Federal Emergency Management Agency

Washington, D.C. 20472

JAN 12 1990

Mr. Frank J. Congel
Director
Division of Radiation Protection
and Emergency Preparedness
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Congel:

Enclosed is a copy of the exercise report of the July 25-26, 1989, exercise of offsite radiological emergency preparedness plans site-specific to the Comanche Peak Steam Electric Station. This was a full-participation qualifying exercise which included reentry, recovery and relocation as well as Ingestion Exposure Pathway activities. Participants included the State of Texas, Somervell and Hood Counties, and the Cities of Stephenville and Cleburne. To meet the current criteria for a full-participation qualifying exercise, 35 of the 36 exercise objectives were demonstrated at this exercise. The one exception was the unannounced and off-hours operations objective which will be demonstrated at an exercise or drill to be scheduled at a later date. This exercise report was prepared by the Region VI office staff of the Federal Emergency Management Agency (FEMA).

There was one deficiency identified in the exercise resulting from the inability of the State Contamination Control Field Teams, operating at the exercise traffic/access control points, to reliably communicate with any other exercise activity location. Neither the primary system (cellular telephones) nor the backup system (hand-held radio units) provided an appropriate communications capability. Following installation of a new, higher antenna and acquisition of more powerful field radio units, a remedial drill was conducted on September 6, 1989. The remedial drill demonstrated that this problem has been resolved and that a reliable communications capability now exists.

In addition, several areas requiring corrective action and areas recommended for improvement were identified in the exercise. A schedule of correction for the areas requiring corrective action is included in the report.

Based on the results of the exercise, the remedial drill, and offsite plan reviews, offsite radiological emergency plans and preparedness are adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public living in the vicinity of the Comanche Peak Steam Electric Station, and the 44 CFR 350 approval granted by FEMA on July 15, 1985, remains in effect.

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If you should have any questions, please contact Craig S. Wingo, Chief, Technological Hazards Division, at 646-3026.

Sincerely,

Dennis H. Kwiatkowski
Assistant Associate Director
Office of Natural and Technological
Hazards

Enclosure

FINAL

RADIOLOGICAL EMERGENCY PREPAREDNESS EXERCISE REPORT

Nuclear Power Plant: Comanche Peak Steam Electric Station
Operator: TU Electric

Location of Plant: State of Texas
Somervell County
Glen Rose, Texas

Date of Report: December 15, 1989

Date of Exercise: July 25-26, 1989

Date of Remedial Drill: September 6, 1989

Participants: State of Texas
Somervell County
Hood County
City of Stephenville
City of Cleburne
Hood General Hospital, Granbury
Walls Regional Hospital, Cleburne
Harris Hospital, Stephenville

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VI
Federal Regional Center
800 North Loop 288
Denton, Texas 76201

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ABBREVIATIONS/ACRONYMS

ACP	-	Access Control Point
ANL	-	Argonne National Laboratory
ARC	-	American Red Cross
ARCA	-	Areas Requiring Corrective Action
ARFI	-	Areas Recommended for Improvement
BRC	-	Texas Bureau of Radiation Control
CFO	-	Chief of Field Operations
CPM	-	Counts Per Minute
CPSES	-	Comanche Peak Steam Electric Station
DEM	-	Division of Emergency Management
DHHS	-	Department of Health and Human Services
DOE	-	Department of Energy
DOH	-	Department of Health
DOT	-	Department of Transportation
DPS	-	Texas Department of Public Safety
DRD	-	Direct Reading Dosimeter
EBS	-	Emergency Broadcast System
EC	-	Emergency Coordinator
ECL	-	Emergency Classification Level
EEM	-	Exercise Evaluation Methodology
EMS	-	Emergency Medical Service
EOC	-	Emergency Operations Center
EOF	-	Emergency Operating Facility
EPA	-	Environmental Protection Agency
EPZ	-	Emergency Planning Zone
ER	-	Emergency Room
ERF	-	Emergency Response Facility
EW	-	Emergency Worker
FAA	-	Federal Aviation Administration
FDA	-	Food and Drug Administration
FEMA	-	Federal Emergency Management Agency
ICU	-	Intensive Care Unit
INEL	-	Idaho National Engineering Laboratory
JIC	-	Joint Information Center
KI	-	Potassium Iodide
LCO	-	Limiting Condition for Operation
LOCA	-	Loss-of-Coolant Accident
M/D	-	Monitoring/Decontamination
mR/h	-	Milliroentgens per hour
NRC	-	Nuclear Regulatory Commission
OSC	-	On-Scene Commander
PAG	-	Protective Action Guide
PAR	-	Protective Action Recommendation
PAS	-	Protective Action Section
PIO	-	Public Information Officer
R/C	-	Reception/Care
RAC	-	Regional Assistance Committee
RADEF	-	Radiological Defense
RCS	-	Reactor Coolant System
REA	-	Radiological Emergency Area
REP	-	Radiological Emergency Preparedness
RLO	-	Regional Liaison Officer

RM - Radiological Monitor
RO - Radiological Officer
RP - Radiation Protection
SOP - Standard Operating Procedure
TCP - Traffic Control Point
TDH - Texas Department of Health
TLD - Thermoluminescent Dosimeter
TSC - Technical Support Center
TU - TU Electric
USDA - United States Department of Agriculture

INTRODUCTION AND AUTHORITY

On December 7, 1979, the President directed the Federal Emergency Management Agency (FEMA) to assume the 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 Interior (DOI)
  - U.S. Food and Drug Administration (FDA)

1. EXERCISE BACKGROUND

The July 25-26, 1989 full-participation, qualifying, Radiological Emergency Preparedness (REP) exercise at the Comanche Peak Steam Electric Station (CPSES) was the third REP exercise at this facility. Previous exercises were evaluated in 1983 and 1984. Due to extensive on-site construction delays, FEMA agreed to put the 1985 44 CFR 350 approval on hold and exempt this facility from off-site exercising requirements until such time as the utility advised that they were within 2 years of full power (above 5%) operation. To meet the current criteria for a full-participation, qualifying exercise, 35 of FEMA's 36 exercise objectives, described in Guidance Memorandum EX-3, were required to be demonstrated at this exercise. The single exception was objective 36, Unannounced and Off-hours Operations, which will be demonstrated at a drill to be scheduled at a later time. The 1989 exercise was, effectively, divided into three phases: a Plume Exposure Pathway exercise on day one; a Reentry/Recovery/Relocation tabletop exercise immediately following the plume exercise; and an Ingestion Pathway exercise on day 2. Phase 2 and 3 activities were continuations of the Phase 1 play, using the data developed during the previous phases as a base for exercise activity.

On July 27, 1989, following the exercise, three meetings were held in the vicinity of the nuclear facility -- a morning meeting of the 34-member FEMA evaluation team to develop a preliminary exercise evaluation; an early afternoon meeting with Federal, State, local and utility participants to present the preliminary findings; and an advertised, evening, Public Critique of the exercise, in the Glen Rose Citizens Center, to provide preliminary information about the exercise to the public and the news media.

Section 2 of this report provides narratives, detailing the observed exercise activities, at each participating location, together with any Deficiencies, Areas Requiring Corrective Action (ARCAs) or Areas Recommended for Improvement (ARFIs) resulting from the exercise observations. A Deficiency, a serious problem that could result in a threat to public health or safety, would result in a negative finding for that portion of the exercise.

There was one Deficiency identified during this exercise. The State and the utility jointly, agreed to initiate corrective action on the problem creating the Deficiency, and a Remedial Drill redemonstrating those exercise objectives was scheduled within the 120-day time requirement.

A Remedial Drill, to demonstrate the corrections accomplished in the area of the exercise Deficiency, and the Area Requiring Corrective Action for Objective Number 4, Communications, was held on September 6, 1989. This Remedial Drill, evaluated by FEMA Region VI personnel, fully demonstrated the State's capabilities to reliably and continuously communicate with their Contamination Control Teams and their Field Monitoring Teams throughout the 10-mile EPZ around CPSES.

Section 3 of this report provides, in tabular form, a summary of the Deficiency and Areas Requiring Corrective Action identified in the 1989 exercise. This summary provides space for State and local jurisdiction response to the identified issues, and a schedule for corrective actions.

The findings presented in this report have been reviewed and concurred in by the Regional Assistance Committee Chairman of FEMA Region VI. FEMA suggests that State and local jurisdictions initiate remedial action on each of the issues identified in this report, and that the State submit a schedule for addressing these issues. The Regional Director of FEMA Region VI is responsible for certifying, to the FEMA Associate Director of State and Local Programs and Support, Washington, D.C., that any Deficiencies and Areas Requiring Corrective Action have been corrected and that such corrections have been incorporated into State and local plans, if appropriate.

The following provides a brief overview of the exercise performances of the State of Texas and participating local governments. More detailed discussions of performance by individual participants are included, under the appropriate exercise activity location, in Section 2 of this report.

1.1 EXERCISE SUMMARY

State of Texas Operations:

The State fully participated in this exercise at five fixed and 11 field locations. State personnel from the Division of Emergency Management (DEM), Department of Public Safety (DPS), Department of Health, Bureau of Radiation Control (BRC) operated from the State Emergency Operations Center, the Disaster District EOC, the BRC Staging Area, the Comanche Peak Emergency Operations Facility (EOF), and the News Center to carry out exercise activities. An exercise Deficiency was identified when the State Contamination Control Field Teams, operating at the exercise Traffic/Access Control Points, were unable to reliably communicate, using either their primary or backup systems, with any other exercise activity location. Thus, exercise objective #4 was not met by these field teams. Additionally, an overall Area Requiring Corrective Action (ARCA) was identified when the State Field Monitoring Teams were at times unable to continuously communicate with the Field Monitoring Team Leader at the EOF.

A Remedial Drill, involving the Field Monitoring Teams, the Contamination Control Teams and the Field Monitoring Team Leader at the EOF, was held on September 6, 1989. This Remedial Drill, evaluated by FEMA Region VI staff, demonstrated that new equipment acquired and installed subsequent to the July 26, 1989 exercise has resolved the communications problems reflected in the Deficiency and the communications ARCA. Therefore, following the Remedial Drill, FEMA exercise objective #4 has now been met.

All other FEMA exercise objectives, assigned to the State, were met during the July 25-26, 1989 exercise.

Local Government Operations:

Two Texas counties, Hood and Somervell, are included in the 10-mile radius Plume Exposure Pathway Emergency Planning Zone (EPZ) for the CPSES. Two additional counties, Johnson and Erath, containing the cities of Cleburne and Stephenville, are included in the response plans to provide support to the EPZ counties. All local jurisdictions involved in emergency response at Comanche

Peak fully participated in the 1989 exercise. Local elected officials, emergency staff and volunteer personnel performed the emergency duties required by their plans and the exercise scenario. All scheduled FEMA exercise objectives were met by the appropriate local jurisdiction participants.

