	Partially satisfied through the temporary installation of a conference line. Permanent arrangements still need to be finalized.	I	I

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: A more efficient communication system is required which cannot be encumbered by a sequential call down process. Notification should be a one-call process to all assigned organizations.					
E.6, J.10. c,d	37. Deficiency: No provisions exist for alerting and instructing the hearing-impaired or mobility-impaired residents or the large transient population anticipated during the hunting season. Recommendation: The locations of hearing-impaired and mobility-impaired residents need to be identified and a supplemental means of alerting these people developed. Practical methods of alerting and instructing the transient hunters in the field also need to be developed.					
K.3.a, K.3.b	38. Deficiency: Emergency workers and their supervisors have not yet been trained in the monitoring and control of radiological exposure. No dates have been set for this training.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: A training program should be established for the emergency workers, and a specific target date should be established as to when the training will be complete.					
E.1,5, 6,7	39. Deficiency: No coordination was observed for the county Presiding Judge's decision to sound sirens and issue an EBS message on sheltering. The decision was based on county information only; no recommendation was received from external sources. Recommendation: Additional communications with the state and other local EOCs is recommended to secure additional input prior to issuing information to the general public.		4/19/84	Satisfactorily demonstrated during the remedial exercise for public alert and notification.	A	C
M.1	40. Deficiency: The OCEOC staff could not demonstrate that they were able to implement appropriate measures for controlled recovery and reentry.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Recommendation: Additional training of the OCEOC staff is required to provide them with the capabilities to adequately implement reentry.					
A.1.d, A.2.a	41. Deficiency: Command and control was not clearly demonstrated. OCEOC staff were generally uninvolved in the play of the exercise and were not participants in general staff meetings or briefings. Recommendation: The individual in charge should be identified. Each member of the staff should receive additional training on their specific functions and responsibilities. Periodic briefings involving the staff should be conducted to assure continuity of the county's response.					
H.3	42. Deficiency: Security and access control to the OCEOC was not demonstrated. Recommendation: Additional staffing is required to assure security at the OCEOC.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
F.1.a, H.3	43. Deficiency: The OCEOC message center was located on another floor. The radio dispatcher was required to leave the radio unattended to deliver messages. Recommendation: A messenger is required to handle messages between the OCEOC and the message center so the radio is not left unattended.					
H.3	44. Deficiency: The OCEOC was not equipped with an operational backup power supply. Recommendation: The emergency generator needs to be placed back into operation by installation of a new starter battery.					
C.1.f	45. Deficiency: No hard copy device was available for transmission or receipt of messages to or from the SEOC or JPIC. Recommendation: Dissemination of messages between the SEOC or JPIC with the OCEOC should be rapid and reliable. It is desirable for voice traffic to be supported by hard copy verification.					

CALLAWAY NUCLEAR POWER PLANT EXERCISE-REMEDIAL ACTIONS
MARCH 21, 1984

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
J.10. e,f	46. Deficiency: The Public Health Officer at the OCEOC indiceted a reluctance to administer KI in the event it was required without the direction of a physician. Recommendation: Additional training is required for public health officials to familiarize them with the planned procedures for administration of KI.					

4 EVALUATION OF EXERCISE OBJECTIVES

In order to facilitate the accounting of all major elements of preparedness within a five-year period (per NUREG-0654, II, N.1.b), FEMA Region VII has developed a tracking system based on the 35 standardized exercise objectives. The fulfillment and evaluation of the objectives demonstrated during the March 21, 1984 exercise are presented on the following pages with reference to the corresponding NUREG element(s).

The locations or functions to which each objective was applicable are identified by a numerical rating.

1. Completely demonstrated; completely demonstrated leaves nothing to be desired for an exercise of the objective.

2. Partially demonstrated with no deficiency: Partially demonstrated with no deficiency indicates undemonstrated elements of the objective, but no perceived lack of preparedness.

3. Partially demonstrated, but with a deficiency; partially demonstrated, but with a deficiency indicates the need for corrective action, OR may indicate only a recommendation for improvement. The deficiency number refers to the deficiency and recommendation identified in Section 3 of this report.

4. Inadequate; inadequate indicates a definite need for corrective action and denotes a greater severity of deficiency. The deficiency number refers to the deficiency and recommendation identified in Section 3 of this report.

5. Other; other may indicate qualifications such as inapplicability due to scenario limitations or other factors.

Objectives not expected of this exercise are labeled "N/A". Each federal observer was requested to provide his/her evaluation of the objectives applicable to his/her assigned location.

