



Federal Emergency Management Agency

Washington, D.C. 20472

MEMORANDUM FOR: Frank J. Congel
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Division of Radiation Protection and
Emergency Preparedness
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission

FROM: *for* Richard W. Krimm *Richard S. Wingo*
Assistant Associate Director
Office of Natural and Technological Hazards

SUBJECT: Final Exercise Report of the March 23, 1988, Exercise of
Offsite Radiological Emergency Preparedness Plans for
Arkansas Nuclear One

Attached is a copy of the final exercise report of the March 23, 1988 exercise of the offsite radiological emergency preparedness plans site-specific to Arkansas Nuclear One. This was a full-participation exercise with the State of Arkansas and Pope, Logan, Johnson, Yell and Conway Counties. This final exercise report was prepared by the Region VI office staff of the Federal Emergency Management Agency.

There were no deficiencies identified during this exercise; nor were there any areas requiring corrective action. Based on the results of this exercise, the offsite radiological emergency plans and preparedness remain adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of an accident at Arkansas Nuclear One, and the 44 CFR 350 approval granted on January 27, 1982, remains in effect.

If you should have any questions, please contact me at 646-2871.

Attachment

8810070354-XA

FINAL
RADIOLOGICAL EMERGENCY PREPAREDNESS EXERCISE REPORT

Nuclear Power Plant: Arkansas Nuclear One
Owner: Arkansas Power and Light

Location of Plant: State of Arkansas
Russellville, Arkansas

Date of Report: August 9, 1988

Date of Exercise: March 23, 1988

Participants: State of Arkansas
Pope County
Logan County
Johnson County
Yell County
Conway County
St. Mary's Hospital
Pope County Ambulance Service
Paris Care Center
Clarksville Care Center
Danville Care Center

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ABBREVIATIONS

ANL	Argonne National Laboratory
ANO	Arkansas Nuclear One
AP&L	Arkansas Power and Light
ARDOH	Arkansas Department of Health
ASEOC	Arkansas State Emergency Operation Center
DEC	Duty Emergency Coordinator
DOE	Department of Energy
DOT	Department of Transportation
ECC	Emergency Communications Center
EMS	Emergency Medical Service
ENS	Early Notification System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	Environmental Protection Agency
EPZ	Emergency Protection Zone
ESO	Emergency Services Officer
FEMA	Federal Emergency Management Agency
GERMS	Gaseous Effluent Radiation Monitoring System
HHS	Health and Human Services
HPSI	High Pressure Safety Injection
JIC	Joint Information Center
KI	Potassium Iodide
NERN	Nuclear Emergency Radio Network
NRC	Nuclear Regulatory Commission
OES	Office of Emergency Services
PAA	Protective Action Advisory

PAG Protective Action Guide
PASS Post Accident Sampling System
PIT Public Information Team
RCS Reactor Coolant System
REX-87 Radiological Emergency Response Exercise-1987
RRTL Radiological Response Team Leader
SAE Site Area Emergency
SDO Staff Duty Officer
SPDS Safety Parameter Display System
TLD Thermoluminescent Dosimeter
TOCC Technical Operations Control Center
TOCD Technical Operations Control Director
USDA United States Department of Agriculture
USFDA U.S. Food and Drug Administration

INTRODUCTION AND AUTHORITY

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

FEMA's immediate basic responsibilities in Fixed Nuclear Facility Radiological Emergency Response Planning include:

- Taking the lead in off-site emergency response planning and in the review and evaluation of State and local government emergency plans ensuring that the plans meet the Federal criteria set forth in NUREG-0654 FEMA REP-1, Rev. 1 (November 1980).
- Determining whether the State and local emergency response plans can be implemented on the basis of observation and evaluation of an exercise conducted by the appropriate emergency response jurisdictions.
- Coordinating the activities of volunteer organizations and other involved Federal agencies. Representatives of these agencies listed below serve as members of the Regional Assistance Committee (RAC), which is chaired by FEMA.
 - 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 (DHHS)
 - U.S. Department of Transportation (DOT)
 - U.S. Department of Agriculture (USDA)
 - U.S. Department of the Interior

1 EXERCISE BACKGROUND

The March 23, 1988 Radiological Emergency Preparedness Exercise at Arkansas Nuclear One (ANO) was the third exercise in the second six-year cycle of testing and demonstration of the 39 FEMA RVI REP Exercise Objectives. This exercise involved full participation by the State and all five of the local jurisdictions included in the ANO emergency response planning area.

Following the exercise, on March 24, 1988, the Federal evaluators met at 8:00 a.m. to conduct a preliminary evaluation of the results of the exercise. At 1:00 p.m., the Federal evaluators met with State and local exercise participants to discuss their preliminary findings. At 3:30 p.m., a public critique of the exercise was held in the AP&L training center auditorium.

Section 2 of this report provides narratives of exercise evaluator observations and descriptions of Deficiencies, Areas Requiring Corrective Action and Areas Recommended for Improvement for each of the jurisdictions and field activities participating in the exercise.

Section 3 of this report provides a summary listing of exercise Deficiencies that would lead to a negative finding and Areas Requiring Corrective Action, including those needing priority attention. The summary is in tabular format which provides space for State and local jurisdiction responses and schedules for corrective actions.

Section 4 of this report compiles, in tabular format, all FEMA Objectives Met or Yet to be Achieved, developed from NUREG 0654, as well as a summary sheet of those FEMA Objectives which have not been satisfactorily met or tested to date.

The findings presented in this report were reviewed by the RAC Chairman of FEMA Region VI. FEMA suggests that State and local jurisdictions take corrective actions in response to each of the problems indicated in the report, and that the State submit a schedule for addressing those problems. 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 Deficiencies and Areas Requiring Corrective Action have been corrected and that such corrections have been incorporated into State and local plans, as appropriate.

The following provides a brief overview of the exercise performances of the State of Arkansas and County Governments. More detailed explanatory discussions of performances of individual agencies are provided under the appropriate location in Section 2 of this report.

1.1 EXERCISE SUMMARY

State of Arkansas Operations

State operations for the Arkansas Nuclear One (ANO) exercise were directed by the Arkansas Department of Health's Technical Operations Control Director (TOCD) located in the Technical Operations Control Center (TOCC) in Russellville, Arkansas. The State EOC was operational and several State agency representatives participated in the exercise. Other State agency representatives were put on a stand-by status, ready to respond if required. A representative of the Arkansas State Police was also located at the TOCC.

All State agencies participating in the exercise demonstrated an adequate level of readiness for responding to a nuclear emergency. The exercise evaluators noted the Areas Requiring Corrective Action and the Areas Recommended for Improvement detailed in Section 2 of this report. The State TOCC and the State EOC are more than adequate facilities to support required State operations either in exercises or actual radiological emergencies.

Individual narratives, in Section 2 of this report, provide detailed explanations of State functions which were demonstrated during this exercise.

Local Government Operations

Five counties are part of the planning area for ANO. Four of these are located within the 10-mile plume exposure Emergency Planning Zone. Each county has its own off-site radiological emergency response role and responsibility. All five counties participated fully and collectively in the 1988 exercise, in accordance with the exercise objectives developed during pre-exercise planning.

Performance by all counties in this exercise was rated as adequate. However, several Areas Recommended for Improvement were noted.

Individual narratives in Section 2 of this report provide detailed descriptions of the performance of each of the local response organizations that participated in this exercise.

1.2 FEDERAL EVALUATORS

Eighteen Federal evaluators participated in evaluating the March 23, 1988 exercise. These individuals, their agencies and their evaluation assignments are listed below.

<u>Evaluator</u>	<u>Agency</u>	<u>Evaluation Location</u>
Gary Jones	FEMA	Overall Coordination
Travis Ratcliff	FEMA	State EOC (Conway)
Hank May	EPA	AR DOH TOCC (Russellville)
Dan Santini	ANL	AR DOH TOCC (Russellville)
Gary Sanborn	NRC	Joint Media Center (ANO Plant Site)
Dana Cessna	FEMA	Joint Media Center (ANO Plant Site)
John Slaten	DOE	Field Mon. Team #1
Harry Harrison	FEMA	Field Mon. Team #2
Leon Zellner	FDA	Field Mon. Team #3
Gary Kaszynski	ANL	Pope County EOC (Russellville)
Tom Carroll	ANL	St Mary's Hospital Pope County Ambulance Service
Gordon Veerman	ANL	St. Mary's Hospital Pope County Ambulance Service
Al Lookabaugh	ANL	Johnson County EOC (Clarksville) Clarksville Reception/Care Center
Al Miller	DOT	Johnson County EOC (Clarksville)
Lee Peyton	FFMA	Logan County EOC (Paris)
Ed Robinson	ANL	Logan County EOC (Paris) Paris Reception/Care Center
Carl McCoy	FEMA	Yell County EOC (Dardanelle)
Mike Brooks	FEMA	Yell County EOC (Dardanelle) Danville Reception/Care Center
Gene Nunn	FEMA	Conway County EOC (Morrilton)

1.3 EXERCISE OBJECTIVES

1.3.1 Arkansas Power & Light (AP&L) Objectives

1. Begin the exercise outside of normal working hours (between midnight and 6:00 a.m.)
2. Classifying and upgrading the emergency through the General Emergency classification.
3. Notification and deployment of the Initial Response Staff (IRS), Initial Response Organization (IRO), and the Corporate Emergency Response Staff as dictated by the scenario.
4. Make notifications to the Arkansas Department of Health within 15 minutes of the declaration of an Emergency Class.
5. Make emergency class notifications to the NRC in accordance with 10CFR50.72 (may be simulated if the NRC chooses not to participate in the exercise).
6. Preparation of an initial news release from the Corporate office.
7. Activation of the Technical Support Center within one hour following the declaration of an Alert.
8. Activation of the Operational Support Center following the declaration of an Alert.
9. Activation of the Emergency Operations Facility within one hour following the declaration of a Site Area Emergency.
10. Activation of the Joint Media Center at the EOF.
11. Activation of the Little Rock Support Center.
12. Demonstrate the use of communications equipment during transfer of the Corporate Emergency Response Staff from Little Rock to ANO.
13. Establishment of communications between the Control Room, Technical Support Center, Operational Support Center, Emergency Operations Facility, Little Rock Support Center, NRC (simulated), and State and local emergency response officials.

14. Demonstrate coordination between the Control Room, Technical Support Center, Operational Support Center, Emergency Operations Facility and Little Rock Support Center throughout the exercise.
15. Transfer command and control responsibilities (and maintain continuity) from the Initial Response Staff to the Initial Response Organization to the fully augmented Emergency Response Organization.
16. Demonstrate coordination with State officials.
17. Demonstrate coordination between the Control Room, Technical Support Center, Emergency Operations Facility and the Arkansas Department of Health on Protective Action Recommendations.
18. Production and delivery of information in joint AP&L and State and Federal (if in attendance) news conference from the EOF Joint Media Center.
19. Activation of the Emergency Medical Team.
20. Emergency Medical Team response to a simulated injured and radioactively contaminated individual(s) at St Mary's Hospital.
21. Transportation of a simulated injured and radioactively contaminated individual(s) to St Mary's Hospital.
22. Coordination between AP&L and St Mary's Hospital staff for the handling of a simulated injured and radioactively contaminated individual(s).
23. Radiation monitoring of plant areas by the onsite section of the Emergency Radiation Team.
24. Demonstrate offsite radiological field monitoring by the offsite section of the Emergency Radiation Team.
25. Demonstrate coordination of offsite radiological field monitoring with State Personnel.
26. Demonstrate radiation/contamination monitoring of the EOF.
27. Demonstrate coordination between field monitoring teams and dose assessment Personnel.