1.2 FEDERAL EVALUATORS

Thirty-four Federal Evaluators were assigned to the exercise activity locations listed below:

Evaluator	Agency	Evaluation Location(s)
Gary Jones	FEMA	Overall Coordination RAC Chairman
Carl McCoy	FEMA	State EOC, Austin
Travis Ratcliff	FEMA	State EOC, Austin
Don Fingleton	FEMA	Disaster District EOC, Waco
Charles Hackney	NRC	BRC Operations at CPSES EOF and Ingestion Pathway Exercise
Henry May	EPA	BRC Operations at CPSES EOF and Ingestion Pathway Exercise
Bob Conley	USDA	BRC Operations at CPSES EOF, Recovery/Reentry/Relocation Tabletop and Ingestion Pathway Exercise
Ernest Boaze	FEMA	BRC Staging Area (Granbury)
Brad Salmonson	INEL	BRC Field Monitoring Team and Sample Collection Team #2
Harry Harrison	FEMA	BRC Field Monitoring Team and Sample Collection Team #1
Marty Simonin	ANL	BRC Field Monitoring Team and Sample Collection Team #3
Lee Peyton	FEMA	BRC Field Monitoring Team #4
Frank Wilson	ANL	BRC Mobile Laboratory (Granbury)
Dana Cessna	FEMA	News Center and Ingestion Pathway Exercise
Roy Smith	FEMA	News Center

Evaluator	Agency	Evaluation Location(s)
Al Lookabaugh	ANL	Somervell County EOC and Recovery/Reentry/Relocation Tabletop
Mark Madore	ANL	Somervell County EOC
Hal Weller	DOT	Traffic/Access Control Point #1
Bill Knoerzer	ANL	Traffic/Access Control Point #2
Jim Cox	DOT	Somervell County School Evacuation Demonstration & Stephenville Reception/Care Center
Bill Gasper	ANL	Hood County EOC and Recovery/Reentry/Relocation Tabletop
Nancy Culp	FEMA	Hood County EOC
Jacques Mitrani	ANL	Hood County EOC
Gene Nunn	FEMA	Hood County School Evacuation Demonstration and Cleburne Reception/Care Center
Leon Zellner	FDA	Cleburne Reception/Care Cent.
Don Newsom	ANL	Cleburne Reception/Care Center
Dan Santini	ANL	Stephenville Reception/Care Center
Bob Neisius	ANL	Stephenville Reception/Care Center
Richard Converse	ANL	Hood General Hospital
Wiletta Malone	FEMA	Hood General Hospital
Tom Carroll	ANL	Squaw Creek Park Evacuation, Walls Regional Hospital and Glen Rose VFD Ambulance
Julie Muzzarelli	ANL	Squaw Creek Park Evacuation, Walls Regional Hospital and Glen Rose VFD Ambulance
Phil Edgington	HHS	Harris Hospital and Stephenville FD Ambulance
Carl Hunckler	ANL	Harris Hospital and Stephenville FD Ambulance

1.3 EXERCISE OBJECTIVES

1.3.1 State and Local Exercise Objectives and Explanatory Notes

OBJECTIVE NUMBER AND TEXT	JURISDICTIONAL RESPONSIBILITY State	Local	LOCATION (See Note A)
1. Demonstrate the ability to monitor, understand and use emergency classification levels (ECLs) through the appropriate implementation of emergency functions and activities corresponding to ECLs as required by the scenario. The four ECLs are: Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.	X	X	1,2,3,4,9
2. Demonstrate the ability to fully alert, mobilize and activate personnel for both facility and field based emergency functions. (See Note B)	X	X	ALL
3. Demonstrate the ability to direct, coordinate and control emergency activities.	X	X	1,2,3,4,9
4. Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.	X	X	ALL
5. Demonstrate the adequacy of facilities, equipment, displays and other materials to support emergency operations.	X	X	1,2,3,4,9,15
6. Demonstrate the ability to continuously monitor and control emergency worker exposure.	X	X	1,2,5,6,7,8,9, 10,11,12,13,14, 15,16
7. Demonstrate the appropriate equipment and procedures for determining field radiation measurement. (See Note C)	X		7

OBJECTIVE NUMBER AND TEXT	JURISDICTIONAL RESPONSIBILITY State	Local	LOCATION (See Note A)
8. Demonstrate the appropriate equipment and procedures for the measurement of airborne radioiodine concentrations as low as 10 E-7 microcuries per cc in the presence of noble gases.	X		7,16
9. Demonstrate the ability to obtain samples of particulate activity in the airborne plume and promptly perform laboratory analysis.	X		7,16
10. Demonstrate the ability, within the plume exposure pathway to project dosage to the public via plume exposure, based on plant and field data.	X		9
11. Demonstrate the ability to make appropriate protective action decisions, based on projected or actual dosage, EPA PAG, availability of adequate shelter, evacuation time estimates and other relevant factors.	X	X	1,2,9
12. Demonstrate the ability to initially alert the public within the 10-mile EPZ and begin dissemination of an instructional message within 15 minutes of a decision by appropriate state and/or local official(s). (See Note D)		X	1,2
13. Demonstrate the ability to coordinate the formulation and dissemination of accurate information and instructions to the public in a timely fashion after the initial alert and notification has occurred. (See Note E)	X	X	1,2,9,15
14. Demonstrate the ability to brief the media in an accurate, coordinated and timely manner.	X	X	1,2,3,4,15

OBJECTIVE NUMBER AND TEXT	JURISDICTIONAL RESPONSIBILITY State	Local	LOCATION (See Note A)
15. Demonstrate the ability to establish and operate rumor control in a coordinated and timely fashion. (See Note U)	X	X	1,2,3,4,15
16. Demonstrate the ability to make the decision to recommend the use of KI to emergency workers and institutionalized persons based on predetermined criteria, as well as to distribute and administer it once the decision is made, if necessitated by radioiodine releases.	X	X	1.2,7,9
17. Demonstrate the ability to make the decision, if the state plan so specifies, to recommend the use of KI for general public, based on predetermined criteria, as well as to distribute and administer it once the decision is made, if necessitated by radioiodine releases.	This objective will not be demonstrated as it conflicts with State policy.		
18. Demonstrate the ability and resources necessary to implement appropriate protective actions for the impacted permanent and transient plume EPZ population (including transit-dependent persons, special needs populations, handicapped persons and institutionalized persons). (See Note F)		X	1,2
19. Demonstrate the ability and resources necessary to implement appropriate protective actions for school children within the plume EPZ. (See Note G)		X	1,2
20. Demonstrate the organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas. (See Note H)	X	X	1,2,7

OBJECTIVE NUMBER AND TEXT	JURISDICTIONAL RESPONSIBILITY State	Local	LOCATION (See Note A)
21. Demonstrate the adequacy of procedures, facilities, equipment and personnel for the registration, radiological monitoring and decontamination of evacuees. (See Note I)	X	X	5,6
22. Demonstrate the adequacy of facilities, equipment and personnel for congregate care of evacuees. (See Note J)	X	X	5,6
23. Demonstrate the adequacy of vehicles, equipment, procedures and personnel for transporting contaminated, injured or exposed individuals. (See Note K)		X	12,13,14
24. Demonstrate the adequacy of medical facilities, equipment, procedures and personnel for handling contaminated, injured or exposed individuals.		X	5,6
25. Demonstrate the adequacy of facilities, equipment, supplies, procedures and personnel for decontamination of emergency workers, equipment and vehicles and for waste disposal. (See Note L)	X	X	5,6
26. Demonstrate the ability to identify the need for and call upon federal and other outside support agencies' assistance.	X	X	1,2,3,4
27. Demonstrate the appropriate use of equipment and procedures for collection and transport of samples of vegetation, food crops, milk, meat, poultry, water and animal feeds (indigenous to the area and stored). (See Note M)	X	X	7

OBJECTIVE NUMBER AND TEXT	JURISDICTIONAL RESPONSIBILITY State	Local	LOCATION (See Note A)
28. Demonstrate the appropriate lab operations and procedures for measuring and analyzing samples of vegetation, food crops, milk, meat, poultry, water and animal feeds (indigenous to the area and stored). (See Note N)	X		16
29. Demonstrate the ability to project dosage to the public for ingestion pathway exposure and determine appropriate protective measures bases on field data, EPA PAG and other relevant factors.	X		9
30. Demonstrate the ability to implement both preventative and emergency protective actions for ingestion pathway hazards. (See Note O)	X		3,9
31. Demonstrate the ability to estimate total population exposures. (See Note P)	X		9
32. Demonstrate the ability to determine appropriate measures for controlled reentry and recovery based on estimated total population exposure, available EPA PAG and other relevant factors. (See Note Q)	X		9
33. Demonstrate the ability to implement appropriate measures for controlled reentry and recovery. (See Note R)		X	1,2,3,4,9
34. Demonstrate the ability to maintain staffing on a continuous 24-hour basis by an actual shift change. (See Note S)	X	X	1,2,3,4,5,6, 7,9,15,16

OBJECTIVE NUMBER AND TEXT	JURISDICTIONAL RESPONSIBILITY State	Local	LOCATION (See Note A)
35. Demonstrate the ability to coordinate the evacuation of on-site personnel. (See Note T)		X	1,2

NOTES:

A. The locations where various exercise objectives are to be demonstrated are indicated by numerical codes as follow:

CODE	TEAM ELEMENT OR FACILITY NAME	LOCATION
1.	Somervell County EOC	Glen Rose
2.	Hood County EOC	Granbury
3.	Texas State EOC	Austin
4.	Disaster District EOC	Waco
5.	Relocation/Care Center	Stephenville
6.	Relocation/Care Center	Cleburne
7.	State Field Teams	10-Mile EPZ (also Hood County Courthouse Annex)
8.	Walls Regional Hospital	Cleburne
9.	BRC O/S	CPSES EOF
10.	Harris Hospital	Stephenville
11.	Hood General Hospital	Granbury
12.	Glen Rose VFD EMS Ambulance	Glen Rose
13.	Stephenville FD EMS Ambulance	Stephenville
14.	Hood General Hosp. EMS Ambulance	Granbury
15.	News Center	CPSES Visitor's Center
16.	Texas BRC Mobile Lab	Granbury
	ALSO: BRC Staging Area	Granbury

B. Mobilization and activation of personnel will be performed in accordance with approved plans and procedures with the exception of state personnel. Due to scenario time constraints, these personnel will be prepositioned in the local area (Glen Rose or Granbury).

C. Two teams will play per shift. One member of each State Field Monitoring Team on the second shift will demonstrate dressing in protective clothing, however this clothing will not be worn in the field. Note: Respirators will not be required.

D. All preparations of the Alert and Notification system will be demonstrated except for the actual sounding of the sirens. Delivery of EBS messages to the EBS station will be simulated by placing a phone call, as described by applicable plans and procedure, to the EBS station. The EBS station will receive the message, log it, process the message and simulate broadcast of the message. Sometime on day one, the station will transmit the EBS network test message.