4.1 State Operations

The following list indicates the fulfillment of exercise objectives demonstrated at state locations during the March 21, 1984 exercise of the Callaway Nuclear Power Plant.

STATE OPERATIONS -- FULFILLMENT OF EXERCISE OBJECTIVES DURING THE MARCH 21, 1984 EXERCISE OF THE CALLAWAY NUCLEAR POWER PLANT

Objective	NUREG-0654 Criteria	EOC		EOF												Medical Drill	
				FCP		PIO		Dose Assessment		Field Monitoring		JPIC					
		Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*			Rating	Def.*
1. Demonstrate ability to mobilize staff and activate facilities promptly.	E.1, E.2	2		1		1		3	11	N/A		1				N/A	
2. Demonstrate ability to fully staff facilities and maintain staffing around the clock.	A.2.a, A.4	2		2		1		1		N/A		3	18,19			N/A	
3. Demonstrate ability to make decisions and to coordinate emergency activities.	A.1.d, A.2.a	3	1,3,5	1		1		1		N/A		N/A				N/A	
4. Demonstrate adequacy of facilities and displays to support emergency operations.	G.3.a, H.2, H.3	3	4,6	2		2		1		N/A		3	20,21			N/A	
5. Demonstrate ability to communicate with all appropriate locations, organizations, and field personnel.	F	4	1,2,5	3	9	1		1		2		1				N/A	
6. Demonstrate ability to mobilize and deploy field monitoring teams in a timely fashion.	E.2, I.8	N/A		N/A		N/A		3	11	3	13	N/A				N/A	
7. Demonstrate appropriate equipment and procedures for determining ambient radiation levels.	I.8, I.11	N/A		N/A		N/A		N/A		3	14,17	N/A				N/A	
8. Demonstrate appropriate equipment and procedures for measurement of airborne radioiodine concentrations as low as 10^{-7} uCi/CC in the presence of noble gases.	I.9	N/A		N/A		N/A		N/A		1		N/A				N/A	
9. Demonstrate appropriate equipment and procedures for collection, transport and analysis of samples of soil, vegetation, snow, water, and milk.	I.8	N/A		N/A		N/A		N/A		3	15	N/A				N/A	

STATE OPERATIONS -- FULFILLMENT OF EXERCISE OBJECTIVES DURING THE MARCH 21, 1984 EXERCISE OF THE CALLAWAY NUCLEAR POWER PLANT

Objective	NUREG-0654 Criteria	EOC		EOF											
				FCP		PIO		Dose Assessment		Field Monitoring		JPIC		Medical Drill	
		Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*
10. Demonstrate ability to project dosage to the public via plume exposure, based on plant and field data, and to determine appropriate protective measures, based on PAG's, available shelter, evacuation time estimates, and all other appropriate factors.	I.10, J.10.m	5		N/A		N/A		1		N/A		N/A		N/A	
13. Demonstrate ability to alert the public within the 10-mile EPZ, and disseminate an initial instructional message within 15 minutes.	E.6	4	1,5	N/A		N/A		N/A		N/A				N/A	
14. Demonstrate ability to formulate and distribute appropriate instructions to the public in a timely fashion.	E.5	4	1,5	N/A		N/A		N/A		N/A				N/A	
20. Demonstate ability to continuously monitor and control emergency worker exposure.	K.3.a,b	5		3	8	3	10	1		3	16	N/A		N/A	
21. Demonstrate the ability to make the decision, based on predetermined criteria, whether to issue KI to emergency workers and/or the general population.	J.10.f	N/A		N/A		N/A		3	12	2		N/A		N/A	
22. Demonstrate the ability to supply and administer KI, once the decision has been made to do so.	J.10.e	N/A		N/A		N/A		3	12	1		N/A		N/A	
24. Demonstrate ability to brief the media in a clear, accurate and timely manner.	G.3.a, G.4.a	N/A		N/A		N/A		N/A		N/A		3	19	N/A	
25. Demonstrate ability to provide advance coordination of information released.	G.4.b	4	1,5	1		N/A				N/A		3	21	N/A	
26. Demonstrate ability to establish and operate rumor control in a coordinated fashion.	G .c	1		N/A		1		N/A		N/A		3	22	N/A	

STATE OPERATIONS -- FULFILLMENT OF EXERCISE OBJECTIVES DURING THE MARCH 21, 1984 EXERCISE OF THE CALLAWAY NUCLEAR POWER PLANT