28. Demonstrate dose assessment capabilities as dictated by the scenario.
29. Demonstrate the capability of the Post Accident Sampling System to analyze the primary system (RCS).
30. Utilize the Gaseous Effluent Radiation Monitoring System and the Safety Parameter Display System.
31. Evacuate the Plant and/or Exclusion Area and demonstrate initial and continued onsite personnel accountability following evacuation. (Personnel will not be evacuated to off-site Care Centers).
32. Demonstrate the ability to control access to the Exclusion Area and the establishment of road blocks.
33. Demonstrate security procedures for the Emergency Operations Facility.
34. Formation of Repair and Damage Control Teams and demonstrate initial recovery and reentry actions.
35. Coordination with the Arkansas Department of Health to downgrade and terminate the emergency.

1.3.2 State/County Objectives

<u>Objective</u>	<u>Off-Site Jurisdiction(s)</u>
1.* Ability to mobilize staff and activate facilities promptly.	STATE -- TOCC and EOC: CONWAY, JOHNSON, LOGAN, POPE, and YELL COUNTIES
3.* Ability to make decisions and coordinate emergency activities.	STATE -- TOCC and EOC: CONWAY, JOHNSON, LOGAN, POPE, and YELL COUNTIES
4.* Adequacy of facilities and displays to support emergency operations.	STATE -- TOCC and EOC: CONWAY, JOHNSON, LOGAN, POPE, and YELL COUNTIES
5.* Ability to communicate with all appropriate locations, organizations, and field personnel.	STATE -- TOCC and EOC: CONWAY, JOHNSON, LOGAN, POPE, and YELL COUNTIES
6.* Ability to mobilize and deploy field monitoring teams in a timely fashion.	STATE -- TOCC
7.* Appropriate equipment and procedures for determining ambient radiation levels.	STATE -- TOCC
8.* Appropriate equipment and procedures for measurement of airborne radiiodine concentrations as low as E^{-7} uCi/cc in the presence of noble gases.	STATE -- TOCC
9.* Appropriate equipment and procedures for collection, transport, analysis, of samples of soil, vegetation, snow, water and milk.	STATE -- TOCC

*Objectives for which capability is required to be demonstrated during each full-participation exercise.

<u>Objective</u>	<u>Off-Site Jurisdiction(s)</u>
10.* 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.	STATE -- TOCC
13.* Ability to alert the public within the 10-mile EPZ and disseminate an initial instructional message within 15 minutes.	STATE -- TOCC
15.* Organizational ability and resources necessary to manage an orderly evacuation of all or part of the plume EPZ.	STATE -- TOCC: LOGAN COUNTY
16. Organizational ability and resources necessary to deal with impediments to evacuation, as inclement weather or traffic obstructions.	STATE -- EOC: LOGAN and YELL COUNTIES
17. Organizational ability and resources necessary to control access to an evacuated area.	STATE -- EOC: LOGAN COUNTY
18. Organizational ability and resources necessary to effect an orderly evacuation of mobility-impaired individuals within the plume EPZ.	LOGAN and YELL COUNTIES
20. Ability to continuously monitor and control emergency worker exposure.	STATE -- TOCC: CONWAY, JOHNSON, LOGAN, POPE and YELL COUNTIES

*Objectives for which capability is required to be demonstrated during each full-participation exercise.

<u>Objective</u>	<u>Off-Site Jurisdiction(s)</u>
22. Ability to supply and administer KI, once the decision has been made to do so.	JOHNSON and LOGAN COUNTIES
23. Ability to effect an orderly evacuation of onsite personnel.	POPE COUNTY
24. Ability to brief the media in a clear, accurate, and timely manner.	STATE -- PIT
27.* Adequacy of procedures for registration and radiological monitoring of evacuees.	LOGAN COUNTY
28. Adequacy of facilities for mass care of evacuees.	LOGAN and YELL COUNTIES
29. Adequate equipment and procedures for decontamination of emergency workers, equipment, and vehicles.	JOHNSON and LOGAN COUNTIES
30.* Adequacy of EMS transportation, personnel, and procedures for handling contaminated individuals including proper decontamination of vehicle and equipment.	POPE COUNTY (w/utility support)
31.* Adequacy of hospital facilities and procedures for handling contaminated individuals.	POPE COUNTY (St. Mary's Hospital)
36.* Adequacy, operability, and effective use of emergency communication equipment and the adequacy of communications procedures and methods.	STATE -- EOC, TOCC, PIT; CONWAY, JOHNSON, LOGAN, POPE and YELL COUNTIES

*Objectives for which capability is required to be demonstrated during each full-participation exercise.

<u>Objective</u>	<u>Off-Site Jurisdiction(s)</u>
37.* Ability to monitor Emergency Classification levels continuously and implement procedures in a timely manner.	STATE -- EOC, TOCC, PIT: CONWAY, JOHNSON, LOGAN, POPE and YELL COUNTIES
38. Capability to effectively process all incoming messages in a timely manner.	STATE -- PIT
39* Existence of authority in activating reception center (as necessary) in a timely manner.	STATE -- TOCC: YELL and LOGAN COUNTIES

1.4 EXERCISE SCENARIO NARRATIVE SUMMARY

The following is an overview of the exercise events:

The exercise is scheduled to begin at 5:00 a.m. on Wednesday, March 23, 1988. Unit 1 has been operating at 100% power for 60 days. Currently "A" decay heat pump is out of service for motor bearing replacement and "B" service water pump is inoperable in order to remove and rewind the pump motor. Additionally, operators have noted a slight upward trend in RCS activity. Based on these initial conditions, the unit will be in an action statement per Unit 1 Tech Spec 3.3.1. The action statement will require the unit to be in hot shutdown by 11:00 a.m. on 03/23/88. In order to comply with this action statement, Operations Management has directed the unit to be shut down at a rate of 15% per hour beginning at 5:00 a.m. The Shift Operations Supervisor will instruct operators to begin the shutdown and will then declare a Notification of Unusual Event (NOUE) based on an established Emergency Action Level (EAL).

The Staff Duty Officer (SDO) at Little Rock is notified of the NOUE declaration and in turn notifies the Technical Operations Control Director (TOCD). The decision is made to not activate the entire State Radiological Response Team (State RRT) at this time.

At 8:30 a.m. the failed fuel iodine monitor indicates greater than 2.2×10^6 cpm (very high RCS activity); therefore AP&L declares an Alert emergency class based on an established EAL.

Immediately following notification of the Alert Emergency Class the State RRT is activated per standard operating procedures. By 9:45 a.m. the Little Rock segment is

*Objectives for which capability is required to be demonstrated during each full-participation exercise.

enroute, the NP&RP segment has begun TOCC and PIT activation, and local EOCs are operational.

At 10:30 a.m., while the plant continues to shut down at 15% per hour, a malfunction in main stream isolation valve CV-2691 results in closure of the valve causing a reactor trip from approximately 20% power. The RCS leak rate increases to approximately 10 gpm and fuel cladding failure will increase to greater than 10%. AP&L declares a Site Area Emergency (SAE) based on an established EAL.

Notifications are made in the appropriate sequence. Members of the State RRT arrive at the TOCC and organize for accident assessment and decision-making postures. The potential for release prompts a PAA for the evacuation of London Elementary School and then a PAA for the evacuation of the two-mile EPZ. Appropriate actions are taken pertaining to EWS (ANS) and care center activation.

At 12:00 p.m., AP&L declares a General Emergency based upon occurrences which include a large break loss of coolant accident (LOCA) resulting in core uncover and fuel cladding failure increase to 36%. When reactor building isolation occurred, hydrogen purge system control valve CV-7446 failed to open due to a failed contractor in the power supply breaker. A break in the two-inch line leading to CV-7446 occurred at the penetration which resulted in an uncontrolled release of activity from the containment building atmosphere to the upper north piping penetration room and ultimately to the offsite environment.

Appropriate actions are taken by offsite authorities to monitor and assess the situation and protect the health and safety of the public.

At approximately 1:40 p.m., AP&L's Repair and Damage Control Team successfully terminates the leak from containment and offsite release rates begin to diminish. By 2:30 p.m., effluent monitors indicate background levels and discussions to downgrade the GE begin between AP&L, the Arkansas Department of Health, and the U.S. Nuclear Regulatory Commission. Health Department field teams will continue to monitor until the plume dissipates.

The exercise will terminate at approximately 4:00 p.m.

Simulations:

1. All meter readings other than background -- although use of survey meters will be demonstrated.
2. All air filter analyses -- although use of the air samples, field counting techniques, and MCA counting techniques will be demonstrated.
3. Environmental samples other than air, soil, and vegetation.
4. Calling in of off-duty school bus drivers.

5. EWS (ANS) activation -- although the siren system will be activated at the normal test time.
6. Evacuation and reentry of school children and residents.

Notes:

1. Hot-line procedures at the TOCC will not be demonstrated.
2. TOCC field teams will not dress out in anticontamination clothing.
3. Environmental samples will not be sent to the fixed radiochemistry laboratory facility in Little Rock.
4. The Atkins Emergency Worker Center will not be activated.
5. With the exception of Paris High School, no care center will be physically activated.
6. Demonstration of the Nuclear Emergency Data Transfer System (NEDTS) is not an objective of this exercise.