E. Delivery of follow-up messages to the EBS station will be simulated.

F. During the exercise, any Special Facilities within affected areas will be contacted (either actual contact for participating facilities or control cell contact for others) for information relating to transportation needs. If contact is not made, default values will be used. Simulated calls will be placed to individuals listed in the special assistance file as required by the scenario. For affected areas, the EOC will identify resources needed, place simulated phone calls to obtain them locally and request assistance, if needed. Any EOC without an affected area will demonstrate this objective by describing the process and providing a list of resources, phone numbers, etc. As required by scenario, the following resources will be dispatched (as a maximum): Five buses, two vans and one ambulance (may be simulated). They will drive to the appropriate locations, pause (to simulate loading time) and proceed to the appropriate locations. For those vehicles arriving at the reception centers, drivers will simulate evacuees and be processed accordingly.

G. Since schools will not be in session, school activities will be simulated according to a mini-scenario, distinct from the main scenario. All three school districts will be contacted, and district administrators will be prepared to describe the school evacuation process, including determining the availability of buses and drivers. Two districts will play further, at one pre-designated school in each district. Because the closed schools will not be air-conditioned, the school administrator and one teacher for each school will be prepositioned at district administrative offices until informed by controller message to proceed to the school. They will simulate school evacuation by providing information about evacuation procedures and by instructing two simulators (simulating students) to evacuate. One school bus will be dispatched to each school, will board the simulated students, and will proceed to the relocation center.

H. Each county EOC will demonstrate that it can determine the necessary number and location of Access Control Points (ACPs) and Traffic Control Points (TCPs) and, how it will man these points and actually set them up in the field. Assistance from other sources will be simulated except for pre-designated State players and equipment. ACPs and TCPs will be set up at the side of the road; normal traffic flow will not be impeded. Due to the need to minimize time away from normal duty stations, only two ACPs and one TCP will be actually established. Any other ACPs or TCPs required by the scenario will be simulated.

I. At least eight individuals and one simulated contaminated person and vehicle will be processed at each center. Decontamination will be simulated. The school relocation portion of the Stephenville Relocation/Care Center Plan will not be activated as school is not in session.

J. To minimize disruption of private organizations that normally provide congregate care, they will be contacted on the day of the exercise, but need not participate.

K. Three ambulances will be used to actually transport simulated contaminated injury victims.

L. Decontamination of emergency workers will include monitoring and display of supplies, equipment and showers. Decontamination of equipment and vehicles (after appropriate demonstrations of monitoring) will be demonstrated by describing the decontamination techniques which would be used.

M. Three field teams will demonstrate the collection and transport of samples. Samples will include soil, standing water, vegetation (two types including grass) and milk but will exclude poultry, meat and stored animal feed. All samples will be delivered to the State Mobile Lab. Radiological controls will be limited to gloves and shoe covers; any other may be simulated. Radio contact is not required. Only the State of Texas will demonstrate the ingestion portion. Local entities are not required to participate. No shift change will be required. This will be performed on the 2nd day of the exercise.

N. All lab procedures will be demonstrated on at least one of each type of the actual samples delivered to the lab except for the actual counting of the samples.

O. Discussions between the BRC O/S CPSES EOF and the State Council members will simulate implementation of protective actions. EBS messages will be generated and coordinated, but will not be transmitted to the radio station. Press releases will be generated and coordinated. The News Center will not be activated on the 2nd day of the exercise. Federal agency participation will be assumed not to have arrived.

P. By agreement with FEMA Region VI, players will demonstrate this objective following the Plume Pathway exercise on day one. Individuals who would make the calculations to satisfy this objective will walk FEMA through the process used, indicate where the data used for calculations is obtained, and will describe the decision-making process involved in developing estimated total population exposures.

NOTE: Subsequent discussions changed this decision to reflect that a report would be prepared, by the State and the utility and submitted to FEMA, within 45 days following the exercise.

Q. This objective will be demonstrated by the formulation of action plans following the Plume Pathway exercise on day one. Controllers will provide simulated data to the participating individuals. Consideration for the relocation and/or reentry of general and/or special populations will be determined and driven by an evaluation of deposition activity in relation to applicable PAGs.

R. The ability to implement appropriate measures for controlled reentry and recovery will be demonstrated by consideration of recovery recommendations/ planning by local, state and utility representatives at the CPSES EOF and, if required, the Somervell County EOC. Players will initiate calls (as needed to implement reentry/recovery measures) to a control cell which will simulate those agencies/organizations which would provide resources and information.

S. An actual shift change will be required during the exercise on day one, for shift personnel at all locations except State EOC, Disaster District EOC Waco (this does not include DEM and BRC personnel), hospitals, ambulances and EMS support organization personnel.

T. Notification of local governments, proper use of communication channels, coordination and provision of appropriate off-site support to an on-site evacuation will be evaluated at the local EOCs. Controller messages to site personnel will specify the number of simulated evacuees and evacuated vehicles. The EOC will evaluate the impact and, if required by scenario, will simulate activities which would be required to control plant evacuation traffic.

U. Rumor control at locations 1-4 will only be exercised as it relates to the overall coordination process with the News Center. This activity will not be demonstrated as a separate or primary function since the News Center at he facility has primary responsibility for this function.

1.4 ON-SITE NARRATIVE SUMMARY

This scenario is comprised of a reactor coolant system double-ended cold leg shear Loss of Coolant Accident (LOCA), a loss of off-site power and a complete loss of Emergency Core Cooling capability. This results in the uncovering of the reactor core and subsequent fuel damage, a hydrogen burn in Containment, and an eventual radioactive release to the environment.

Initial Conditions

The exercise will begin with the establishment of initial conditions at 7:30 a.m. Unit 1 is operating at 100% power with all plant parameters normal and stable. The unit is in its first fuel cycle operating at above 90% power for the last 73 days with 291 Effective Full Power Days (EFPD) utilization of the core. The following equipment is out of service:

Centrifugal Charging Pump #1 was taken out of service 37 hours ago for maintenance to the pump seals and inspection of the pump impellers. Maintenance personnel are currently working on the pump.

Containment Spray Pump #3 was undergoing post-work testing when a phase to ground motor electrical fault occurred. Analysis indicates that the motor must be replaced. It has been out of service for 25 hours.

Containment Purge Exhaust valve 1-HV-5538 was removed from service two hours ago for inspection of its Seat. A cracked disc was discovered and must be replaced. The Spool Piece was reinstalled while the work order is being revised.

Texas Electric Service Co. removed the DeCordova 138 kV transmission line from service yesterday for repairs on the DeCordova site breaker. It is expected to be returned to service at 8:00 p.m. tonight. XST1 is receiving power via the Stephenville 138 kV transmission line.

Initiating Event

The initiating event for the scenario is an unidentified 11 gpm leak from the loop #4 cold leg. The Shift Supervisor should declare a Notification of Unusual Event based upon a Reactor Coolant System (RCS) unidentified leak rate exceeding one gallon per minute but less than 50 gallons per minute per Emergency Plan Procedure (EPP)-201.

The Notification of Unusual Event classification requires the notification of specific on-site and off-site personnel and agencies that events are in progress or have occurred which indicates a potential degradation of the level of safety of the plant. No releases of radioactive material are expected for this classification unless further degradation of safety systems occurs.

For the purposes of the exercise, the Shift Supervisor should not trip the reactor or reduce power at a rate greater than 10 MW/min.

Declaration of an Alert

At H + 00:50, the leak will increase to 75 gpm. The Emergency Coordinator should declare an Alert due to the RCS leak rate being greater than 50 gpm but less than the makeup capacity of the available centrifugal charging pumps, as discussed in EPP-201.

An Alert classification level requires the notification of specific on-site and off-site personnel and agencies that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any radioactive releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guideline (PAG) exposure levels. Upon receipt of the Alert classification, the Technical Support Center (TSC) and the Operations Support Center (OSC) should be activated and the Emergency Operations Facility (EOF) should be staffed. County and state officials should ascertain the availability of their manpower and resources to support any further response, if needed.

Loss of the Switchyard and Reactor Trip

At H + 01:15, Phase C of the Venus 345 kV transmission line falls from the west side of the tower across the West Bus, the switchyard fence, and all three phases of the Stephenville 138 kV transmission line. The resulting phase to ground and phase to phase faults isolates the Stephenville line to the 138 kV switchyard. A West Bus lockout occurs which opens West Bus breakers W3(8010) and W5 (8050), and W10 (8030). Breaker W7 (8090) from Comanche fails to open causing actuation of the generator lockout relays. This causes the main generator to trip. The reactor trips due to the turbine generator trip. There is no power to transformer XST1. Control room personnel should enter EOP-0.0, "Reactor Trip or Safety Injection." No escalation of emergency action level is required at this time.

Loss of Coolant Accident

Eventually, a double-ended guillotine shear of the #4 Cold Leg occurs. Start-up transformer XST2 shorts out during initial loading of Safety Injection (SI) equipment. Pressure rises in containment and the containment spray pumps start.

Loss of Emergency Core Cooling and Declaration of a Site Area Emergency

Five minutes following safety injection, the Train B diesel generator catches fire and trips causing a loss of all Train B emergency equipment. The fire brigade is dispatched and extinguishes the fire in ten minutes. The Train A RHR and SI pumps continue cooling the core with water from the Refueling Water Storage Tank (RWST).

At H + 02:05, Containment Spray Pump #1 trips due to a bearing failure. The lube oil reservoir has drained down after its fill pipe cracked open due to stress and corrosion. The outboard radial/thrust bearing fails as a result of the loss of lube oil.

Eventually, all water in the RWST has been used and an RWST "Lo Lo Level" Alarm is received in the Control Room. Steps should be taken to switch to cold leg recirculation via Train A RHR pump taking suction from the containment sump and providing injection directly into the loops and providing suction to the Train A SI pump.

At H + 02:35, a leak develops in the Train A RHR pump discharge piping. The leak does not significantly affect injection to the RCS, but causes the RHR pump room to fill with steam. Radioactive steam is carried via safeguards ventilation to the primary plant ventilation systems and out the plant vent stacks. No significant off-site doses are expected. At H + 02:45, the RHR pump motor shorts out due to the steam environment and cannot be restarted. Containment pressure begins to rise as the water covering the core begins to boil away.

The Emergency Coordinator should declare a Site Area Emergency based on a reactor coolant system leak greater than the makeup capacity of the available centrifugal charging pumps concurrent with the failure of high and low pressure safety injection.

The Site Area Emergency classification requires the notification of specific on-site and off-site personnel and agencies that events are in progress or have occurred which involve an actual or likely major failure of plant functions needed for the protection of the public. Some significant releases of radioactivity are likely or occurring. However, core degradation is not expected. Any releases are not expected to exceed EPA PAG exposure levels except near the site boundary. Upon receipt of the Site Area Emergency notification, the Emergency Operations Facility (EOF), the Logistical Support Center (LSC), and the Corporate Operations Support Center (COSC) in Dallas should be activated.