Objective	NUREG-0654 Criteria	EOC		EOF										Medical Drill	
				FCP		PIO		Dose Assessment		Field Monitoring		JPIC			
		Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*	Rating	Def.*
30. Demonstrate adequacy of ambulance facilities and procedures for handling contaminated individuals.	L.4	N/A		N/A		N/A		N/A		N/A		N/A		1	
31. Demonstrate adequacy of hospital facilities and procedures for handling contaminated individuals.	L.1	N/A		N/A		N/A		N/A		N/A		N/A		1	
32. Demonstrate ability to identify need for, request, and obtain Federal assistance.	C.1.a,b	5	2	N/A		N/A		N/A		N/A		N/A		N/A	
35. Demonstrate ability to determine and implement appropriate measures for controlled recovery and reentry.	M.1	3	7	N/A		N/A		2		N/A		N/A		N/A	

*Def. = Deficiency.

Core Objectives Remaining to be Exercised by the State

The following objectives from the list of 35 core objectives provided by FEMA Headquarters were not scheduled for the March 21, 1984 exercise of the Callaway Nuclear Power Plant.

11. Demonstrate ability to project dosage to the public via ingestion pathway exposure, based on field data, and to determine appropriate protective measures, based on PAGs and other relevant factors (NUREG-0654, I.10, J.11).

12. Demonstrate ability to implement protective actions for ingestion pathway hazards (NUREG-0654, J.9, J.11).

15. Demonstrate the organizational ability and resources necessary to manage an orderly evacuation of all of part of the plume EPZ (NUREG-0654, J.9, J.10.g).

16. Demonstrate the organizational ability and resources necessary to deal with impediments to evacuation, as inclement weather or traffic obstructions (NUREG-0654, J.10.k).

17. Demonstrate the organizational ability and resources necessary to control access to an evacuated area (NUREG-0654, J.10.j).

18. Demonstrate the organizational ability and resources necessary to effect an orderly evacuation of mobility-impaired individuals within the plume EPZ (NUREG-0654, J.10.d).

19. Demonstrate the organizational ability and resources necessary to effect an orderly evacuation of schools within the plume EPZ (NUREG-0654, J.9, J.10.g).

23. Demonstrate ability to effect an orderly evacuation of onsite personnel (NUREG-0654, J.2).

27. Demonstrate adequacy of procedures for registration and radiological monitoring of evacuees (NUREG-0654, J.12).

28. Demonstrate adequate of facility for mass care of evacuees (NUREG-0654, J.10.h).

29. Demonstrate adequate equipment and procedures for decontamination of emergency workers, equipment and vehicles (NUREG-0654, K.5.a,b).

33. Demonstrate ability to relocate to and operate the alternate EOF/EOC (NUREG-0654, H.2, H.3).

34. Demonstrate ability to estimate total population exposure (NUREG-0654, M.4).

4.2 COUNTY OPERATIONS

The following list indicates the fulfillment of exercise objectives demonstrated at county locations during the March 21, 1984 exercise of the Callaway Nuclear Power Plant.

COUNTY OPERATIONS -- FULFILLMENT OF EXERCISE OBJECTIVES DURING THE MARCH 21, 1984 EXERCISE OF THE CALLAWAY NUCLEAR POWER PLANT

Objective	NUREG-0654 Criteria	Callaway County		Gasconade County		Montgomery County		Osage County	
		Rating	Deficiency	Rating	Deficiency	Rating	Deficiency	Rating	Deficiency
1. Demonstrate ability to mobilize staff and activiate facilities promptly.	E.1, E.2	1		1		1		1	
2. Demonstrate ability to fully staff facilities and maintain staffing around the clock.	A.2.a, A.4	1		2		2		3	42,43
3. Demonstrate ability to make decisions and to coordinate emergency activities.	A.1.d, A.2.a	1		1		1		3	39,41
4. Demonstrate adequacy of facilities and displays to support emergency operations.	G.3.a, H.2, H.3	3	24	3	28	3	32,35	3	44
5. Demonstrate ability to communicate with all appropriate locations, organizations, and field personnel.	F	3	25	1		3	33	3	36
13. Demonstrate ability to alert the public within the 10-mile EPZ, and disseminate an initial instructional message, within 15 minutes.	E.6	4	23	3	30	3	33	3	37
14. Demonstrate ability to formulate and distribute appropriate instructions to the public, in a timely fashion.	E.5	3	23,25,26	3	29,30,31	3	33	3	45
17. Demonstrate the organizational ability and resources necessary to control access to an evacuated area.	J.10.j	1		2		3	35	1	
20. Demonstrate ability to continuously monitor and control emergency worker exposure.	K.3.a,b	3	27	5		3	34	3	38,46
25. Demonstrate ability to provide advance coordination of information released.	G.4.b	3	25	3	29	2		4	45
26. Demonstrate ability to establish and operate rumor control in a coordinated fashion.	G.4.c	2		N/A		N/A		N/A	