1.4.1 Exercise Timeline

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
0500	AP&L	Operations management directs that Unit 1 be shut down due to the unit being in an action state per Tech Spec 3.3.1. The Shift Operations Supervisor declares a Notification of Unusual Event.		
0515	AP&L/State	Notification of Unusual Event (NOUE) is made by AP&L to the Arkansas Department of Health (ADH) Emergency Communications Center (ECC).		36, 37, 38
0515-0530	State	<ul style="list-style-type: none"> • Staff Duty Officer (SDO) in Little Rock is informed of the NOUE by the ECC. • SDO contacts the Technical Operations Control Director (TOCD) and informs the TOCD of the NOUE. • TOCD instructs the SDO to stand by for further instructions. • ECC notifies the Russellville SDO of the NOUE. • ECC notifies the State Office of Emergency Services (OES) of the NOUE. 		36, 37 36, 37 36, 37 5, 36, 37, 38

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
		<ul style="list-style-type: none"> The TOCD contacts the Radiological Response Team Leader (RRTL) to discuss the situation. 	Decision made to not activate entire State Radiological Response Team (RRT) at NUE, but that TOCD, RRTL, Little Rock SDO and Communications Supervisor should arrive at ADH as soon as possible. Also, Russellville SDO and NP&RP Program Manager should arrive at NP&RP office as soon as possible.	1, 3, 36
		<ul style="list-style-type: none"> Both SDOs, the Communications Supervisor and the NP&RP Program Manager are instructed to proceed to their respective offices as soon as possible. 		1, 2, 36
	State/ Conway, Johnson, Logan, Pope and Yell Counties	Notification of the NOUE declaration is made to all local entities.		3, 5, 36, 38
0615	State	Personnel called in begin to arrive at normal duty stations.		1

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
0700	State/AP&L	TOCD arrives at ADH and contacts AP&L for a situation update. Personnel at Little Rock and Russellville are briefed on information received from AP&L.	OES and local governments will receive updates upon request. Based on information from AP&L, decision to not activate entire team is reconfirmed.	1, 3, 5, 36, 38
0730	State	Other RRT members begin arriving at normal duty stations in Little Rock and Russellville.	Personnel are briefed on the situation upon arrival and are asked to review Standard Operating Procedures (SOPs) for their specific RRT duties. Personnel scheduled to leave on routine business are told to remain in the building until further notice.	1, 3
0830	AP&L	The Shift Operations Supervisor declares an Alert due to very high reactor coolant system (RCS) activity.		
0845	AP&L/State	Alert notification is made by AP&L to the ADH ECC.		5, 36, 37, 38
0850-0910	State/ Local Governments	<ul style="list-style-type: none"> • SDOs and TOCD are informed of Alert declaration. • OES is notified of the Alert. 	Activation of the RRT and TOCC are automatic at Alert	1, 3, 5, 6 5, 36, 37, 38

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
		<ul style="list-style-type: none"> Local governments are notified of the Alert. 		5, 36, 37, 38
		<ul style="list-style-type: none"> OES notifies support agency liaison officers (ESLOs) of the Alert and continues to address problems not related to the ANO emergency situation. 	Individual ESLOs decide whether to report to the State EOC or to operate from their own duty stations. Several non ANO-related problems are handled by the State EOC throughout the exercise.	1, 3, 4
0915	State/ Local Governments	TOCD issues a Protective Action Advisory (PAA) concerning calling off-duty school bus drivers in all school districts.*	Some drivers may be difficult to reach.	3, 5
0930- 0945	State/ Local Governments	Little Rock RRT and communications van leave the ADH enroute to the Technical Operations Control Center (TOCC).	The Accident Assessment Group (AAG), RRTL and TOCD monitor events and communicate, as necessary by radio.	1, 5, 6, 36, 37
		<ul style="list-style-type: none"> ECC notifies OES that the RRT is mobile. 		5, 36
		<ul style="list-style-type: none"> TOCC is operational. 		1, 4, 5, 36, 37, 38

*The PAA will be issued, but calling of off-duty school bus drivers will be simulated.

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
		<ul style="list-style-type: none"> • Public Information Team (PIT) is operational. • Local EOCs are operational. 		1, 4, 24, 36, 38 1, 4, 20, 22, 37
1030	AP&L	Site Area Emergency is declared due to indications that there is greater than 10% fuel cladding failure.		
1045	AP&L/State	Site Area Emergency (SAE) notification is made to the TOCC by AP&L.		36, 37, 38
1050	State	TOCC is informed of SAE via radio (if still enroute to the TOCC).		5
1055-1115	State/ Local Governments	<ul style="list-style-type: none"> • Local Governments notified of SAE. EWS (ANS) is activated per SOP.* • Members of Little Rock RRT who are arriving at the TOCC organize for radiochemistry screening, accident assessment, and field team operations. 		13, 23 9, 10

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*EWS activation will be simulated; siren (test) will occur at a later date.

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
		<ul style="list-style-type: none"> • Telephone communications are established between ADH and AP&L counterparts. 		5
		<ul style="list-style-type: none"> • The TOCD issues a PAA for the precautionary evacuation of the London Elementary School,* activation of the Emergency Worker center,* and activation of appropriate care centers.* 	The potential for a release prompts the advised evacuation of children.	3, 10, 37
1130	State/ Local Govern- ments	<ul style="list-style-type: none"> • Accident Assessment is functional from the TOCC and can use information from AP&L and field teams to make dose projections to assist in protective action advisories. 		4, 7, 10
		<ul style="list-style-type: none"> • TOCD issues PAA for the precautionary evacuation of the two-mile EPZ. 	Plant conditions prompt PAA for evacuation.	3, 10, 37, 39
1145	State	ADH field monitoring teams are deployed for radiation monitoring activities.		39

*The PAA will be issued; all other actions are simulated.

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
1200	AP&L	A General Emergency is declared due to the loss of two fission product barriers and impending failure of the third barrier.		6, 7, 8, 20
1215	AP&L State/ Local Govern- ments	<ul style="list-style-type: none"> • General Emergency (GE) notification is made to the TOCC by AP&L. • Evacuation of persons in two-mile EPZ is underway. 	Release is underway.	
1230	State/ Local Govern- ments	<ul style="list-style-type: none"> • All organizations and locations are informed of the GE. • TOCC issues PAA for the evacuation of persons in affected sectors. • Governor is asked to issue a Proclamation of Disaster Emergency. 		5 3, 10, 37 3
1245- 1430	State/ Local Govern- ments	<ul style="list-style-type: none"> • Field teams continue to monitor and track the plume. Air samples will be taken to monitor for radioiodine. 	Amount of radioiodine in the release too small to produce detectable levels ($1E-7$ uCi/l) by field personnel. Air samples must be analyzed at the TOCC.	7, 8

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
		<ul style="list-style-type: none"> • Accident Assessment continues to provide data to the TOCD for protective action advisories. 		10
		<ul style="list-style-type: none"> • The PIT continues to provide public information. 		24
		<ul style="list-style-type: none"> • TOCD continues to oversee offsite activities and maintains contact with AP&L, OES and State Police liaisons, and local governments throughout the emergency. 		3, 5
		<ul style="list-style-type: none"> • Local governments take the appropriate actions necessary to implement the evacuation and respond to problems associated with the emergency -- and also problems not related to the radiological emergency. 	Several problems are addressed by the appropriate entities.	15, 16, 17, 18, 29
		<ul style="list-style-type: none"> • Conway County participation ends. 		
		<ul style="list-style-type: none"> • Evacuees arrive at care centers. 	Some evacuees may be contaminated.	28

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
1300	AP&L	An on-site response team member is injured.		
1330	AP&L/Pope County Ambulance Service/ St. Mary's Hospital	<ul style="list-style-type: none"> • The victim is transported to hospital for treatment and contamination. • Johnson County participation ends. 	The victim and the ambulance are contaminated.	30, 31
1430	AP&L/State	The potential for deescalating from General Emergency is being considered.	The release has been terminated and the initiating conditions are under control.	3
1445	State/ Local Governments	<ul style="list-style-type: none"> • Field teams continue to monitor and track the plume as it clears the area and dissipates. • Later, field teams are instructed to collect soil and vegetation samples and to return to the TOCC. • Local governments and care centers have discontinued participation as appropriate. 		7, 8 9

Time	Responding Agency	Activity	Problems/Notes	FEMA Objective No.
1530	AP&L/ State	The decision is made to de-escalate from General Emergency.		3
1600	AP&L/ State	Exercise terminated.		

1.5 EVALUATION CRITERIA

The Arkansas Nuclear One exercise evaluations that follow in Sec. 2 of this report are based on applicable standards and criteria set forth in Sec. II of NUREG 0654-FEMA-REP 1, REV 1 (Nov. 1980). FEMA Region VI evaluated the exercise using the Modular Format.

Following the narrative for each participating organization or off-site activity, Deficiencies, Areas Requiring Corrective Action and Areas Recommended for Improvement are presented with accompanying recommendations. Any identified Deficiencies would cause a finding that the off-site preparedness is not adequate to provide reasonable assurance that appropriate protective measures can and will be taken to protect the health and safety of the public living in the vicinity of the site in the event of a nuclear emergency. At least one Deficiency in this category would necessitate a negative finding, and would require one or more remedial drills to demonstrate corrective action has been accomplished.

Areas Requiring Corrective Action include those activities where demonstrated performance during the exercise was evaluated and considered faulty. Corrective actions are considered necessary, but other factors indicate reasonable assurance that, in the event of a nuclear emergency, appropriate measures can and will be taken to protect the health and safety of the public. This category should be relatively easy to correct in comparison to those classified as Deficiencies.

Areas Recommended for Improvement are also listed for each off-site activity or jurisdiction.

2 EXERCISE EVALUATION

On the basis of general criteria set forth in NUREG 0654/FEMA REP 1, REV 1 (Nov. 1980), and exercise objectives and observations, an evaluation has been performed of the March 23, 1988 exercise at Arkansas Nuclear One. This evaluation, including Deficiencies, Areas Requiring Corrective Action, and Areas Recommended for Improvement is presented herein. FEMA Region VI will maintain close liaison with the State and local governments in determining the required corrective actions (including time frames for accomplishing the corrections) in accordance with established criteria and guidelines.

2.1 ARKANSAS STATE OPERATIONS

The following includes evaluations of operations at the State EOC in Conway, the Technical Operations Control Center (TOCC) at Russellville, the Radiological Field Monitoring Teams, and the Joint Information (Media) Center (JIC).

2.1.1 State EOC - Conway

Narrative

Activation and staffing procedures were adequately demonstrated. The State EOC is staffed on a 24-hour per day basis. Notification of an Unusual Event was received at 5:45 a.m. At 9:12 a.m. the Alert Message was received and the State Call-down was initiated and completed at 9:52 a.m. Agencies and individuals included on the list were: Governor, Civil Air Patrol, Game and Fish Commission, National Guard, Red Cross, State Police, Arkansas Highway and Transportation Department, Pollution Control and Ecology, and Corps of Engineers. Seven individuals completed full staffing of the EOC by 8:00 a.m.

The Deputy OES Director gave frequent briefings to the staff present and through his staff made timely decisions and coordinated all emergency activities. He demonstrated good leadership and a grasp of the procedures by responding promptly and appropriately to problems built into the exercise. Decision-making procedures were excellent.

Physical facilities at the EOC were adequate to support emergency operations. The EOC is located in Conway, Arkansas, and has ample space, lighting, furnishings and equipment. All activities were conducted in the operations room adjacent to the Communications Center. Backup power is available onsite but was not demonstrated during this exercise. Maps and display boards were available and adequate and were used throughout the exercise.

Communications facilities and procedures were very good. The primary communication link to the TOCC was land-line telephone. Telephone messages were recorded on official notification forms. The State Protective Action Advisory (PAA)

forms were also used. The State OES is equipped with a General Electric Base radio system capable of contacting any mobile unit in the State. They have both commercial and direct (dedicated) lines which were utilized during the exercise.

All messages were logged for datafax, radio, and telephone traffic. There was good control of messages from receipt through logging, distribution, and posting of pertinent information on the display boards.

The State OES demonstrated the ability to effectively call upon outside support agencies by contacting the American Red Cross for meals for Yell County and the Corps of Engineers to stop a runaway barge on the river.

The State OES had all state resources available as required and appropriate to the situation including the National Guard and the Department of Human Services. The State OES requested Union Pacific Railroad to move a train blocking a road in Morrilton.

In summary, the State OES successfully demonstrated FEMA objectives 1, 3, 4, 5, 36 and 37.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

2.1.2 Technical Operations Control Center (TOCC)

Narrative

The Technical Operations Control Center (TOCC) is located in the Arkansas National Guard Armory in Russellville, approximately eight miles southeast of the ANO plant. There is a capability to relocate the TOCC to a backup site outside the EPZ if necessary. The Armory is well suited for use as a TOCC. It has ample room for 24-hour operations and possesses all required equipment, supplies and excellent displays.