County officials should activate the two county Emergency Operations Centers (EOCs) in Granbury and Glen Rose, and the State should activate the

District EOC in Waco and the State EOC in Austin. Based upon the protective action recommendations provided by TU Electric, each county judge may elect to implement a protective response within his jurisdiction.

Loss of Containment Integrity and Declaration of a General Emergency

As fuel damage increases, hydrogen gas is produced from a reaction between the water coolant and the zircaloy fuel cladding. Due to an unknown malfunction, the electric hydrogen recombiners are unable to remove the hydrogen. A hydrogen burn occurs resulting in a containment pressure spike which forces open containment purge exhaust valve 1-HV-5539. Radioactive steam is released through this line to the primary plant Heating, Ventilation, Air Conditioning (HVAC) system and out the plant vent stacks.

Plant conditions warrant the declaration of a General Emergency. Per EPP-201, a General Emergency is required when a reactor coolant system leak exceeds the makeup capacity of the available centrifugal charging pumps concurrent with the loss of high and low pressure safety injection and a loss of containment integrity occurs.

A General Emergency classification level requires the notification of specific on-site and off-site personnel and agencies that events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can reasonably be expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area. County officials should consider protective actions for the city of Glen Rose and surrounding zones.

Contaminated/Injured Person Event

At H + 04:05, a radiation protection (RP) technician is injured and contaminated when he/she is dispatched to investigate an area radiation monitor alarm in the Hot Shop. When the technician arrives at the Hot Shop, the first aid controller will intercept him/her and inform him/her that he/she has been injured due to a fall while performing a survey, hitting his/her head and gashing his/her arm in the process. First Aid teams should be dispatched. A radiological survey will show the RP technician is contaminated. Hood General Hospital is contacted and the victim removed from the site.

Restoration of Emergency Core Cooling and Containment Spray

It is postulated that the emergency organization will prioritize the restoration of power to the operable, but deenergized, Train B Emergency Core Cooling and Containment Spray pumps and components. This will be performed by jumpering power from Train A safeguards buses to Train B loads. If an adequate effort to perform this task has been made by H + 05:15, then the jumpering will be complete at that time.

If the emergency organization has not adequately demonstrated restoration of power to the Train B equipment by H + 05:30, then the TESCO dispatcher roleplayer will call the control room to inform the shift supervisor that power

has been restored to the DeCordova 138 kV transmission line and is ready to supply XST1.

With the restoration of power, Train B Emergency Core Cooling pumps and Containment Spray pumps may be loaded onto the bus to begin recovery. As containment pressure drops below 5 psig, containment purge valve 1-HV-5539 reseats, thus terminating the release.

At H + 06:00, the emergency organization will be instructed to demonstrate shift change. The relief shift should come in and be briefed. Immediately following turn over, all facility managers and supervisors on the offgoing shift will meet in the NOSF to hold a Recovery/Reentry/Relocation meeting.

Eventually, the plume disperses in Somervell County. Players should now discuss long-term recovery actions and critique their performance. The exercise is terminated at the direction of the Exercise Lead Controller.

1.5 OFFSITE NARRATIVE SUMMARY

The Texas Department of Health, Bureau of Radiation Control (BRC), the Texas Department of Public Safety, as well as Hood and Somervell Counties will be participating in this full-scale graded exercise. The Federal Emergency Management Agency (FEMA) and the U.S. Nuclear Regulatory Commission (NRC) will be evaluating the response of the participating organizations. The events occurring offsite of Comanche Peak Steam Electric Station (CPSES) will be, for the most part, a result of the postulated release of radioactive effluents from a major accident occurring at CPSES.

By approximately 7:45 a.m. (H + 00:15), the shift operations personnel at Comanche Peak will notify the State and local governments, and the NRC, that a Notification of Unusual Event (NOUE) has been declared. Upon receipt and verification of this notification, each dispatcher (Hood and Somervell Counties, and Waco) should initiate the appropriate notifications to key officials and/or agencies.

By approximately 8:35 a.m. (H + 01:05), the shift supervisor should make the appropriate notifications that he has declared an Alert, and has turned over the responsibilities of the Emergency Coordinator to the Technical Support Center (TSC) manager. Key county and State personnel should at this time ascertain the availability of their manpower and resources to support any further response, if needed.

At 10:05 a.m., (H + 02:35) a leak in the discharge piping results in a minor puff release. This release lasts for ten minutes. It is anticipated that once this puff occurs, a protective action recommendation (PAR) for evacuating Emergency Zone 4C will be implemented. If the Hood County Judge does not elect to evacuate 4C, a contingency message will be passed to insure that this action is taken. This is necessary to accommodate Recovery/Reentry/Relocation decision making during the course of the exercise.

At approximately 10:30 a.m. (H + 03:00), the Comanche Peak Emergency Coordinator should make the appropriate notifications that he has declared a Site Area Emergency. Each county judge (Hood and Somervell) should initiate a

limited activation of their Emergency Operations Centers (EOCs), direct the County Public Information Officer to initiate news media contacts, and advise the Disaster District 6A EOC (in Waco) of any possible support needed. It is anticipated that once a Site Area Emergency is declared, a protective action recommendation for sheltering emergency zone 2A will be released. Based upon the protective action recommendations provided by TU Electric at this point in the scenario, the Somervell County Judge may elect to implement a protective action response within the affected zones. State officials should initiate activation of the District EOC and the State EOC. State emergency response personnel should prepare to respond to any requests for support from the counties. The Texas Department of Health, Bureau of Radiation Control should begin deployment of personnel and equipment from the Austin area to the Comanche Peak area. The Bureau of Radiation Control (BRC) will be prestaged in Granbury.

At approximately 11:00 a.m. (H + 03:30), a radioactive plume is released. The CPSES Emergency Coordinator should declare a General Emergency due to a Loss of Coolant Accident, a complete loss of emergency core cooling systems, and a loss of containment integrity. An immediate PAR to evacuate zone 2A and shelter zones 3A, 3B, and 2C out to five miles is anticipated once a General Emergency is declared. If not already done, each county judge should consider activation of the Alert & Notification (A&N) System sirens and informing the Emergency Broadcast System (EBS). Any public warning messages or protective responses implemented for the affected zones should be based upon the protective action recommendations provided by CPSES and the State emergency response personnel stationed at the Emergency Operations Facility (EOF).

Once a protective action recommendation for evacuation or sheltering has been developed, Bureau of Radiation Control (BRC) personnel in the CPSES EOF should consult with Somervell County officials concerning locations at which access control points should be established. For the exercise, the access control points will be located at: (1) intersection of US-67 and SH-144, and (2) intersection of US-67 and FM-51. Off-site protective responses should include evacuation of the affected zones and activation of the relocation centers in Cleburne and Stephenville.

The plume blows due south toward Glen Rose, and will continue until 1:30 p.m. The BRC should deploy radiological monitoring and contamination control teams at this time. A number of messages are included in the scenario to test the response, communications, and decision-making process of the off-site agencies. These include requests for assistance from the State EOC, questions and concerns from members of the public, simulated accidents, etc. These events require that communications and actions be completed; however, no equipment or personnel will be deployed. Simulators and controllers will be involved in testing the responses of Stephenville and Cleburne Relocation Centers, and Hood, Stephenville, and Cleburne Hospitals. The postulated events will involve evacuees, concerned citizens, injured persons, etc.

A number of events will test the personnel manning the access control points. These include persons trying to enter the contaminated areas, persons leaving the areas who are contaminated, etc. Simulators will role-play these persons in order to test the response of the access control personnel. At 12:25 p.m., two persons are involved in a car wreck as they are leaving the access control point east of Glen Rose. They are contaminated and one of them is seriously hurt and needs an ambulance. Access control personnel will hear the

car wreck and should investigate the accident. This event will progressively involve players at the access control point east of Glen Rose, Somervell County EMS, and Walls Hospital, Cleburne. This event will be role-played by two simulators, with additional data and details provided by the controllers at the various locations. All communications should be completed and the injured man transported to Walls Hospital.

At 12:45 p.m., another car accident happens near the access control point west of Glen Rose. The accident will be similar to the above described accident, with two persons exiting the contaminated area and one of them being seriously injured. This event will progressively involve players at the access control point west of Glen Rose, Stephenville EMS, and Harris Hospital, Stephenville. This contaminated/injury event will be role-played by two simulators, with additional data and details to be provided by controllers.

The radioactive plume will be completely dispersed by 3:30 p.m. (H + 08:00). Off-site recovery/reentry/relocation operations should be discussed at this time. De-escalation of emergency response activities by the State and counties should be coordinated with the appropriate CPSES personnel stationed at the EOF.

1.5.1 Off-Site Scenario Sequence of Events

TIME	INITIATING MESSAGE NUMBER	PLANT EVENT SUMMARY
08:30 am (H+01:00)	1	An evacuation of Somervell County school children will be demonstrated as a mini-scenario unrelated to the main timeline.
10:30 am (H+03:00+)	5	A branching message is passed instructing the Hood County Judge to evacuate Emergency Response Zone 4C.
10:30 am (H+03:00)	5.1	An evacuation of Hood County school children will be demonstrated as a mini-scenario unrelated to the main timeline.
11:15 am (H+03:45)	6	A motorist reports that a tractor-trailer rig has jackknifed and overturned on the Brazos River bridge on Highway 67 east of Glen Rose. The overturned vehicle is blocking all lanes of the highway. The driver, who was thrown free of the cab, appears to have sustained only cuts and bruises. The motorist reports that he had to turn back since no vehicles can pass the accident.
11:15 am (H+03:45+)	7	This Contingency Message recommends evacuation of Emergency Zones 2A, 2C, 3B, and Glen Rose, and shelter Zones 3C, 3D, and 3F.