COUNTY OPERATIONS -- FULFILLMENT OF EXERCISE OBJECTIVES DURING THE
MARCH 21, 1984 EXERCISE OF THE CALLAWAY NUCLEAR POWER PLANT

Objective	NUREG-0654 Criteria	Callaway County		Gasconade County		Montgomery County		Osage County	
		Rating	Deficiency	Rating	Deficiency	Rating	Deficiency	Rating	Deficiency
35. Demonstrate ability to determine and implement appropriate measures for controlled recovery and reentry.	M.1	1		2		2		4	40

Core Objectives Remaining to be Exercised by the Counties

10. Demonstrate ability to project dosage to the public via plume exposure, based on plant and field data, and to determine appropriate protective measures, based on PAGs available shelter, evacuation time estimates, and all other appropriate factors (NUREG-0654, I.10, J.10.m).

11. Demonstrate ability to project dosage to the public via ingestion pathway exposure, based on field data, and to determine appropriate protective measures, based on PAGs and other relevant factors (NUREG-0654, I.10, J.11).

12. Demonstrate ability to implement protective actions for ingestion pathway hazards (NUREG-0654, J.9, J.11).

15. Demonstrate the organizational ability and resources necessary to manage an orderly evacuation of all or part of the plume EPZ (NUREG-0654, J.9, J.10.g).

16. Demonstrate the organizational ability and resources necessary to deal with impediments to evacuation, as inclement weather or traffic obstructions (NUREG-0654, J.10.k).

18. Demonstrate the organizational ability and resources necessary to effect an orderly evacuation of mobility-impaired individuals within the plume EPZ (NUREG-0654, J.10.d).

19. Demonstrate the organizational ability and resources necessary to effect an orderly evacuation of schools within the plume EPZ (NUREG-0654, J.9, J.10.g).

21. Demonstrate the ability to make the decision, based on predetermined criteria, whether to issue KI to emergency workers and/or the general population (NUREG-0654, J.10.f).

22. Demonstrate the ability to supply and administer KI, once the decision has been made to do so (NUREG-0654, J.10.e).

23. Demonstrate ability to effect an orderly evacuation of onsite personnel (NUREG-0654, J.2).

24. Demonstrate ability to brief the media in a clear, accurate and timely manner (NUREG-0654, G.3.a, G.4.a).

27. Demonstrate adequacy of procedures for registration and radiological monitoring of evacuees (NUREG-0654, J.12).

28. Demonstrate adequacy of facilities for mass care of evacuees (NUREG-0654, J.10.h).

29. Demonstrate adequate equipment and procedures for decontamination of emergency workers, equipment and vehicles (NUREG-0654, K.5.a,b).

30. Demonstrate adequacy of ambulance facilities and procedures for handling contaminated individuals (NUREG-0654, L.4).

31. Demonstrate adequacy of hospital facilities and procedures for handling contaminated individuals (NUREG-0654, L.1).

32. Demonstrate ability to identify need for, request, and obtain Federal assistance (NUREG-0654, C.1.a,b).

33. Demonstrate ability to relocate to and operate the alternate EOF/EOC (NUREG-0654, H.2, H.3).

34. Demonstrate ability to estimate total population exposure (NUREG-0654, M.4).

5 APPENDIX: REMEDIAL EXERCISE OF PUBLIC ALERT AND NOTIFICATION PROCEDURES - APRIL 19, 1984

A remedial exercise of public alert and notification procedures was conducted on April 19, 1984 as a result of deficiencies identified during the March 21, 1984 exercise. The remedial exercise was conducted to test state and local procedures to alert the public of an emergency at the CNPP using the siren system. Further, the exercise was designed to examine the coordination and dissemination of protective action instructions to the public using the EBS. During the remedial exercise, the entire siren system was successfully sounded and verified by local observers at each location. In addition, the state effectively coordinated the protective action recommendations made by the counties and activated EBS. The public alert and notification functions were performed within 15 minutes of the initiating event. The successful completion of this remedial exercise for public alerting and notification corrected the related deficiencies observed during the March 21, 1984 exercise.