Activation of the TOCC began about 9:45 a.m., following receipt of the ALERT notification, when one of the Arkansas Department of Health (ADH) communicators began set-up of the communications room. Additional staff, including the field teams, from the Russellville and Little Rock ADH offices, arrived between 9:45 and 10:08 a.m.

The TOCC was declared operational on the arrival of the Technical Operations Control Director (TOCD). All concerned locations were immediately notified that the TOCC was operational at 1008 hours. The ADH communications van, with radio capability equal to that located in the TOCC, arrived from Little Rock at about 10:35 a.m. and set-up outside the Armory.

During the exercise, both primary (radio) and backup (telephone) communications systems were used from the TOCC. Communications capability was maintained, with all appropriate locations, at all times except for a short radio outage to Conway County. Telephone backup was used and communications were maintained. The communications room staff performed their duties professionally and effectively. The single telefax machine performed flawlessly, but there is no backup. On one occasion, there was a delay in sending outgoing messages due to a series of incoming messages from the utility. It is recommended that a backup telefax machine be obtained. Then, during heavy message traffic periods, one machine can be used for incoming messages and one for outgoing messages.

At 11:01 a.m., the TOCC received a hard-copy message from AP&L indicating that the exercise situation had now been upgraded to a Site Area Emergency. The message was announced to the TOCC staff and preparation of an EBS message to the public was begun. At 11:13 a.m., the message (Message G-1) was authorized for immediate release. The communicator who transmitted this message, and the two subsequent EBS messages, did not log the transmission times or enter the times on the EBS message forms. This information could be important for later documentation of actions during an exercise or actual event. It is recommended that EBS message transmission times be logged, and the times also be entered on the actual message form. A second EBS message (Message E-1) was prepared and approved for transmittal at 11:55 a.m. At 11:57 a.m. and 11:59 a.m., the TOCC received verbal (telephone) and hard copy (telefax) messages that a General Emergency had been declared at ANO and a radioactive release was in progress. A third EBS message (Message E-2), directing immediate evacuation of Zone E, and a small portion of Yell County, south of Lake Dardanelle, adjacent to the Logan County border, was ready for transmission to the EBS station at 12:04 p.m. Concurrence with the PAA initiating this message, was obtained from Logan and Yell Counties by 12:09 p.m. The 15 minute alert and notification requirement was met by the State for all three messages.

Protective Action Advisories (PAAs) were also prepared and issued by the TOCD. PAA Number 1 recommended the precautionary alerting of school bus drivers for quick response in the event school evacuations were required. PAA Number 2 recommended the precautionary evacuation of London School which is located less than two miles from the ANO plant. PAA Number 3 recommended the precautionary evacuation of Zone G due to the possibility of the loss of the last containment barrier, and PAA Number 4 recommended the evacuation of Sectors 10 through 13 out to ten miles from the plant. During the development of the later PAAs, the TOCD was faced with difficult decisions because the utility made a Protective Action Recommendation which the local governments could not implement. The State and ANO use sectors and miles which the State translates to zones with identifiable geographical barriers for the public. Zone G comprises a radial distance approximately 2 miles from the plant. All

the other zones extend to approximately 10 miles radial distance from the plant and are designed to follow sector lines as closely as possible. When the utility recommended 5-mile radial evacuation, the State had to determine between advising evacuation of the entire 10-mile EPZ or evacuation of only down-wind zones. The State decided to advise evacuating only down-wind zones. When it was found that a small portion of an unaffected zone should also be included in the evacuation, the TOCD decided not to recommend evacuation of the entire zone, but chose instead to recommend evacuation of only the affected area. It is recommended that the State and ANO develop a compromise on how evacuation and/or sheltering areas are to be described so that little or no interpretation will be required during future exercises or should an actual emergency event ever occur.

The State Field Monitoring Teams assembled and were briefed at the TOCC. Following deployment, they maintained radio communications with the field team controller at the TOCC at all times. Team locations, in relation to the plume, were carefully plotted and dosimeter readings were obtained at approximately 30-minute intervals to insure that radiation doses were minimized. Monitoring data, transmitted from the field teams to the TOCC, was used for manual dose calculations and for comparison with computer dose projections. The field data provided to the teams by the controllers was not, in many cases, consistent with the plume projections generated by the computer. However, good professional judgement was used to accurately plot the plume. The new PC system was used to make plume projections with manual input of Gaseous Effluent Radiological Monitoring System (GERMS) data supplied, by the utility by telephone modem connection. Backup dose projection was by hand calculation using nomograms and formulae. Both primary and secondary methods were demonstrated. A similarity in computer file names between the "real-time" data file constantly maintained in the computer, and the exercise data file entered by the utility scenario developer, resulted in some "actual" rather than "simulated" data being accessed during the exercise, and some plume dose rate projections that were inconsistent with the scenario. During the early stages of the exercise, the "vent" with the highest release rate was selected as the single release data-point. This vent continued to be used even though later data indicated releases at that point were declining and other vent points with higher readings. Thus, the total source term was not used and low plume dose rate estimates could have occurred. However, the TOCC staff demonstrated good judgment in manipulating the information available to them and correctly describing the shape and conditions of the plume. They did not believe the zero values for plume update number 3 and acted accordingly. These minor problems are, for the most part, the result of exercise artificialities as, during a real event, there could be no confusion of file names and the computer program automatically includes and considers all eleven monitored release points (vents) in data development.

During the development of PAA #4, a disagreement developed with the utility over the proper protective actions to be taken. The TOCC overrode the utility recommendation and evacuated a smaller area and did not recommend sheltering as the utility had suggested. The TOCC actions were dictated, in part, by the nature of the plan, and in part by the differences in the means of designating protective action areas.

In summary, all FEMA RVI exercise objectives assigned to the TOCC (Nos. 1, 3, 4, 5, 6, 10, 13, 15, 16, 17, 20, 36, 37 and 39) were fully met.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

- **Description:** The single telefax machine has no backup. On one occasion, there was a delay in transmission of outgoing messages due to a series of incoming messages from the utility.

Recommendations: Obtain a backup telefax machine. Then, during heavy message traffic periods, one machine can be used for incoming messages and one for outgoing messages.

- **Description:** EBS message transmission times were not logged or entered on the EBS message forms.

Recommendations: EBS message transmission times be logged and entered on the actual message form.

2.1.3 Radiological Field Monitoring Teams

Narrative - Field Team #1

The mobilization and deployment of State Radiological Response Team (RRT) personnel from Little Rock could not be totally observed from the TOCC. It was observed that the State RRT did arrive at the TOCC in a timely manner with all necessary equipment to perform required radiation monitoring.

The State RRT arrived at the TOCC at 10:47 a.m. Upon arrival, field team personnel were organized, and Team #1 began a check of equipment using a written checklist. Instrumentation was checked for operation and calibration status. All instruments were found to have been calibrated within a quarterly time frame of the exercise date. Ambient radiation levels were adequately determined using appropriate equipment and procedures. Field teams were briefed on current plant and meteorological conditions, exposure control, and use of emergency backup communications. Team members' watches were synchronized at 11:35 a.m. Team #1 was directed to proceed to

area 13A1 to perform the initial radiation survey and was under way 57 minutes after arrival at TOCC.

Team #1 demonstrated effective use of communications equipment, even when communication became difficult. The emergency backup system to OES was demonstrated at one point, and the team knew how to further effectively use emergency communication methods.

Team #1 adequately demonstrated their ability to use appropriate equipment and procedures for measurement of airborne radiiodine as low as E^{-7} uCi/cc in the presence of noble gases. They also demonstrated their ability to collect soil, water, and vegetation samples. Samples were bagged, labeled, and radiation monitored. Care was taken to prevent the possible spread of contamination to equipment, vehicle, and personnel.

Team #1 more than adequately demonstrated their ability to continuously monitor and control emergency worker exposure through simulated radiation surveys and proper use of dosimetry equipment. Dosimeter readings were checked every half hour and reported to the TOCC.

In summary, Team #1 successfully demonstrated FEMA objectives 1, 5, 6, 7, 8, 9, 20, 36, and 38.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

Narrative - Field Team #2

The demonstrations of the operability and effective use of routine and emergency communication equipment and the adequacy of procedures and methods to communicate with field personnel were met. The primary radio system used was the Arkansas Department of Health's radio net. The OES radio was available and demonstrated as a standby or backup system.

Mobilization and deployment of the field teams from Little Rock in a timely manner were not observable at the TOCC. The teams are notified from the Arkansas Department of Health's offices in Little Rock following either a decision to activate the

team by the TOCD or notification of an Alert emergency class. Therefore, the actual mobilization process was not observable. The teams were activated at Alert and arrived at the TOCC at 10:47 a.m. Upon arrival at the TOCC, field teams were briefed on current plant and meteorological conditions, team responsibilities and exposure control procedures. Team #2 ran through a thorough check of equipment using a written checklist. Team members' watches were synchronized at 11:35 a.m. At 11:36 a.m., teams were ready for deployment to the field.

Ambient radiation levels were adequately determined using appropriate equipment and procedures. Team #2 used the G-M for low-level radiation and ion chamber instrument for high-level radiation, as applicable at each location visited. Care was taken to prevent the possible spread of contamination to equipment, vehicle and personnel. Team #2 was able to locate and navigate in the field to find all preselected sampling points. Maps were followed and both team members were familiar with the geographic area.

Team #2 was required to take one air sample during the exercise. Appropriate procedures and equipment were used to determine airborne radioiodine as low as E-7 uCi/cc in the presence of noble gases. An air pump was used to draw a measured sample of air across a charcoal filter (silver zeolite filters were available in the kits but were not used). The air pump was properly calibrated for the appropriate flow rate. Sample cartridges were quickly screened with the G-M to determine if shielding were required during transport to the lab. Sample cartridges were then labeled and double bagged prior to pick up.

The procedures and equipment used to collect, transport, and analyze samples of soil, vegetation, and water were demonstrated by Field Team #2. This team had and used the appropriate equipment and did know the applicable procedures.

Team #2 adequately demonstrated the ability to continuously monitor and control emergency worker exposure through the proper use of dosimetry equipment and procedures. Each team member was provided with a dosimetry kit which contained: two low-range (0-200 mR), one mid-range (0-20 R), and one high-range (0-200 R) self-reading dosimeters; a TLD and record keeping cards. Team members read their dosimeters approximately every half hour and properly recorded dose readings. The maximum allowable dose without authorization (25 R) was known by team members. The team was aware that they should leave the area if that exposure dose was reached, and that they should report to the team controller for further instructions. The team was equipped with full anti-contamination suits and protective equipment (i.e., coveralls, boots, gloves, respirators, etc.).

FEMA objectives met by Team #2 were 1, 5, 6, 7, 8, 9, 20, and 36.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

Narrative - Field Team #3

The team leader received notification at the Little Rock office. The second team member (driver) was not notified at this time. A substitute driver (Area Sanitarian) was used until the designated driver could be contacted and met the field team at the first monitoring site. This demonstrated that a substitute driver was available and that under actual emergency conditions the designated driver could be contacted when working away from the office in Clarksville and meet the team at the first monitoring site.