TIME	INITIATING MESSAGE NUMBER	PLANT EVENT SUMMARY
11:30 am (H+04:00+)	12	State Air Control Board is requested by the State EOC to establish monitoring equipment west of Waco. This is to provide a safety check of any air pollutant problems and to provide information for populated areas around Waco.
11:50 am (H+04:20+)	25	The Hood County dispatcher receives a call from the manager of the Leonard Boy Scout Encampment. He is in Fort Worth at the present time and needs to find someone to go to the camp and ensure the occupants take actions required in response to the emergency situation.
12:00 pm (H+04:30)	34	An officer reports to the Somervell dispatcher that he encountered a family of five at a house near the Dinosaur Valley State Park. Despite the officer's advice, the man refuses to leave his home and farm animals unattended. The officer also indicates that the man's wife is pregnant. He requests guidance on what to do.
12:00 pm (H+04:30+)	36	Four CPSES employees arrive at the Stephenville Relocation Center as part of the site evacuation of nonessential workers. They are not contaminated, nor are their vehicles.
12:00 pm (H+04:30+)	37	Four CPSES employees arrive at the Cleburne Relocation Center as part of the site evacuation of nonessential workers. They are not contaminated, nor are their vehicles.
12:05 pm (H+04:40)	39	T. J. Hobbs is a freelance writer and is passing through the area. He wants to get into the evacuated area through the access control point west of Glen Rose so he can do a firsthand story on the effects of radiation on the environment.
12:10 pm (H+04:40)	40	Two contaminated evacuees arrive at the access control point from inside the affected area. (Driver is Manny Bosworth. The passenger is Burt Davis.) They were drilling a well about two miles south of CPSES, and could not hear the

TIME	INITIATING MESSAGE NUMBER	PLANT EVENT SUMMARY
		sirens due to the noise produced by the drilling operation.
12:25 pm (H+04:55)	44	As Manny Bosworth and Burt Davis leave the access control point east of Glen Rose, they are involved in a car wreck. The controller at the access control point will indicate to the personnel that right after Bosworth and Davis drive off, they hear screeching tires and a loud thump. The Glen Rose ambulance is to actually be dispatched to the accident scene, and the injured party is actually to be transported to the hospital in Cleburne.
12:25 pm (H+04:55+)	45	Two evacuees (Greg and Lois Jones) arrive at the Cleburne Relocation Center. They were brought there by a DPS officer. They are not contaminated. They indicate to the Relocation Center staff that Greg's brother (Arlo Jones) went to town earlier today for an exhaust manifold for Greg's truck. They are afraid that he will try and go back to their house, and they are wondering if there is any means to contact him.
12:27 pm (H+04:57)	46	Access control point personnel respond to the accident.
12:29 pm (H+04:59)	48	Access control point personnel check Davis' injuries.
12:29 pm (H+04:59+)	49	An off-site accident involving a contaminated, injured party has been reported to the Somervell County Sheriff's Department. Somervell Fire Department ambulance is requested.
12:30 pm (H+05:00)	50	M. A. Francis arrives at the Cleburne Relocation Center. She (or he) is not contaminated, and wants to go and stay with relatives until it is safe to return home.
12:30 pm (H+05:00)	51	S. T. Reynolds arrives at the Stephenville Relocation Center. She (or he) is not contaminated, and wants to go and

TIME	INITIATING MESSAGE NUMBER	PLANT EVENT SUMMARY
		stay with friends until it is safe to return home.
12:30 pm (H+05:00)	52	Two contaminated evacuees arrive at the access control point from inside the affected area. (Driver is Jim Jefferson. The passenger is Tom Carlow.)
12:30 pm (H+05:00+)	56	Arlo T. Jones arrives at the eastern access control point. He wants to take an exhaust manifold to his brother. Mr. Jones has just come from a junkyard in Cleburne and hasn't heard anything about an accident at CPSES. (The brother lives inside the area affected by the release, and is at home with his wife and three small children. They have no telephone, and no transportation until the exhaust manifold is put back on their pickup.)
12:33 pm (H+05:03+)	59	Deputy Steve Thompson is returning to the County EOC after checking on the status of an elderly woman. The soles of his feet will be contaminated.
12:40 pm (H+05:10+)	62	Two evacuees (Don and Pat Walker) arrive at the Stephenville Relocation Center. They were brought to the Relocation Center by a TU employee. They are not contaminated. They indicate to the Relocation Center staff that Don's uncle (Rick Morgan) went to town earlier today for a water pump to Don's car. They are afraid that he will try and go back to their home, and they are wondering if there is any way to contact him.
12:45 pm (H+05:15)	64	As Jim Jefferson and Tom Carlow leave the access control point west of Glen Rose, they are involved in a car wreck.
12:45 pm (H+05:15+)	67	Access control point personnel check Carlow's injuries. Activity for this accident will end when the access control personnel request an ambulance for Carlow. In order to not move the Stephenville ambulance an excessive distance from its normal area of operation, a second set of simulators playing Jefferson and Carlow will be

TIME	INITIATING MESSAGE NUMBER	PLANT EVENT SUMMARY
		prepositioned at the Erath Co. Electric Co-op parking lot. The ambulance will proceed to this location and respond to the "simulated" injuries.
12:45 pm (H+05:15+)	68	Rick Morgan arrives at the western access control point. He wants to take a water pump to his nephew. Mr. Morgan has just come from a junkyard in Dublin and hasn't heard anything about an accident at CPSES. (The nephew lives inside the area affected by the release, and is at home with his wife and three small children. They have no telephone, and no transportation until the water pump is put back on their car).
12:45 pm (H+05:15+)	69	Sara Balough arrives at the Relocation Center in Cleburne. She is looking for her son, who was at the Tarrant Baptist Camp southeast of Glen Rose.
12:45 pm (H+05:15+)	70	Wanda Sommers arrives at the Relocation Center in Stephenville. She is looking for her son, who works at the Southern Concepts Inc. Home in Glen Rose.
12:49 pm (H+05:19+)	71	A second off-site accident involving a contaminated, injured party has been reported to the Somervell County Sheriff's Department. Stephenville ambulance is requested.
12:50 pm (H+05:20+)	72	(This event will occur only if Mr. Jones was allowed into the exclusion area earlier.) Having earlier been allowed to enter the exclusion area to pick up some relatives, Arlo T. Jones is now coming back out. Both he and his vehicle are contaminated.
12:55 pm (H+05:25+)	74	C. D. Turner tries to gain entry to the evacuated area. He was camping in Dinosaur Valley State Park and had gone to Cleburne to do some shopping.
1:10 pm (H+05:40+)	76	(This event will occur only if Mr. Morgan was allowed to enter the affected area in order to get his nephew.)

TIME	INITIATING MESSAGE NUMBER	PLANT EVENT SUMMARY
		Having earlier been allowed to enter the exclusion area to pick up some relatives, Rick Morgan is now coming back out. Both he and his vehicle are contaminated.
1:10 pm (H+05:40)	77	The Stephenville Relocation Center is running low on disposable paper coveralls which are issued to evacuees whose own clothing is contaminated. The controller will request that the Relocation Center personnel describe the process by which they can obtain additional supplies.
1:40 pm H+06:10)	78	Contaminated individual (Arlo T. Jones) arrives at the Cleburne Reception Center.
2:30 pm (H+07:00)	81	A message is passed, directed to all participants, that play will terminate at this time for the District EOC (Waco), and the Cleburne and Stephenville Relocation Centers so that these facilities may participate in the Recovery/Reentry/Relocation Tabletop. All other play will continue.
2:30 pm (H+07:00)	81.1	For the purpose of this Exercise, the PIO should develop a press release to provide the media with information on ingestion pathway issues and areas of concern which are being addressed by the State of Texas.
3:30 pm (H +08:00)	82	The response phase of the exercise has ended. Selected players will now participate in an off-site tabletop recovery/reentry/relocation meeting. This meeting will be driven by controller provided data. A time jump of 24 hours will be simulated. The data available to the players will be representative of what they, or support agencies, could have developed during the 24 hours immediately following termination of the release.

1.6 EVALUATION CRITERIA

The 1989 Comanche Peak Exercise evaluations that follow in Section 2 of this report are based on the applicable planning standards and evaluation criteria set forth in Sec. II of NUREG-0654/FEMA REP-1, Rev. 1 (November 1980).

FEMA Region VI evaluated this exercise using the "Exercise Evaluation Methodology" (EEM) described in Guidance Memorandum (GM) EX-3. Federal evaluators were instructed to mark those sections of the EEM forms "Not Applicable" which did not correspond with the approved objectives of the exercise.

Following the narrative for each jurisdiction or off-site exercise activity, any Deficiencies, Areas Requiring Corrective Action (ARCAs) or Areas Recommended for Improvement (ARFIs) are presented, together with accompanying recommendations.

An identified exercise Deficiency would cause a finding that off-site preparedness is not adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency. Such a Deficiency would be cause for a negative finding, and require that a Remedial Drill be held within 120 days to demonstrate that appropriate corrections had been made.

Areas Requiring Corrective Action (ARCAs) if noted, represent instances where demonstrated performance, during the exercise, was evaluated and considered faulty. Corrective actions are considered necessary but other factors indicate that reasonable assurance can be given that, in the event of a radiological emergency, appropriate measures can and will be taken to protect the health and safety of the public. ARCAs should be relatively easy to correct in comparison to problems classified as Deficiencies. Unless otherwise specified, demonstration of these corrections will be required at, or before, the next regularly scheduled exercise.

Areas Recommended for Improvement are also listed, as appropriate, for each exercise activity location.

2 EXERCISE EVALUATION

2.1 EXERCISE DAY 1 - PLUME EXPOSURE PATHWAY ACTIVITIES

2.1.1 Texas State Operations

The following sections describe the activities of personnel from the Texas Department of Public Safety, Division of Emergency Management, and the Texas Department of Health, Bureau of Radiation Control, at their exercise activity locations, during the 1989 Comanche Peak Exercise.

2.1.1.1 State EOC

The State Emergency Operating Center (EOC) is located underground beneath the Texas Department of Public Safety Headquarters in Austin, Texas. It is located in the office suite complex of the Division of Emergency Management (DEM). The EOC is adequate to support all anticipated emergency operations, with appropriate communications, space, power, lighting, furniture, equipment, emergency generator, showers, kitchen and other resources required to maintain personnel for 24-hour shift operations. Maps and displays in the EOC are excellent, providing summary and tracking information necessary for management decision making. These include plume EPZ, evacuation routes, and plume EPZ population by planning zones. Available in the EOC in display form, but not posted were: relocation centers, radiological monitoring points, and ingestion EPZ for agricultural information.

State EOC communications equipment, systems and procedures are excellent. The facility is equipped with VHF/FM, HF/AMTOR, VHF/PACKET radios. Computer links include VHF/AMTOR and VHF/PACKET capability, along with TEWAS and TLETS systems. RACES volunteer operators are available. Telephones (24 lines) are available for agency representatives on the State Emergency Management Council. Telex, hard-copy and/or radio systems connect the EOC with all appropriate locations, with multiple redundancies and backups in case of failure of one or more systems. An additional system has been implemented since the last evaluation. A VHF/AMTOR radio modem connected to a personal computer can now be used between DEM and their satellite offices or any other radio operator so equipped to provide hard-copy backup to telephone or radio messages. This is an excellent backup system to the facsimile machine. All incoming and outgoing communications are appropriately logged, duplicated and passed to the EOC staff for action or information. Frequent reviews of action status were held to ensure that no required actions or responses were overlooked. In addition, a timeline and activities log of significant events was maintained.

The EOC staff, led by the Deputy Director for DEM Operations, demonstrated a thorough grasp of emergency operations, requirements, and procedures. This individual was effectively in charge of the EOC. He held frequent briefings to ensure that all present were knowledgeable regarding the status of events and he also involved the staff and other agency representatives in discussions prior to making decisions. He frequently requested that the BRC representative of the State Department of Health (DOH) brief the assembly on technical matters related to DOH/BRC activities during the incident.