5.1 STATE OPERATIONS

5.1.1 State EOC

The SEOC received notification of a General Emergency at the CNPP at 1137 over a conference telephone line. EBS was immediately contacted and instructed to standby at 1138. The SEOC concurred with the protective action recommendations received from the utility at 1141. Affected areas were identified by EPZ sectors. The County Judges requested time to confirm the recommended protective actions. Callaway County accepted the recommendation at 1144 and translated the EPZ sectors into subareas. The state PIO redefined the protection action subareas using familiar local boundaries and landmarks. The public instructions were drafted at the SEOC using prescripted messages. The messages (numbers 1, 3, and 5 in the plan) were dictated to EBS between 1145 and 1150 by the state PIO. EBS was instructed to broadcast the message at 1152. These instructions were confirmed by EBS. The SEOC requested the counties to activate the sirens at 1152 with the broadcast of the EBS message.

The time between the receipt of the initiating event and public notification through siren and EBS activation was approximately 14 minutes. Since the messages were preformatted, the EBS operator was required only to fill in a few blanks during dictation by the state PIO. Overall, the alert and notification functions were performed automatically according to the planned procedures. Communications were greatly enhanced through the temporary arrangements for telephone conferencing.

5.2 COUNTY OPERATIONS

5.2.1 Callaway County/Fulton EOC

The CCEOC received notification of the General Emergency at the CNPP at 1138 over a conference telephone line linking the EOF, SEOC, and county EOCs. With immediate concurrence on the protective action recommendations by the state at 1141, the County Emergency Management Director conferred with the County Judge. They approved the utility/state protective action recommendations. The county translated the description of the affected EPZ sectors into subareas and directed the PIO to prepare the appropriate EBS messages (#1 on authority; #3 standard for General Emergency; and #5 specifically for sheltering). These messages were dictated to the SEOC between 1144 and 1145. At 1151 the state informed the CCEOC that the EBS would be activated at 1152. The CCEOC was prepared for and sounded the sirens at 1152 immediately upon activation of the tone-alert radio by EBS. Acceptability of the coordination of siren activation with tone-alert radio activation is predicated on the repetition of EBS messages during an actual emergency. Those receiving the alert via the siren system require time to tune to the EBS station.

5.2.2 Gascondate County

Following the General Emergency message (1139), the County Judge and the Emergency Preparedness Director (EPD) prepared the dispatcher to sound the sirens by reviewing the procedures. They examined the EPZ map and agreed that the plume was not yet affecting their jurisdiction. The PIO concurred with the messages proposed by Callaway County after looking them up in the plan. The SEOC informed the GCEOC that EBS and siren activation would be done at 1152 and the sirens were to be sounded when the tone-alert radios were activated by EBS. The EPD again reviewed the siren activation procedures with the dispatcher. The procedures were contained in the plan and also in a smaller, hand-held reference sheet. The tone-alert radio did not activate but the EPD maintained contact on the conference line and was aware of the other counties actions for siren activation. At 1152, he instructed the dispatcher to sound the sirens. They immediately called a tavern in Morrison to confirm siren activation or, if the sirens failed to operate, to determine what alternate methods would be employed. During the call, the phone was disconnected so they sounded the sirens again to ensure that they were working. A second call confirmed the sirens had sounded.

All participants were aware of their respective role and function. The EPD informed the observer that he had seven dispatchers that were on a rotating drill/exercise schedule. He would expose a different dispatcher to drills and exercises to enable each to have exercise experience. The County Judge was aware of the direction and magnitude of the plume in relation to the county. The participants worked well together and conferred in decision making. It is recommended that an additional antenna be permanently installed to ensure reception of signals to activate the tone-alert radio.

5.2.3 Montgomery County

Montgomery County met the overall objective of demonstrating the capability to alert the public through siren activation. The MCEOC had a speaker phone installed on the conference line and used it effectively during the exercise. All exercise communications were received and monitored at the MCEOC. At 1152, the tone-alert radio was activated and the EBS message was received. At this time the siren system was activated. However, the field observer indicated the sirens did not sound. At 1155, the sirens were reactivated and the observer verified the sounding. No explanation for the inoperation of the first effort was made.

5.2.4 Osage County

The OCEOC received the message at 1138 that a General Emergency had been declared via conference call. The dispatcher recorded the information on a notification form. The EPD and County Judge resumed monitoring the conference line and read the notification. They discussed the situation, located the sectors on the map and made the decision that no protective measures were required in Osage County. This decision was relayed to the SEOC. When the tone-alert radio sounded, the dispatcher was taking another call. Nevertheless, within seconds of the tone-alert activation, the sirens were sounded. Correct procedures were followed, appropriate decisions were made, and an overall smooth operation was observed. The siren was sounded within 15 minutes of the initiating event and verified.