All team members and support personnel arrived at the TOCC with all instruments and sampling equipment. All personnel appeared well trained and prepared to perform their necessary support functions.

There was continuous contact with the TOCC and other field teams. As a backup to the Department of Health's radio network, the use of the OES radio was demonstrated.

All field team members from Little Rock arrived at the TOCC at 10:47 a.m. A substitute driver (Area Sanitarian) was recruited and the designated driver notified the team that he would meet them at the first monitoring site. He arrived in time to assist with the collection of the first sample. All teams were deployed at 11:45 a.m.

Equipment and procedures for monitoring ambient radiation levels were demonstrated adequately. The proper instrument was used for the type and level of radiation. Team #3 also demonstrated the proper procedures for contamination control for personnel, vehicle and survey instruments.

Team #3 demonstrated the appropriate equipment and procedures to obtain an air sample in order to properly measure radioiodine for field conditions. The filter was properly handled and labeled for transport to the TOCC.

The team had a list of all instruments and sampling equipment. Also, the team had SOPs for equipment use and proper sample collection. The team did not have the specified container for a soil sample. The soil was collected in plastic bags, which were adequate for sample collection and transportation to lab. Also, during the exercise last year, March 18, 1987, it was noted that Team #3 did not have a soil sample container.

The team demonstrated the ability to continuously monitor and control personnel exposure. At the time of deployment, a G-M survey meter was operable during the entire field exercise to detect any changing radiation levels within the vehicle. In

addition, the self-reading dosimeters were frequently checked. Records were maintained, so that cumulative radiation exposures could be estimated at all times.

Upon deployment, the team performed a radio check and demonstrated the effective and proper procedures in the use of all communications equipment during the exercise. The team experienced no problems with equipment operation and demonstrated the proper use of backup systems.

In summary, Team #3 successfully demonstrated FEMA objectives 1, 5, 6, 7, 8, 9, 20 and 36.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

- **Description:** Soil sample containers were not in the field bag.

Recommendation: Carry sample collection containers in a bag apart from the other miscellaneous supplies.

2.1.4 Joint Media Center

Narrative

The Public Information Team (PIT) was operational at 9:15 a.m., minutes after the Alert declaration. Rapid mobilization and activation was made possible because the PIT's emergency work location is, for most PIT members, its normal work area.

Both the PIT's working space and areas used to conduct media briefings and other news production/gathering activities was adequate. The only drawback to this arrangement is the location of the media center relative to the plant. As pointed out in previous exercises, it is unlikely the media center could be used during an actual radiological emergency. Emphasis should be placed on making alternate arrangements.

The PIT was able to communicate with all appropriate locations and organizations with no problems.

The PIT demonstrated an excellent capability to provide information to the media promptly and accurately. Additionally, the PIT was aggressive in disseminating important protective actions information for the public. However, one significant problem occurred as the result of AP&L actions. The problem involved AP&L making public its protective action recommendations which differed from protective actions actually implemented by State and local governments. This created a large potential for confusion and a distraction had the media noticed this situation. AP&L released this information on its periodic status reports made available to the media in the media work area.

The PIT encountered no significant problems in communications with other parts of the off-site emergency response organizations.

By virtue of having developed new procedures, the PIT was able to demonstrate dramatic improvement in its ability to track the receipt and dissemination of important information. These procedures, tested in draft form, provide careful control over all incoming and outgoing messages and expedite the PIT's dissemination of important information. As demonstrated, this system also facilitated excellent coordination of information with AP&L. Implementation of these procedures also corrected an Area Requiring Corrective Action from the previous exercise involving the PIT's inability to provide information in a clear, accurate and timely fashion.

In summary, FEMA objectives 1, 4, 5, 24, 36, 37 and 38 were met.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

- **Description:** The location of the media center to the plant is not conducive to safe operations should an actual radiological emergency occur.

Recommendation: Provide an alternate location for the media center.

2.2 COUNTY GOVERNMENT AND LOCAL RESPONSE ORGANIZATIONS

2.2.1 Pope County EOC

Narrative

Activation and staffing occurred following receipt of the notification of unusual event (NOUE). The decision to activate at the NOUE rather than the ALERT was a prerogative for staffing that was appropriately exercised. Appropriate staffing levels by all necessary response agencies was evident. All agency representatives were activated and arrived promptly at the EOC. Full staffing was essentially completed by 7:15 a.m. The County Judge and the Emergency Coordinator provided the essential emergency response direction and control. Other representatives at the EOC included members of the Sheriff's Department, Fire Department - City of Russellville, Red Cross/Marine Reserve Chief, State OES, and the Police Department. Overall, activation of these personnel was prompt and the staffing levels were appropriate to the level of participation. In addition, Pope County is to be commended for the level of participation and high level of interest demonstrated during the exercise. Pope County showed enthusiasm and diligence in following up each component of their plan and treated each change in the emergency classification level (ECL) with a sense of urgency. Pope County continues to show improvement in every area but especially radiological exposure control.

Emergency operations management continued to function at a level commensurate with the excellent demonstration at the previous year's remedial drill. Additional improvements were also identified in management relating to knowledge of the plans in implementing protective actions and anticipating potential problems. The County Judge and the Emergency Coordinator directed their staff throughout the exercise to implement protective actions. Throughout the exercise, controller-input problems were reviewed, analyzed and appropriately administered. It was evident that the County Judge and Emergency Coordinator have further familiarized themselves with the county's response actions and were able to coordinate implementation of the actions through the agencies represented at the EOC. It is suggested that briefings be held more frequently to update the staff on current planned status and implementation activities. Also a review of the county concept of operations regarding protective actions advisories (versus protective action directives) and associated county concurrence is needed. Furthermore, generic checklists developed to prompt the Center Director on fundamental response actions (notification of special needs individuals, etc.) would prove useful following receipt of ECLs and/or PAAs. Overall, continued improvements in emergency operations management were noted.

The Pope County EOC is located in the Pope County Detention Center in Russellville, Arkansas. The EOC was established in a meeting room within that facility where it was set up following activation of staff. As indicated to the evaluators, the facility was essentially operational at 7:15 a.m. All maps, status boards and displays that were appropriate to their emergency response functions were set up and utilized

throughout the day. Status boards were updated regularly, maps were used to identify appropriate traffic control points and displays were used to document the status of the emergency. It is suggested that color overlays be used to identify affected sectors on the plume EPZ map. The adequacy of the facility was clearly demonstrated.

The primary communication system linking the Pope County EOC with the TOCC and the other county EOCs was the NERN System. Telephones were used for backup communications and individual agencies used radios to communicate with their field personnel. Throughout the exercise, the primary system functioned properly. The Sheriff's Department staff was familiar with the use of all primary equipment as well as backup equipment. As the need arose, the staff was knowledgeable in the means to communicate with any individual at any of the other response locations. Inquiries from the State regarding status of implementing actions were carried out quickly and effectively throughout the exercise. There appeared to be clear communication lines between Pope County EOC and Hector Care Center.

An effective system is in place to inventory, distribute and document emergency worker exposure control in Pope County. Adequate numbers and types of dosimeters were available at the Pope County EOC for distribution to emergency workers located there. According to the radiological officer, other exposure control kits were available at various locations in the county for distribution to emergency workers. Equipment inventories are conducted quarterly and emergency worker training programs are in place. The assignment of responsibility for exposure control rests with the radiological officer who was knowledgeable in demonstrating the technical aspects of radiological exposure control. The emergency worker exposure control kit consisted of direct-read dosimeters, permanent record dosimeters, KI, exposure control cards and instructions on the use of KI. The limits for emergency worker excess dose authorizations as well as the interval for recording dose readings were presented by the radiological officer. It would prove useful to include in the record keeping sheet a time interval for recording doses and instructions for placement of the dosimeters on emergency workers. There continues to be improvements in the exposure control concept of operations for Pope County.

A controller input message at approximately 11:00 a.m. prompted the testing of the objective for coordination of onsite evacuation of personnel. The Emergency Coordinator delegated responsibility for coordinating these activities to the County Sheriff. The County Sheriff assessed the situation and made determinations on establishing traffic control points to expedite evacuation of onsite utility personnel. The appropriate traffic control points were identified immediately and all necessary conditions were evaluated.

The Pope County EOC monitored each emergency classification level (ECL) by radio contact with the TOCC and responded quickly with follow-up phone calls when the classification status changed. When PAA #5, calling for emergency evacuation was received, Pope County was the first EOC to note that the General Emergency (GE) had not been announced. Pope County is to be commended for noting this immediately upon receipt of PAA #5, and notifying the TOCC to announce the GE.

In general, Pope County responded immediately to each PAA and ECL by reading each message out loud once by the communications officer, discussing it among the EOC

members, designating an EOC member responsibility for action and creating a checklist for follow-up to ensure that the actions had been completed. However, Pope County missed checking item 6D, Evacuation of Zone E on PAA #4. The communications officer noted that the TOCC had to interrupt each ECL announcement to make sure that all county EOCs had properly understood item #8 (Condition Requiring Notification) on the Emergency Class Notification Form. The State should consider moving this item to the end of the form or deleting it all together, since Pope County EOC felt emergency actions could be unnecessarily delayed in recording and interpreting the meaning of detailed technical jargon presented in item #8 of the Emergency Class Notification Form.

In summary, FEMA objectives 1, 3, 4, 5, 20, 23, 30, 31, 36 and 37 were met.

DEFICIENCY

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

- **Description:** Briefings were held too infrequently.

Recommendations: Pope County could benefit from more frequent briefings even if these briefings are a reiteration of previous messages. These briefings could facilitate discussion and perhaps "trigger" actions or special circumstances that should be considered. The content of the briefings could include what is happening at the utility, the TOCC and other counties so that Pope County can understand how other EOCs are responding even if they are not directly affected.

- **Description:** All EOC actions were acted upon immediately and from the collective memory of EOC members. If certain members are absent, the potential to overlook an item exists.

Recommendations: Pope County should prepare a checklist of action items triggered by changes in emergency classification levels. Each message received by the EOC provoked discussion about necessary action and response, but the potential to miss an action item exists, especially in a real emergency when EOC members are attending to their designated areas of responsibility. The checklist simplifies the process of decision making and reduces

the possibility of overlooking areas to be covered. The checklist would prioritize items within each emergency classification level to show which items require immediate actions and which items may be momentarily deferred.

- **Description:** Emergency facilities and access to these facilities during an emergency was well known to members of the EOC, but not visually apparent from the EPZ map.

Recommendation: A facilities overlay (perhaps color-coded) would permit the EOC to visually identify affected areas, points of access control and the relative position of the plume with one viewing of the EPZ map. Although not required, the overlay(s) would greatly simplify who is likely to be affected, evacuation routes, and all facilities available for response.

2.2.2 Johnson County

2.2.2.1 Johnson County EOC

Narrative

The Johnson County EOC is located in the basement of the County Courthouse in Clarksville, Arkansas. It contains all items necessary to operate for an extended period of time. An additional display reflecting the latest emergency classification levels is needed. The ES coordinator kept the staff aware of the levels throughout the exercise. A clock in the operations room would also be helpful.