Emergency classification levels (ECLs) were utilized throughout the exercise to drive events, response and protective actions. There was some uncertainty with the exact time of the Notification of Unusual Event: The DEM received notification at 8:10 a.m. from the Disaster District office at Waco of the 7:48 a.m. declaration of the Notification of Unusual Event (NOUE) at the Comanche Peak Steam Electric Station. The message was confirmed at 8:10 a.m. The Texas Law Enforcement Teletype System (TLETS) at Waco was out of order from 7:10 until 7:45 a.m. Message #1 was received at 8:10 a.m. stating that the Notification of Unusual Event was declared at 7:48. Message #2, received at 8:33 a.m. stated that the NOUE was declared at 8:12 a.m.

At 9:00 a.m., the EOC Director directed the DEM staff to "Call in the Council" based on his anticipation of the declaration of Alert status. The staff called all 27 members and representatives of the Emergency Management Council. Ten members were advised to report to the EOC. These members were assembled by 9:30 a.m. Seventeen members were advised to be available at their normal place of duty in case they were needed. Those advised to report included representatives from: Aeronautics Commission, Adjutant General's Department, Department of Agriculture, Air Control Board, American Red Cross, Department of Health, Department of Highways & Public Transportation, Parks and Wildlife Department, Department of Public Safety, and the Water Commission.

The DEM Public Information Officer (PIO) was present in the EOC throughout the exercise. Press briefings were simulated. The PIO indicated that briefings would be conducted for the media, who would assemble in the cafeteria of the DPS building, at hourly intervals. In addition, a briefing is held as each significant event occurs and with each change in ECL. A prescripted message is used for the initial advisory of the event. All subsequent messages are dependent upon scenario events. Copies of news releases were circulated among the EOC staff for comment prior to release. The PIO has maps and display boards available for use in media briefings. The PIO is also responsible for rumor control. In the event that the PIO cannot satisfy the caller's questions, the caller is referred to the News Center.

A shift change was demonstrated. Each agency representative was physically replaced with another person. Prior to the departure of the first shift, both the DEM coordinator and the BRC senior official gave a thorough briefing to the on-coming shift.

The EOC Director initiated a request to the Federal Aviation Administration (FAA) to restrict air traffic over the event and contacted the State Railroad Commission to ask that they contact the Federal Railroad Commission to restrict rail traffic through the affected area. He also contacted FEMA for possible support. Helicopter support, additional monitors, and additional laboratory facilities through the university system, (for sample analysis) were placed on standby. With the declaration of the General Emergency, the Waco Emergency Management Council requested simulation of the activation of the National Guard to assist in the evacuation. Twenty vehicles and 50 personnel were activated (simulated) and assembled at the Clifton Armory. An additional 50 National Guardsmen and 20 tracked vehicles were later activated (simulated) to assist in monitoring.

In summary, FEMA exercise objectives 1, 2, 3, 5, 14, 15, 26, 33 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.1.2 Disaster District 6A EOC

The Texas Department of Public Safety (DPS) facility in Waco is the site of the Disaster District 6A EOC. The facility has sufficient space, furniture, lighting, restrooms, ventilation, and other equipment and materials to support emergency operations on a 24-hour basis for an extended period of time. Backup power is available and would be automatically activated in the event of power loss. Access to the Texas DPS facility was controlled and the EOC command and communications rooms could be further controlled if it became necessary. All appropriate maps were displayed showing the plume EPZ with zones labeled, evacuation routes, and the most recent wind direction and wind speed available. In addition, maps were available showing population by zone and relocation centers. Status boards were prominently displayed showing both the emergency classification levels (ECLs) and important messages received. The status boards were continually updated in a timely manner.

Mobilization of emergency personnel began with initial notification of primary responders upon the receipt and verification of the Notification of Unusual Event (NOUE) at 7:54 a.m. The call-out procedure was completed in a timely manner at 9:04 a.m. for the primary responders and at 9:21 a.m. for secondary responders. A written call list which included names, telephone numbers, addresses, and backup responders was used and appeared to be current. Personnel immediately began to staff the EOC with the arrival of the Chairman of the Disaster Committee and the Regional Liaison Officer shortly after the NOUE notification was received. This response would be typical during normal working hours because both officials have offices in the Waco DPS building. They are, however, on call 24 hours and can be reached at any time via beepers.

The facility was completely set up by 9:15 a.m. and staffing was completed by 9:30 a.m. with all appropriate department representatives. This included, in addition to the Disaster Committee Chairman and the Regional Liaison Officer, representatives from the Bureau of Radiation Control, Red Cross, Highway and Public Transportation, Air Control Board, Railroad Commission, National Guard, Water Commission, Texas Parks and Wildlife, Aeronautics Commission, and several additional troopers from the Texas Highway Patrol.

The Alert notification was received at 8:32 a.m.; Site Area Emergency notification was received at 10:07 a.m.; and the General Emergency notification received at 11:09 a.m. All messages were immediately verified via telephone and verified again by fax of the original notification message forms.

Direction and control was effectively managed through the combined efforts of the Disaster District Committee Chairman and the Regional Liaison Officer. The Disaster Committee Chairman is ultimately responsible for decision making which is consistent with the State plan. However, he effectively shared his responsibilities with the Regional Liaison Officer and the two worked well as a team. In addition, their backup people also were effective in managing the

situation at the EOC. As necessary, appropriate department agency representatives were involved in the decision making which included State protective action implementation. Furthermore, responsibilities were properly delegated to the appropriate department heads.

Briefings were held, as necessary, to update the staff. These were primarily held when important information was received (e.g., change of ECL or PARs). Briefings also were held when new staff arrived, as part of a shift change, to get them familiar with the current situation.

Copies of the plan were readily available for use and all key personnel had their own standard operating procedures (SOP) for their area of responsibility. However, the staff, both the first shift and their replacements, appeared to be sufficiently knowledgeable of their duties without the SOPs.

Message logs were kept for all incoming and outgoing messages. A message handling system was effectively used to reproduce and distribute all incoming messages to the department heads.

The EOC has numerous methods of communication by virtue of being a Texas DPS Highway Patrol facility. Communications included the utility hotline, commercial telephones, teletype, radio, telecopier, VHF and UHF ham radio capability as well as a new methodology for sending hard copy via ham radio (SIMTEC & AMTR) which was successfully tested during this exercise. The primary communications method, commercial telephone, is manned on a 24-hour basis by Texas DPS personnel. All communications appeared to work effectively during the exercise and could adequately handle communications with limited delays. The EOC had direct communications with the CPSES EOF, the State EOC, and other appropriate organizations. Conferencing capability was readily available.

Media briefings would be provided, as necessary, by the EOC Public Information Officer (PIO). Press releases were developed at the EOC for distribution to the media and included current, accurate, and timely information from the EOF, News Center, and State as well as information that was relevant to this specific location and its activities. Media briefings were held in a secured area of the DPS facility, away from the EOC. Prescripted information was prepared by the appropriate staff and avoided the use of technical jargon. The briefing materials were reviewed internally before being authorized for release jointly by the PIO and Chairman of the Disaster District Committee. Any media requests that could not be handled at the EOC were referred to the News Center. Rumor control would be handled by the News Center (PIO). All calls from citizens, however, were referred to the state rumor control phone number.

The ability to identify the need for and call upon assistance from outside support agencies was demonstrated when Somervell County requested air monitoring equipment, and staff familiar with its use, to be dispatched to monitor releases from CPSES. The EOC requested assistance from the Texas Air Control Board and was informed that two people and equipment would arrive at the designated location within two hours. Federal assistance would not be directly requested from this District EOC. Requests of this nature would be directed to the State EOC in Austin for processing.

In summary, FEMA exercise objectives 1, 2, 3, 4, 5, 14, 15, 25 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.1.3 BRC Operations at the CPSES EOF

BRC operations at the CPSES EOF were actually initiated at the BRC staging area, at the Hood County Courthouse Annex in Granbury, where BRC staff personnel received an initial briefing on the situation, were issued personal dosimetry equipment and KI, and were then dispatched to their operating location at 9:15 a.m., arriving at about 9:30 a.m.

The EOF had already been activated, by the utility, prior to the arrival of the State BRC personnel. Security had been established, arriving personnel were screened, and each person was checked against an authorized admittance list and only admitted if their name appeared on the list. Immediately following their arrival, BRC personnel initiated contacts with their counterparts and began setting up their equipment.

The area in the EOF assigned to BRC operations was of sufficient size, and had the appropriate furniture and equipment for its intended function. Communications in the BRC area consisted of 10 single-line telephones, a radio base station on the BRC frequency (for contact with BRC field teams) and a fax machine. On several occasions it was observed that incoming telephone calls, intended for the Chief of Field Operations (CFO), had been placed to other telephone stations because the single line at the CFO station was busy.

Shortly after his arrival, the BRC CFO met with the utility Emergency Coordinator (EC) for a plant status briefing. He then briefed his staff. BRC staff personnel participated in status briefings throughout the exercise and key staff meetings were held to discuss problems and to inform the staff of management decisions.

The CFOs (both first and second shift) demonstrated excellent command and control of the BRC emergency response area. All protective action recommendations were effectively coordinated with appropriate off-site authorities, i.e., the State EOC in Austin and Somervell and Hood Counties.

The primary purposes of the BRC operations at the EOF are the coordination of dose projections (with the utility), control of the State field teams and the development of protective action recommendations for the areas affected by radiological releases. Numerous dose projections were developed by the BRC staff, using a pre-programmed computer system. The utility uses an identical system. Therefore, any differences in the dose projections, due to variations in input parameters or assumptions of plant conditions, can be quickly identified and appropriate corrective action initiated.

By 9:50 a.m., plant conditions had degraded to the point that the CFO consulted with the EC about upgrading to a Site Area Emergency. He then contacted the Hood County EOC to alert them to the possibility of the need to evacuate areas downwind of the plant. Following the confirmed puff release, at 10:07 a.m., a decision was made to recommend the evacuation of Zone 2A rather than shelter this zone as had been previously discussed.

At 10:16 a.m., the CFO then advised Somervell County that, due to seriously degrading conditions and a wind shift toward the south, the evacuation of Zone 2A and sheltering of the population in Zones 4C, 4D and 3A was recommended. Following consultation with the utility staff, a General Emergency was declared at 10:50 a.m.

Dose projections made by the BRC staff, prior to 11:47 a.m., assumed iodine filter integrity and a functioning containment spray, even though the spray had been inactive since 10:00 a.m., and a hydrogen burn (which was presumed to have degraded the filters) occurred at 11:00 a.m. At 11:47 a.m., these conditions were factored into the BRC calculations and new dose projections were prepared. This lack of coordination between BRC computer parameters and plant conditions resulted in significant differences, by a factor of 100, in dose projections between the utility and the State. On observing these differences, the BRC staff properly chose to use the more conservative projection in the development of their protective action recommendations.