Activation and staffing of the EOC followed the notification of the Alert Classification. The EOC was declared operational and staffed 25 minutes after the Alert. The staff is alerted by radio pagers and also could be notified by telephone. A sufficient number of the EOC staff were present to handle the problems of the exercise.

The EOC was managed by a very capable ES coordinator with the County Judge present to make additional decisions. Periodic briefings were made by the EM coordinator to keep the staff updated at all times. The staff displayed a high state of training and were very knowledgeable concerning their responsibilities. Messages were processed and handled in a timely manner.

The EOC has ample communications to maintain contact with the TOCC and surrounding counties and to all of their emergency agencies and vehicles throughout the county. No hard copy device was available for the exercise, but the ES coordinator advised they were in the process of obtaining one. Effective use of all communication equipment and procedures was observed with the exception of one transmission not preceded by "This is an exercise message."

Dosimeters, TLDs, record keeping cards and KI were issued to emergency workers during the exercise. The decision to take KI was not issued to Johnson County from the TOCC. The EOC managers successfully demonstrated their ability to continuously monitor and control emergency worker exposure.

The scenario was sufficient to test all objectives of this exercise; therefore objectives 1, 3, 4, 5, 20, 22, 36 and 37 were all met.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTIONS

None.

AREAS RECOMMENDED FOR IMPROVEMENT

- **Description:** No display board to reflect changes in emergency classification levels was available.

Recommendation: Obtain an emergency classification level status board and utilize it in the next exercise.

2.2.2.2 Clarksville Reception/Care Center

Narrative

The Johnson County Emergency Management Coordinator mobilized the radiological monitors along with members of the Lamar and other volunteer rural fire fighters to demonstrate the monitoring and decontamination of a vehicle. The area selected to decontaminate the vehicle was located in an open field across from the Clarksville High School.

The radiological monitors were all very knowledgeable and well trained in monitoring procedures. One member properly suited out in "anti-C" clothing; the remaining members simulated dressing out. The vehicle was properly checked for contamination; one hot-spot was located with information furnished by a controller. Smear samples were taken and, after the vehicle was washed down, smear samples were taken again and properly packaged and labeled. The entire vehicle was monitored. Correct procedures were observed throughout the entire demonstration of monitoring and decontamination of a vehicle. This indicated that all personnel had been well trained and were knowledgeable about the procedures of monitoring and decontamination of

vehicles. As a result, demonstration of vehicle monitoring and decontamination corrected ARCA #87-3 from the 1987 exercise.

Radio contact was maintained with the EOC throughout the demonstration.

In summary, FEMA objectives 1, 5 and 29 were met. This removes (ARCA) 87-3 from the last exercise.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

2.2.3 Logan County

2.2.3.1 Logan County EOC

Narrative

The Logan County Sheriff's office Communications Center received the NOUE declaration and immediately notified the County Emergency Services Coordinator. The Coordinator contacted the County Judge and discussed the situation with him. The decision was made to do nothing until further information was received. At 8:45 a.m., the county received the ALERT notification in both the Sheriff's office and the Emergency Services communications facility. The Emergency Services Coordinator initiated his staff call-up procedures and the entire staff, including; the County Judge, the Deputy ES Coordinator (County EMS Coordinator), two communicators, a Sheriff's Deputy, the RDO, the US secretary and three Red Cross representatives, was present at the EOC by 9:05 a.m.

The County EOC, a small facility located in the basement of the County Courthouse in Paris, Arkansas, is limited in space. However, the ability to expand into the hallway outside the EOC, and into the snackbar across the hall allows sufficient room for adequate operations at this facility. The EOC has sufficient furniture and equipment and the appropriate maps and displays to support its required emergency functions. The EOC also has excellent checklists and up-to-date operational instructions for the various staff members.

After reviewing the situation with the ES Coordinator, the RDO began the preparation of emergency worker dosimetry kits and made a radiological survey of the EOC area to serve as a baseline for later surveys. The kits included direct reading and permanent record dosimeters, instructions for use of the kits and dose record cards. KI was available at the EOC for issue if required.

At 10:55 a.m., Logan County received notification of the Site Area Emergency. The County Judge immediately ordered precautionary positioning of county emergency response forces (simulated) and alerted the Reception and Care (R/C) Center at the Paris High School. The R/C Center was activated at 11:30 a.m. to meet the schedule for the class that would act as incoming evacuees. It is noteworthy that the County Judge and the ES Coordinator displayed an impressive grasp of the situation and the potential problems, and anticipation of the requirements for action. They responded, throughout the exercise, to controller inputs and live play, decisively and expeditiously. These inputs included problems involving traffic control, access control, traffic obstructions and handling of mobility-impaired persons within the plume EPZ.

The County received the notification of the General Emergency at 12:27 p.m. and the County Judge immediately issued a Court Order for the evacuation of Zone E (Sectors 11, 12 and 13). This action provided legal basis for the county to require evacuation of the threatened area. Protective Action Recommendations from the TOCC were monitored and acted on with dispatch. The County Judge and the ES Coordinator maintained a continuous watch on the situation and initiated other appropriate actions as they were required. The area of Logan County within the EPZ was declared evacuated at approximately 1:15 p.m.

The EOC communications room, a small alcove off of the main EOC room, maintained continuous communications with the TOCC and all field forces throughout the exercise with no problems or outages. All communications equipment functioned properly and was used effectively. Activities at the Logan County EOC were terminated, with permission of the TOCC, at approximately 2:30 p.m.

In summary, FEMA objectives 1, 3, 4, 5, 15, 16, 17, 18, 20, 22, 36, 37 and 39 were fully met at the Logan County EOC.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

2.2.3.2 Paris Reception/Care Center

Narrative

The Paris High School Reception/Care Center received notification to activate their facility at 11:30 a.m. The Center Manager (the High School Principal) immediately notified the assistant manager and began calling the balance of the center staff via the telephone and a two-way radio. American Red Cross and County Health Department personnel arrived to set up the Reception and Care Center and Fire Department personnel, in protective clothing and with appropriate dosimetry, established the monitoring and decontamination area. A chemistry class from the high school served as simulated evacuees and were processed through the center as though they had arrived from the contaminated area. The (simulated) evacuees were monitored on a paper step-on pad at the entrance to the center and, if found to be clean, directed to the Red Cross for registration and processing. If they were found to be contaminated, they were sent, by a different route, to the decontamination area where they were re-monitored, their possessions secured and their contaminated clothing secured in double plastic bags for later cleaning or disposal. They were then directed to the decontamination showers where they were monitored once again and provided with clean clothing. From here, they were sent to the Red Cross for registration. The entire Reception/Care center staff, including the monitoring team, was well trained and performed their functions with skill and enthusiasm. Additionally, the students at the school, both the members of the chemistry class, who were simulated evacuees, and the other students who were only observers of the events at their school, are to be commended for their excellent behavior during the exercise. They are a credit to their school and their community.

At 12:45 p.m., a Sheriff's Deputy was directed to the center from the area of the plume. On being monitored, he and his vehicle were found to be contaminated. The deputy was directed through the decontamination process at the center and the vehicle was directed to a decontamination area at the fairgrounds (one block from the R/C Center). At the vehicle decontamination area, the wash-down water was contained by dikes and held for later disposal.

Although not an objective of this exercise, there was an excellent demonstration of response by the Emergency Medical Service at the R/C Center. One of the monitors suffered a (simulated) heart attack and required immediate medical attention and transportation to a hospital. The ambulance arrived quickly and, on learning of the possible contamination of the patient, the ambulance crew donned gloves and booties. Then, following good contamination control procedures, the patient's vital signs were taken, oxygen was administered, his contaminated clothing was removed and bagged and he was prepared for transport. The interior of the ambulance was protected from contamination by spread sheets and the careful wrapping of the patient.

In summary, FEMA objectives 1, 5, 20, 27, 28 and 29 were fully met at the Paris High School R/C Center.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

2.2.4 Yell County**2.2.4.1 Yell County EOC****Narrative**

The Yell County EOC is located in the Courthouse of the county seat of Yell County at Danville, Arkansas. The county courtroom doubles as the EOC, with the joint Emergency Management/sheriff's communications center located in the basement of the courthouse.

Staff mobilization and facility activation were adequately demonstrated when the Yell County Sheriff's office dispatcher in Danville received a call from the TOCC at 5:07 a.m. reporting a NOUE. This call was verified by the use of a code word. Using a typed call down list, the dispatcher immediately informed the County OES Coordinator, County Judge and Deputy OES Coordinator who responded to the EOC and began moving all telephones, radios, maps, charts, display boards, etc. from the Sheriff's dispatch office to the court room. The County Judge made the decision to mobilize the EOC staff at 9:15 a.m., upon receipt of the Alert-Status notification. All 14 members and agency representatives were present at 9:30 a.m.

Agencies represented at the EOC included: County Judge, Emergency Management Director, Deputy Emergency Management Director, Sheriff's Office, Yell County Care Center, Dardanelle Fire Department, County Board of Education, Yell County Health Department, Yell County Fire Department, Yell County Sheriff's Department, Dardanelle Police Department, Ola Police, Yell County Police - Danville, and County Mounted Patrol.

Security was established at 9:30 a.m. and maintained throughout the exercise by the establishment of a Sheriff's Deputy at the entrance door.

The EOC operation was effectively managed by the County Judge and the OES Coordinator. Throughout the period of the exercise, both individuals demonstrated

excellent judgement and control. Problems and events were handled in a timely, accurate manner. Decisions involving other agencies represented in the EOC were coordinated effectively and other members were frequently consulted regarding those activities within the purview of their office. Briefings were held as messages were received, insuring that all present were kept informed regarding all aspects of the exercise. The County Judge would read the message aloud and announce the response and/or action necessary to satisfy the problem.

The courtroom, which is utilized for EOC operations, is a large comfortable room containing adequate space, furniture, and other resources necessary to carry out emergency response duties and responsibilities. Upon notification of an Alert, all equipment necessary for the conduct of the drill or emergency is transported from the communications center to the courtroom.

The county courthouse is equipped for 24-hour emergency operations with a full kitchen, showers and bunks in the basement. Backup power is available for the communications center but was not demonstrated during this exercise. It is powered by natural gas. Butane can be used during an emergency that interrupts the gas supply.

Displays, maps, and status boards were adequate and were frequently used in decision making. Several of the display boards were not mounted at eye level. All messages were synopsisized on the Status Board which made it difficult to read. Evacuation routes, population densities, relocation centers, access control points, and radiological monitoring points are not shown on displays but are available in the county plan, which was frequently referenced throughout the exercise. The staff frequently used written checklists and procedural references in the performance of their duties.

The ability to communicate with all locations and field personnel was demonstrated first by the receipt of information from the TOCC by the dispatcher. After all communications equipment was moved to the EOC, a deputy sheriff served as communications officer. He utilized the NERN radio system and the dedicated hot line from the TOCC to communicate with local EOCs, the licensee and the EOF. EBS was not utilized during this exercise but stations KCAB, KWKK, and KARV are the local EBS stations which will be utilized for general public information. Communications systems at the EOC consist of dedicated landline with police radio and commercial telephone as backups. The communications center is equipped with a low-band nuclear-incident radio. Through the telephone, the communicator can automatically designate which locations are to be automatically dialed. Local hospitals and schools are all equipped with tone-alert Early-Warning radios, as are the sheriff's offices and police departments in Danville and Dardanelle. Ambulances are in constant contact through mobile radios. The Fire Department radio is backed up by the Sheriff's dispatcher. Radiological monitoring team personnel vehicles have radios (six members also carry pagers) as do the County Mounted Patrol vehicles.

Communications to the State EOC are relayed through the TOCC by NERN radio. There is no direct radio to the State EOC.

The hard-copy facsimile was not tested during this exercise. It was reported to be out of order due to the facility changing its system. Until the communications

systems were functional in the EOC, all calls were promptly answered, and upon completion, the message form was immediately hand-carried to the EOC.

Radiation exposure was excellently monitored and controlled. Adequate radiation monitoring equipment was available and well maintained. The radiation control officer charged, zeroed, and issued TLDs, high-band (0-200 R) and low-band (0-200 MR) dosimeters to all present (with instructions). The one individual who was dispatched to search for a possible downed aircraft was a trooper who carries protective clothing and radiation monitoring equipment in his vehicle. A standard record card was utilized to record the names of those to whom the dosimeters were issued and would have been used to record readings. As the EOC was not near the exposure plume, there were no readings conducted. Thirty-six sets of the above described equipment are available. Demonstration of this objective corrected ARCA #87-4 from the 1987 exercise.

Upon receiving a report that the worker who had been dispatched into the plume area had received contamination, the radiation officer announced that the level of exposure exceeded acceptable limits and the worker was advised to immediately report to the reception care center for decontamination.

The ability to adequately monitor classification levels continuously and implement procedures in a timely manner, was demonstrated as follows: The TOCC advised the EOC that one section of the county, in which seven families reside, was within the plume. Tone-alert activation was simulated and the seven families were advised to immediately evacuate and report to the reception center. Troopers were instructed to insure that all routes and access points were clear. They were then asked to check each home to insure complete evacuation. These troopers drive radio equipped vehicles and carry protective clothing and dosimeters in their vehicles. All were advised to report to the reception center for decontamination upon completion of evacuation.

For this exercise all calls were received over the dedicated line or the NERN radio. Messages received were transcribed to the sequentially-numbered message form. In situations in which a message was not fully understood, the operator requested that the message be repeated.

In summary, objectives 1, 3, 4, 5, 16, 18, 20, 36, and 37 of this exercise were met at the Yell County EOC.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

2.2.4.2 Danville Reception/Care Center**Narrative**

The Reception/Care Center manager was well versed on county procedures to demonstrate the adequacy of facilities for mass care of evacuees. A walking tour of the facility was conducted to demonstrate this objective.

The center is located in the Danville High School. It is capable of handling approximately 1,000 to 1,500 evacuees. The high school is equipped with a full-size kitchen and cafeteria, which could double as a bunking area. The outside entrance to the shower facilities is ideal for the segregation of contaminated individuals from the rest of the evacuees and control of the decontamination process. The school gymnasium is also adequate for continued congregate care. The high school has ample parking for vehicles. If the center were to exceed 1,500 evacuees, the county could utilize the facilities of the Danville First Baptist Church, the National Guard Armory and a Methodist Church which are within 150-200 yards of the Reception/Care Center. The National Guard Armory could only accommodate the bunking of evacuees. However, both churches have adequate kitchen and bunking facilities. Additionally, the Armory and both churches have ample parking space. Their space would only be used as a backup to the care center facilities. The Reception/Care Center has a designated area in the high school for a nursing care station. The care center also has access to the county hospital, which is about two blocks south. The monitoring and decontamination of vehicles was not demonstrated, but was satisfactorily reviewed.

In summary, FEMA objectives 27 and 28 were met.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

2.2.5 Conway County EOC

Narrative

The initial warning point for Conway County activation is the Morrilton Police Department Dispatch, which is staffed on a 24-hour basis. Notification of an Unusual Event was received over the NERN system at 6:30 a.m. Immediately upon receipt of this message, the dispatcher notified the County OES Coordinator and police chief via telephone.

Upon receipt of the NOUE, the County OES Coordinator notified six of his staff by car radio to be on standby and then reported to the EOC at which time he activated a call list of 12 individuals - eight of whom were placed on standby. Three others reported immediately - the communications operator, Deputy County OES Coordinator and an all-purpose helper. The County Judge and the Mayor were notified by telephone by 8:20 a.m. All standby personnel were periodically briefed by phone.

Upon receipt of PAA message #6, which was an update of the Alert Message, the Coordinator used a call-down roster and notified his staff to report to the OES. This call was made at 10:35 a.m. and all staff reported by 10:45 a.m. Each was briefed as they arrived. The County Judge and a City representative reported and were briefed. Upon receipt of this message, the police department dropped out of the communications link. (The alert message, which was sent at 9:12 a.m., was never received at the Conway County EOC. It should have been received by the Morrilton Police Department, but it appears the TOCC failed to include this location as a recipient.)

The County ES Coordinator served as the authorized representative of the County Judge since the Judge could not be present. The Coordinator gave frequent briefings to the staff and contacted the Mayor and County Judge via telephone and briefed each of them with each change in alert status. The Coordinator displayed good leadership and a grasp of the procedures by responding promptly and appropriately to problems built into the exercise and free-play messages provided by the State Controller. Decision making and procedures were excellent even though the County Judge, Sheriff, Police Chief nor Mayor were present. These individuals will be present when the County is a full-play participant in order to test the County's decision-making and implementation process.

The physical facilities at the EOC were adequate to support emergency operations. The EOC is located in the basement of the Morrilton Post Office, and has ample space, lighting, furnishings and equipment. It is divided into four rooms: a communications room, an operations room, a billeting room with two bunks and chairs and a spacious storage room. It also has a backup power unit in the form of an auxiliary generator in the parking lot behind the post office.

Maps and display boards were excellent and were used throughout the exercise. The wall maps were located in the Communications Room and the message display boards were located in the Operations Room. It would seem to benefit the operation if the maps were moved to the Operations Room. This would eliminate interference with the communications operator since all maps were in his immediate location.

Communications equipment and procedures were adequate. The primary communication link to the TOCC was the NERN radio system. All messages were recorded on official notification forms, logged and posted on prominently displayed message boards in the operations room. State Protection Action Advisory (PAA) forms were also used. Other communications equipment available included telephones, statewide OES radio, police and sheriff's department radio, County Fire Department radio, ambulance and hospital frequency radio, police and local tone alert system for contacting schools and major employers, eight hand-held portable radios and a pager system for eight staff members.

There were seven dosimeter kits in the EOC and KI is available if needed. There were also plastic-wrapped dosimeter kits stapled to the wall in each room of the EOC along with several kits stored in boxes.

A radiological officer from the fire department is on the staff and normally runs tests randomly, but was unavailable for this exercise. A substitute radiological officer was available.

In summary, FEMA objectives 1, 3, 4, 5, 20, 36 and 37 were met.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None.

AREAS RECOMMENDED FOR IMPROVEMENT

None.

2.3 UTILITY SUPPORT

2.3.1 Medical Support - St. Mary's Hospital/Pope County Ambulance Service

Narrative

At 1:23 p.m., St. Mary's Hospital was notified by ANO of a contaminated injured patient. The Pope County Ambulance Service was simultaneously notified for transportation of the patient and immediately began performing necessary duties to stabilize the patient.

As dictated by hospital plans, the emergency department staff noted the necessary patient information as relayed by the ambulance staff and transmitted the information to the hospital administration for proper verification with ANO. Within 25 minutes from notification, the staff was dressed out in protective clothing, essential equipment was in place, a hot area was designated, and the emergency department was ready to receive the patient.

At 2:02 p.m., the ambulance arrived at the hospital, the patient was unloaded and taken into the emergency room.

Meanwhile, a hospital employee provided security for the ambulance until a health physics technician completed a survey of the vehicle. No contamination was found on or in the vehicle. The crew was surveyed and found to be clean.

Overall, the hospital facility was adequate. Necessary equipment was in evidence and properly demonstrated by the hospital staff and ambulance crew. The hospital staff and ambulance crew were knowledgeable and well trained and all procedures in the transportation, reception, decontamination and treatment of the patient were executed in a smooth and professional manner.

The only problem at the hospital remains the back stairs entrance through which the patient enters the emergency department. It is cumbersome and less than desirable and can be resolved only through remodeling, reconstruction or by utilizing the main entrance of the emergency department while taking proper precautions. The hospital should consider correcting this problem before the next exercise.

In summary, FEMA objectives 1, 5, 20, 30, 31 and 36 were met.

DEFICIENCIES

None.

AREAS REQUIRING CORRECTIVE ACTION

None

AREAS RECOMMENDED FOR IMPROVEMENT

- **Description:** The continuing problem (see previous exercise reports) with the emergency room entrance results in a less than desirable situation.

Recommendation: It is urged that some measures be taken to resolve this problem by either using a different entrance or remodeling the present entrance.

3 TRACKING SCHEDULE FOR STATE/LOCAL ACTIONS TO CORRECT DEFICIENCIES AND AREAS REQUIRING CORRECTIVE ACTION

Section 2 of this exercise report has provided a listing of Deficiencies and Areas Requiring Corrective Action with recommendations noted by federal evaluators during the most recent exercise conducted on March 23, 1988. The evaluations were based on the applicable planning standards and evaluation criteria set forth in Sec. II of the NUREG-0654, FEMA-1, Rev. 1 (Nov. 1980) and exercise objectives.

The FEMA Region VI Director is responsible for certifying to the FEMA Associate Director, State and Local Programs and Support, Washington, D.C., that any deficiencies or areas requiring corrective action noted in the exercise will be corrected and such corrections will also be incorporated into the emergency response plans as appropriate.

FEMA Region VI will request that the State of Arkansas and local jurisdictions participating in the Arkansas Nuclear One exercise submit measures that they will take or intend to take to correct those problems found by the Federal evaluators. If corrective actions are necessary, FEMA Region VI will request that a detailed plan, including dates for scheduling and implementing corrective actions be provided if such actions cannot be instituted immediately.

Table 1 provides a consolidated summary of all Deficiencies and Areas Requiring Corrective Action. The table is designed so that space has been allowed to add: (1) the proposed corrective actions that have been recommended and (2) the projected and actual date of completion. There were no Deficiencies noted in this exercise.

TABLE 1 Deficiencies/Areas Requiring Corrective Actions for the March 23, 1988 Arkansas Nuclear One Exercise

Deficiencies and Areas Requiring Corrective Actions with FEMA/RAC Recommendations for Correction	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy or Inadequacy	Actual Completion Date
<p>Technical Operations Control Center (TOCC)</p> <p>Deficiencies: None</p> <p>Areas Requiring Corrective Actions: None</p>				

4 EVALUATION OF OBJECTIVES

4.1 SUMMARY OF FEMA OBJECTIVES REMAINING TO BE MET

Table 2 on the following pages provides listing of those FEMA Objectives which, according to the FEMA RAC Chairman, have not been satisfactorily met or tested and which should be incorporated in to the exercise objectives on or by the sixth year of the six-year period in which the objectives must be tested. These should be considered in the development of future exercise objectives; as well as those FEMA objectives which, although previously tested and satisfactorily demonstrated, must be tested and evaluated during any Full-Participation exercise of off-site State and Local response capabilities. As previously mentioned in the Exercise Background Section, this 1988 exercise is the third of a new six-year cycle.