At 11:54 a.m., based on projection of thyroid doses greater than 5 Rem, the CFO recommended sheltering of the population in Zones 3D, 3F, 3C and 2J and the evacuation of the city of Glen Rose. At 12:15 a.m., a further recommendation was made to evacuate Zones 2C, 3B and 4C. At 12:18 a.m., plant conditions began to improve and at 1:28 p.m., all releases were terminated. All plume protective action decisions observed were judged to be appropriate to the conditions known at the time.

Following the 11:00 a.m. report of a hydrogen burn, and the significant release of radioactivity (known to contain radioiodine), the CFO recommended that all emergency workers take Potassium Iodide (KI). This recommendation preceded the actual dose projection specified in state procedures. As noted above, prior to 11:47 a.m., state dose projections, including thyroid doses, were different from the utility projections by a factor of nearly 100. Despite this difference, the KI recommendation, and its implementation, were properly and expeditiously executed.

Command and control of the State Contamination Control Teams, operating at Traffic/Access Control Points, and State Field Monitoring Teams, operating throughout the 10-mile EPZ, was adversely affected by numerous communications problems. Team control, at the EOF, was never able to establish communication with the Contamination Control Teams and had only sporadic contact with the Field Monitoring Teams. The Monitoring Teams could, usually, receive transmissions, from the EOF, on the BRC frequencies in the DPS radios in the team cars. However, they were often unable to obtain confirmation of contact on their transmissions back to the EOF. The backup systems for the field teams, BRC hand-held radio units, were never able to establish reliable communications.

The Contamination Control Teams were equipped with cellular telephones and the BRC hand-held radio units. The telephones appeared to suffer from coverage problems and the hand-held units were unable to contact the team control.

As reliable communication between the State field teams and their team control at the EOF is essential, a complete review and overhaul of the current communications system is in order. Please note the remedial communications drill results on the following page.

A 24-hour staffing capability for BRC at the EOF was demonstrated by a complete shift change at 12:20 p.m. The relief shift received an initial briefing on existing conditions at the BRC staging area prior to deployment to the EOF. On arrival at the EOF, they were fully briefed and became operational in a timely manner.

The Total Population Dose Report (FEMA exercise objective #31), to be submitted to FEMA within 45 days of the exercise was delivered, from the State, to FEMA Region VI, on September 13, 1989.

In summary, FEMA exercise objectives 1, 2, 3, 5, 6, 10, 11, 16, 31, and 34 were met at this location. A remedial drill was held September 6, 1989 to correct communications deficiencies. The drill was successful and objective 4 has now been met.

DEFICIENCIES:

89-1 **Description:** Communications could not be established or maintained between the BRC Field Team Controller and the State Contamination Control Teams, operating at the exercise Traffic/Access Control Points. Neither the exercise primary system, cellular telephones, nor the backup system, BRC hand-held radio units, provided an appropriate communications capability. This problem appeared to be caused by the insufficient height of the BRC radio antenna at the EOF, and the low power of the field radio units. (NUREG-0654 H.3)

Recommendation: Determine the actual cause of the communications problems, take appropriate remedial action and redemonstrate communications, between the EOF and the State Contamination Control Teams, within 120 days of the exercise date.

NOTE: The Remedial Drill, held on September 6, 1989, following installation of a new, higher antenna, and acquisition of more powerful field radio units, demonstrated that this problem had been resolved, and that a reliable communications capability now exists. Thus, Objective #4 regarding communications is now met.

AREAS REQUIRING CORRECTIVE ACTION:

89-1 **Description:** Communications between BRC Field Team Control at the EOF and the BRC Field Monitoring Teams, using the BRC frequencies in the DPS vehicle radio, was sporadic. The field teams could, usually, receive transmissions from field team control, but were often unable to make successful team-to-control contact. The BRC hand-held radio units, using the same frequencies, were even less capable of maintaining contact with team control. Other backup systems (i.e. law enforcement frequencies) could be used, but these multiple-relay systems were slow and could result in misunderstood messages. (NUREG-0654 H.3)

Recommendation: Determine the root cause of the sporadic communications, between BRC Field Team Control and the field teams, on the BRC frequencies, and initiate appropriate actions to ensure reliable, continuous, field team communications.

Note #1: A plan-of-action, containing both immediate and long term initiatives, designed to correct this issue, has been developed through joint efforts of the BRC and the utility. This plan has been reviewed and approved by FEMA Region VI and will be instituted by the appropriate entities.

Note #2: The Remedial Drill, held on September 6, 1989, also demonstrated that a reliable, continuous communications capability now exists between the EOF and the State Field Monitoring Teams.

89-2 **Description:** Plant conditions were not factored into BRC dose projections in a timely manner. More than one hour elapsed before the projections accounted for the loss of containment spray, and some time elapsed before the loss of the High Efficiency Particulate Air (HEPA) filters, due to the hydrogen burn was included. (NUREG-0654 I.10)

Recommendation: Provide additional training to dose projection personnel stressing the need for timely updates of the computer program with current plant conditions.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** Telephones in the BRC operating area are single line units. If an individual's line is busy, calls will frequently arrive on other units, making the individual "chase" the call.

  Recommendation: Convert the BRC telephones to five-line units with hold and transfer capabilities. Additionally, place telephone system instructions, i.e., outside line code, how to transfer calls, etc., at each telephone.

- **Description:** The BRC EOF operation needs to display the implementation status of protective actions.

Recommendation: Use the last column of the "Protective Action Status Board", entitled "Status of Response", to display and inform the staff of the extent to which the PAR has been implemented.

- **Description:** Procedures specify that recommendations to take KI are to be made only when projected doses exceed specified numerical values. Yet, the CFO properly recommended KI for emergency workers based on rapidly degrading plant conditions and the report of "significant" release of radioactivity.

  Recommendation: Revise procedure number 9 to clarify that decision makers have the authority to recommend KI, based on judgement, prior to actual projection of a 10-rad thyroid dose.

2.1.1.4 Bureau of Radiation Control Staging Area

The BRC Staging Area is located in the Hood County Courthouse Annex in Granbury, TX. All state support personnel were pre-staged at the staging area and dispatched from there to their appropriate destinations depending on the scenario and their respective emergency response function. The pre-staging of personnel was agreed upon between the State of Texas and FEMA prior to the exercise in the interest of time.

The staging area was manned by a coordinator, communications clerk, radiological officer, and a courier who assisted in updating the display boards and taking messages. All personnel understood the Emergency Classification Levels as evidenced by their response to changing conditions. All ECL changes were confirmed by fax from the EOF.

The actual mobilization of personnel was not observed, but credit is given for objective #2 because of the agreement between the state and FEMA mentioned above.

The communication system at the staging area consisted of four telephones, radio, facsimile machine, and a courier. All communications equipment worked. However, since the telephone was the primary means of communicating, the radio was used mainly for monitoring and was not really tested as to its ability to communicate with the field teams. The staging area had contact with the State EOC in Austin, all local EOCs, the EOF at Comanche Peak, reception/care facilities, hospitals and any other location that had telephone capability.

There was some confusion generated at the staging area due to receiving information from multiple sources at the EOF that was contradictory. Also, some of the facsimile messages were not received. However, when the communications officer at the staging area noticed a gap in message numbers, she immediately called the EOF and asked for transmission of the missing messages. This did not prevent or impede the proper functioning of the staging area.

The facilities are more than adequate for the purpose of staging and subsequent dispatch of emergency workers. All appropriate equipment was available for the proper operation of the staging area. All necessary display boards and maps were placed in the front of the room and were visible to all

concerned. A new sign-in/out display board was utilized to track personnel as they came on duty and were dispatched to their duty stations. It worked very well and was an obvious enhancement for the proper tracking of personnel.

The demonstration of emergency worker exposure control was excellent. All emergency workers were issued low (0-200 mR) and high (0-20 R) dosimeters, TLDs, and personal exposure records for recording readings while in the field. All personnel zeroed their instruments and recorded the reading before leaving for their field assignments. Calibration equipment was available if needed. The issuance of KI was simulated by giving each of the emergency workers going to the field a copy of the instructions for its proper use.

The recommendation for emergency workers to take KI was given at 11:05 a.m. As per previous instructions, the emergency workers made their decision to take/not take KI as it is voluntary and not a requirement. To aid the emergency workers in making the decision, they were briefed on the possible side effects of KI prior to departure from the staging area. Those who chose to take KI recorded the time they simulated its taking for proper dose control.

Demonstration of shift change was well organized. All incoming shift personnel were assembled well in advance of being dispatched. After signing in, they were given a thorough briefing on the history of the emergency and current status including plume direction and other weather information. They were then dispatched to their respective assignments.

In summary, FEMA exercise objectives 1, 2, 4, 5, 6, 16, and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** The staging area received information from multiple sources at the EOF which, at times, was contradictory and created some confusion.

  Recommendation: Establish a procedure that esiablishes a single point (one person) of contact for the dissemination of information from the EOF to the EOC.

- **Description:** The staging area failed to receive some facsimile messages from the EOF (messages #2 and #4).

  Recommendation: Establish a procedure whereby the telephone liaison between the EOF and the staging area calls the staging area to confirm receipt of all facsimile messages that are sent.

- **Description:** Confirming facsimile messages following ECL announcements were delayed for an unreasonable length of time.

Recommendation: Establish a procedure to assure that facsimile messages confirming a change in ECL are promptly transmitted (simultaneous with such declaration or as soon as possible thereafter).

2.1.1.5 State Field Teams

2.1.1.5.1 Field Monitoring Team 1

Alerting and mobilizing of all the field teams occurred by prepositioning the teams in Granbury and building in some time delay to simulate transit time from Austin to the Comanche Peak site. While this does not constitute an actual alerting and mobilization effort, it is considered adequate for exercise purpose. Field teams were in place by about 8:00 a.m. at the staging area at the Hood County Courthouse Annex in Granbury. A phone call to the Staging Area Coordinator was received from the EOF at 8:46 a.m. At 8:50 a.m., the Coordinator started a briefing on plant conditions and meteorological data, and field monitoring teams were told to prepare for deployment; equipment check procedures were demonstrated. The team was packed and prepared to deploy. At 9:59 a.m., the field teams were assembled as the Coordinator received a phone call with further information; the Chief of Field Operations decided to deploy field teams because of further degrading plant conditions, although there had been no release of radioactive materials at this time. Field Team #1 departed the Staging Area at 10:06 a.m. after receiving a thorough briefing on plant and meteorological conditions and radiological protection considerations.

Primary communications for Field Monitoring Team #1 was the DPS vehicle radio, a 32-channel unit which included the BRC operating frequencies. Communications, between the team and their team control at the EOF, using the DPS radio, was not fully reliable as there are many "dead spots" throughout the EPZ due to the rolling terrain in the area. Standard instructions to the field teams are to move to higher ground if they find they are in a "dead spot". During the exercise, Field Team #1 was directed to take an air sample in the city of Glen Rose (which was at least partially in the plume at that time). The area to which the team was directed was in one of the "dead spots" rendering communication impossible on the radio systems in use. Other radio frequencies were in the DPS vehicle but were not used to re-establish communications. The process of setting-up, taking an air sample and tearing down requires almost 30 minutes. This period of time in a plume area without communications is undesirable. The BRC hand-held radio unit proved to be unacceptable as it could occasionally receive transmissions from the EOF but was never able to pass traffic to Team Control.