4.2 FEMA OBJECTIVES TRACKING — ARKANSAS NUCLEAR ONE

Table 3 provides a comprehensive tracking system of FEMA Objectives, NUREG-0654 Reference Elements, Exercise Objectives, Jurisdictional Responsibility, Exercise Dates, Identified Deficiencies and Required Corrective Actions, and the Date Specific FEMA Objectives Were Met by State and Local agencies. This system will track the progress and status of these data through the six-year exercise cycle in which all FEMA Objectives must be tested.

TABLE 2 Summary of FEMA Objectives Remaining to Be Met — Arkansas Nuclear One

FEMA Objective and NUREJ Reference	Jurisdiction
2. Demonstrate ability to fully staff facilities and maintain staffing around the clock. (A2.a, A.4)	Not Tested -- State or Local
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. (I.10, I.11, J.11)	Objective to be tested.
12. Demonstrate ability to implement protective actions for ingestion pathway hazards (J.9, J.11)	Objective to be tested.
27. Demonstrate adequacy of procedures for registration and radiological monitoring of evacuees. (J.12.1)	Not tested -- Conway County -- 3/18/87, 3/23/88
28. Demonstrate adequacy of facilities for mass care of evacuees. (J.10.h)	Not tested -- Conway County -- 3/18/87, 3/23/88
29. Demonstrate adequate equipment and procedures for decontamination of emergency workers, equipment and vehicles (K.5.a,b)	Not tested in Conway County and Pope County (Atkins)
33. Demonstrate ability to estimate total population exposure. (M.4)	Objective to be tested.
34. Demonstrate ability to determine and implement appropriate measures for controlled recovery and reentry. (M.1)	Objective to be tested.

TABLE 3 FEMA Exercise Objectives Tracking Chart — Arkansas Nuclear One

FEMA Objective Number and Description	NUREC 0654 Reference	Objective at March 23, 1988 Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (by Tracking No. & Date)	Date Objective Met/Not Met	
			State	Local			State	Local
1. Demonstrate ability to mobilize staff and activate facilities promptly. (Objective for which capability should be demonstrated during each full participation exercise)	E.1, E.2 (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
2. Demonstrate ability to fully staff facilities and maintain staffing around the clock.	A.2.a, A.4 (S&L)	No	X	X				
3. Demonstrate ability to make decisions and to coordinate emergency activities. (Objective for which capability should be demonstrated during each full participation exercise)	A.1.d, A.1.e, A.2.a (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
4. Demonstrate adequacy of facilities, equipment, maps and displays to support emergency operations. (Objective for which capability should be demonstrated during each full participation exercise)	C.3.a, M.2, M.3 (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
5. Demonstrate ability to communicate with all appropriate locations, organizations and field personnel. (Objective for which capability should be demonstrated during each full participation exercise)	F (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
6. Demonstrate ability to mobilize and deploy field monitoring issues in a timely fashion. (Objective for which capability should be demonstrated during each full participation exercises)	I.8 (S)	Yes	X		3/23/88		3/23/88	

TABLE 3 (Cont'd)

FEMA Objective Number and Description	MUREC 0654 Reference	Objective met March 23, 1988 Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (by Tracking No. & Date)	Date Objective Met/Not Met	
			State	Local			State	Local
7. Demonstrate appropriate equipment and procedure for determining ambient radiation levels. (Objective for which capability should be demonstrated during each full participation exercise)	1.8, 1.11 (1.8) (1.11-a)	Yes	X		3/23/88		3/23/88	
8. Demonstrate appropriate equipment and procedures for measurement of airborne radiiodine concentrations as low as 10^{-3} $\mu\text{Ci/cc}$ in the presence of noble gases. (Objective for which capability should be demonstrated during each full participation exercise)	1.9 (S)	Yes	X		3/23/88		3/23/88	
9. Demonstrate appropriate equipment and procedures for collection, transport, analysis of samples of soil, vegetation, snow, water, and milk. (Objective for which capability should be demonstrated during each full participation exercise)	1.8 (S)	Yes	X		3/23/88		3/23/88	
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. (Objective for which capability should be demonstrated during each full participation exercise)	1.10, J.10 (1.10-S) (J.10-S)	Yes	X		3/23/88		3/23/88	
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. (Objective for which capability should be demonstrated during each full participation exercise)	1.10, J.11 (C)	No		X				

TABLE 3 (Cont'd)

FEMA Objective Number and Description	WU3EC 0654 Reference	Objective at March 23, 1988 Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (by Tracking No. & Date)	Date Objective Met/Not Met*	
			State	Local			State	Local
12. Demonstrate ability to implement protective actions for ingestion pathway hazards.	J.10, J.11 J.9 (S&L) J.10(S&L)	No	X	X				
13. Demonstrate ability to alert the public within the 10-mile EPZ and disseminate an initial instructional message within 15 minutes. (Objective for which capability should be demonstrated during each full participation exercise)	E.6, App.3	Yes	X		3/23/88		3/23/88	
14. Demonstrate ability to formulate and distribute appropriate instructions to the public in a timely fashion.	E.5, E.7 (S)	No	X		3/18/87		3/18/87	
15. Demonstrate organizational ability and resources necessary to manage an orderly evacuation of all or part of the plume EPZ. (Objective for which capability should be demonstrated during each full participation exercise)	J.9, J.10.a, J.10.g. (S&L)	Yes	X	X	3/18/87		3/18/87	All met 3/23/88
16. Demonstrate organizational ability and resources necessary to deal with impediments to evacuation, as incident weather or traffic obstructions.	J.10.k (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
17. Demonstrate organizational ability and resources necessary to control access to an evacuated area.	J.10.j (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
18. Demonstrate organizational ability and resources necessary to effect an orderly evacuation of mobility-impaired individuals within the plume EPZ.	J.10.d (L)	Yes		X	3/23/88			All met 3/23/88

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at March 23, 1988 Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (by Tracking No. & Date)	Date Objective Met/Not Met	
			State	Local			State	Local
19. Demonstrate organizational ability and resources necessary to effect an orderly evacuation of schools within the plume EPZ.	J.9, J.10.g	No		X	3/23/88			All previously met
20. Demonstrate ability to continuously monitor and control emergency worker exposure. (Objective for which capability should be demonstrated during each full participation exercise)	K.3.a, K.3.b (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
21. Demonstrate ability to make the decision, based on predetermined criteria, whether to issue KI to emergency workers and/or the general population.	J.10.f (S&L)	No		X			4/2/86	
22. Demonstrate ability to supply and administer KI, once the decision has been made to do so.	J.10.e (S&L)	Yes	X	X			4/2/86	Met 4/2/85 Yell & Pope County EOCs Met 3/23/88 Johnson & Logan Counties EOCs
23. Demonstrate ability to effect an orderly evacuation of on-site personnel.	J.2	Yes		X	3/23/88			Met 3/23/88 Pope Co.
24. Demonstrate ability to brief the media in a clear, accurate, and timely manner.	G.3.a, G.4.a, (S)	Yes	X		3/23/88	ARCA 87-1, corrected 3/23/88	3/23/88	

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at March 23, 1988 Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (by Tracking No. & Date)	Date Objective Met/Not Met	
			State	Local			State	Local
25. Demonstrate ability to provide advance coordination of information released.	G.4.b (S)	Yes	X		3/18/87		3/18/87	
26. Demonstrate ability to establish and operate rumor control in a coordinated fashion.	G.4.c (S)	No	X				4/2/86	
27. Demonstrate adequacy of procedures for registration and radiological monitoring of evacuees. (Objective for which capability should be demonstrated during each full participation exercise)	J.12 (L)	Yes		X	3/23/88			Met 3/18/87 Johnson & Pope Co. EOCs Met 4/2/88 Yell County Met 3/23/88 Logan County Not tested Conway County
28. Demonstrate adequacy of facilities for mass care of evacuees.	J.10.h (L)	Yes		X	3/18/87			Met 3/18/87 Pope & Johnson Counties Met 3/23/88 Logan & Yell Counties
29. Demonstrate adequate equipment and procedures for decontamination of emergency workers, equipment, and vehicles. (Objective for which capability should be demonstrated during each full participation exercise)	K.5.a, K.5.b, (L)	Yes		X	3/23/88	ALCA 87-3 Clarks-ville Reception/Care Center corrected 3/23/88		Met 3/23/88 Logan and Johnson Co. Met 6/11/87 Pope County; 4/2/86 Yell County Not tested Conway County

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective as of March 23, 1988 Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (by Tracking No. & Date)	Date Objective Met/Not Met	
			State	Local			State	Local
30. Demonstrate adequacy of EMS transportation, personnel and procedures for handling contaminated individuals including proper decontamination of vehicle and equipment. (Objective for which capability should be demonstrated during each full participation exercise)	L.4 (L)	Yes		X	3/23/88			Met 3/23/88 Pope County 3/23/88 Utility support
31. Demonstrate adequacy of hospital facilities and procedures for handling contaminated individuals. (Objective for which capability should be demonstrated during each full participation exercise)	L.1 (L)	Yes		X	3/23/88			3/23/88 Utility support
32. Demonstrate ability to identify need for, request, and obtain Federal assistance.	C.1.a, C.1.b (S)	No	X		3/18/87		3/18/87	
33. Demonstrate ability to estimate total population exposure.	M.4 (S)	No	X					
34. Demonstrate ability to determine and implement appropriate measures for controlled recovery and reentry.	M.1 (S&L)	No	X	X				
35. Demonstrate the ability to effectively call upon and utilize outside support agencies when local capabilities are exceeded.	C.4 (S)	No	X		3/18/87		3/18/87	

TABLE 3 (Cont'd)

FEHA Objective Number and Description	NUREG 0654 Reference	Objective at March 23, 1988 Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (by Tracking No. & Date)	Date Objective Met/Not Met	
			State	Local			State	Local
36. Demonstrate the adequacy, operability and effective use of emergency communication equipment and the adequacy of communications procedures and methods. (Objective for which capability should be demonstrated during each full participation exercise)	F.1 (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
37. Demonstrate ability to monitor Emergency Classification levels continuously and implement procedures in a timely manner. (Objective for which capability should be demonstrated during each full participation exercise)	F.1 (S&L)	Yes	X	X	3/23/88		3/23/88	All met 3/23/88
38. Demonstrate capability to effectively process all incoming/outgoing messages in a timely manner, including the documenting of both actual and simulated messages.	E (S&L)	Yes	X	X	3/18/87	3/19/87 ARCA 87-1 JIC corrected 3/23/88	ARCA 87-1 JIC corrected 3/23/88	All met 3/23/88
39. Demonstrate that authority exists in coordinating and activating a reception center (as necessary) in a timely manner. (Objective for which capability should be demonstrated during each full participation exercise)	A.2.a, A.3 (S&L)	Yes	X	X	3/23/88		Met 3/23/88 TJCC	Met 3/23/88 Johnson Co. EOC; Not met Pope Co. EOC Def. 87-1 Met 6/11/87 Pope Co. EOC Met 3/23/88 Logan Co. EOC Met 4/2/86 Yell County