Each field team member was equipped with a 0-200 mR and a 0-20 R self-reading dosimeter and a TLD. Dosimeter readings were recorded periodically by the team members. Team members were aware of the anticipated exposure that each might have received. Team members were aware of the maximum dose that must be reported and the maximum dose allowed without authorization.

Ambient radiation monitoring was performed with appropriate instruments using proper procedures. Beta/Gamma measurements were made using window-open and window-closed parameters to determine the proximity or extent of the plume.

No ground deposition surveys were performed as conditions during this exercise, and State procedures, did not require them.

Airborne iodine monitoring was done by collecting an air sample using a calibrated sampler at the proper flow-rate with particulate filter and a charcoal filter (simulating a silver zeolite filter). The direct radiation from each type of filter was measured with a beta/gamma survey instrument, as the filters were prepared by appropriate bagging and labeling for transfer to the mobile analytical laboratory. Wisely and properly, no attempt was made by the Field Monitoring Team to perform detailed analysis in field locations under these adverse field conditions.

Simulated KI was distributed to the field monitoring teams prior to their deployment from the BRC staging area. The field team leader instructed the teams to take KI at 11:06 a.m. The field team simulated this action following this instruction.

The field team was dispatched to a state roadside park on highway 144 to transfer the collected samples. After a period of waiting for the courier, field team #1 was dispatched to the staging area.

In summary, FEMA exercise objectives 2, 4, 6, 7, 8, 9, 16, and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: See ARCA 89-1 text in Section 2.1.1.3.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.1.5.2 Field Monitoring Team 2

By prior agreement with FEMA, the field monitoring team personnel from the Bureau of Radiation Control (BRC) and Department of Public Safety (DPS) License and Weight Service were prepositioned at the BRC staging area in Granbury. Field monitoring team 2 was comprised of one BRC health physicist and one DPS trooper. The BRC provided all monitoring equipment and supplies and the DPS provided a transportation vehicle equipped with radio communications. Field monitoring team 2 was adequately briefed during the mobilization phase and the team members completed all appropriate equipment inventories and equipment operability checks prior to deployment to the field. At the direction of the on-site EOF field team leader, team 2 was deployed to field monitoring location 54. Field team deployment was in accordance with the emergency plan procedures.

Field team 2 was issued a BRC hand-held radio for use as a backup to the DPS radio that was used for primary field team communications. The DPS vehicle radio is a 32-channel unit which has the BRC Health Department frequency as well as all area law enforcement frequencies. Following deployment from the BRC staging area, the BRC team member contacted the staging area and requested that all communications from the field teams be relayed through the staging area to the on-site EOF during the 15-to 20-minute transit time to arrive at the assigned field locations. This relay request was prompted by the BRC team member's knowledge of "dead spots" en route to the field location. In the

field, the hand-held radio was not of any use for transmitting, but it could occasionally receive. The DPS vehicle radio experienced frequent difficulties in transmitting on the BRC frequency and occasional reception problems on the BRC frequency. The DPS trooper utilized the backup law enforcement frequencies to relay messages car-to-car between field teams, and to Hood County, to try and relay them to the on-site EOF. Both the BRC and DPS team members seemed to be aware of the locations of local "dead spots". Communications from monitoring location 64 (about two miles from the site) seemed to fade in and out during the course of the exercise. Regardless of the communications difficulties, it did not appear that team 2 missed any significant events transmitted from the on-site EOF and, although there were some delays, it appeared that team 2 was able to communicate all of its field data to the on-site EOF. It should be noted that team 2 spent most of its time at location 64 which was probably one of the better communication locations.

Dosimetry and simulated KI were issued to the field monitoring teams at the BRC staging area. Each team member received two (0-200 mR and 0-20 R) direct reading dosimeters and a TLD badge with a unique identification number. The dosimeters were charged (zeroed) prior to leaving the BRC staging area. The team members read their dosimeters at appropriate intervals and reported the readings when requested by the team leader at the on-site EOF. The BRC team member was aware of the authorized exposure limits, 200 mR "call in" and 1 R maximum exposure for the mission. Neither the BRC nor DPS team member was aware of the exposure rate turn-back value of 100 mR/hr. The team members were aware that they would have to contact the field team leader at the on-site EOF to obtain authorization to exceed the authorized exposure limits or to report exposures which exceeded the authorized limits.

Field team 2 demonstrated the appropriate equipment and procedures for determining field radiation measurements. All of the survey instruments were battery checked. The BRC team member demonstrated open and closed window surveys at one meter height which is in accordance with the BRC procedures. Both team members were able to locate the assigned monitoring point. Field team readings were transmitted to the on-site EOF in a timely manner.

Field team 2 demonstrated the appropriate air sampling method and procedure for collecting an iodine sample in the presence of noble gases. Field measurements were not performed as the team members were directed by the field team leader to give the air sample filters to a courier for transport to the mobile laboratory for analysis. This is in accordance with the new (6/89) plan and procedures. The air sample filters were appropriately bagged and labeled prior to delivery to the sample courier. Appropriate procedures were followed for collecting the air sample.

Field team 2 demonstrated its ability to collect a particulate air sample and promptly transport the particulate filter to a laboratory for analysis. Following completion of the air sample collection, the field team leader made arrangements for a courier to meet field team 2 at monitoring location 64. The air filter samples (iodine and particulate) were transported by courier to the sample preparation van in Granbury within one hour of the time of sample collection.

Simulated KI was distributed to the field monitoring teams prior to their deployment from the BRC staging area. The field team leader transmitted

instructions to take KI to the field monitoring teams at 11:06 a.m. Field team 2 simulated ingestion of KI immediately following receipt of the instructions.

Field monitoring teams 2 and 4 demonstrated a shift change. Team 4 arrived at location 64 at 1:32 p.m. and relieved monitoring team 2. Team 2 returned to the BRC staging area and turned in their monitoring equipment and completed their exposure record forms.

In summary, FEMA exercise objectives 2, 4, 6, 7, 8, 9, 16, and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION:

89-1 See ARCA 89-1 text in Section 2.1.1.3

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.1.5.3 Field Monitoring Team 3

This field monitoring team, part of the BRC second shift, arrived at the BRC staging area at 10:30 a.m. from their pre-staged position in Granbury. They immediately initiated an inventory and operational check of their equipment. They also obtained appropriate dosimetry and KI thyroid blocking agent. At 11:30 a.m., an excellent pre-mission briefing was provided to all second shift BRC personnel prior to their deployment to operating locations. The team was then directed to stand by for further directions from Field Team Control at the EOF. At 12:47 p.m., the team received a further telephone briefing from Field Team Control and was directed to deploy to its first field location.

As the team was departing from the staging area, they attempted a communications check and discovered that their radio had lost it's programming. The DPS sergeant at the staging area re-programmed the radio and the team then departed. The team tried several times to communicate with the field team that they were replacing, and with Field Team Control at the EOF. Each attempt was unsuccessful.

Following their arrival at the first assigned location, the roadside park located on State Road 144 north of U.S. Highway 67, they made several additional attempts at communication, moving north and south on highway 144 to locate a point where radio transmission was possible. During all movements, the team maintained a constant monitoring posture for airborne radiation. When communication was established, the team was directed to proceed to monitoring point 43, where a well drilling crew had been reported, and direct them to safer areas. On arrival at the monitoring point, no crew was found. The team then attempted to report to Team Control but was, again, unable to effectively communicate. After shifting location to monitoring point 33, the team was able to re-establish communication. They were directed to stand by for later directions. The team read their dosimetry frequently during the exercise. They also simulated consumption of KI thyroid blocking agent in accordance with directions.

During the waiting period, the team discussed and demonstrated procedures for dressing in protective clothing (Anti-C's), contamination control procedures, air sampling and other field team activities. At 2:30 p.m., the team was directed to move to monitoring point 72 and to take soil samples and water samples at that location. The team realized that this movement would require transit of the area where the plume had passed. Therefore, the team was extra alert for airborne and/or ground contamination. Sampling techniques demonstrated at the assigned point were excellent, with good contamination control procedures. The team then was moved to monitoring point 73 where they met Monitoring Team #4, transferred the soil sample and moved on to the next assignment. They were then directed to monitoring point 52 to take additional soil and water samples. While at this location, during the sampling operations, the team was advised that the exercise had been terminated and that they were to return to the staging area. On arrival there, the team carried out appropriate shift termination activities.

In summary, FEMA exercise objectives 2, 4, 6, 7, 8, 9, 16 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION:

89-1 **See ARCA 89-1 text in Section 2.1.1.3**

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.1.5.4 Field Monitoring Team 4

The State BRC was able to demonstrate their ability to fully alert, mobilize and activate personnel for field-based emergency functions. The BRC field monitoring team members were prepositioned in Granbury, Texas due to scenario time constraints. The teams would otherwise need three plus hours to travel from Austin, Texas or regional offices to their staging area (Granbury). The team personnel arrived at the staging area in a timely manner, checked and inventoried their equipment, were briefed on the status of events, and were deployed to their monitoring locations.

Field monitoring team 4 was provided with a multi-channel radio in the Department of Public Safety vehicle. In addition, a portable hand-held radio, which operates on the Health Department frequency, was present, but the team was unable to contact their leader at the EOF with it.

Several times during the exercise, radio dead spots were encountered and messages from the field monitoring team leader at the EOF had to be relayed to team 3 using the DPS frequency. The primary communication system, Health Department frequency, worked well as far as messages received from the EOF; however, problems occurred when transmitting messages from the field teams to the EOF.

According to Procedure 10, page 7, the primary communication system should be the Health Department frequency on the DPS radio and only urgent communications should be transmitted via the DPS frequency. Operations which do not

include DPS team personnel should be communicated via telephone in order to remain in contact with the EOF.

Both field monitoring and sampling teams were provided with direct-reading dosimeters (0-200 mR and 0-20 R) and a permanent record dosimeter (TLD). The dosimeters were zeroed and initial readings were recorded on an exposure record form. The BRC team member was very knowledgeable of radiological exposure control procedures.

Personal protective clothing and equipment (e.g., respirators) were available. Although one team member was to completely put on all necessary protective clothing, this event was simulated and adequately demonstrated through the verbal description of how to don and remove the clothing. A respirator was also available for the Department of Public Safety officer who provided and drove the field monitoring vehicle. However, the respirators were not stored in sealed bags in accordance with procedures. In addition, no smoke tubes were available to determine and test proper respirator fit.

Field monitoring team 4 was provided with appropriate equipment for determining field radiation measurements. They had both low and high range survey instruments along with a backup instrument. All survey instruments had been recently calibrated during 1989, and were operationally checked, both with battery and with a radioactive source. Upon departure from the staging area, the survey instrument was on and remained so until the team returned to the staging area.

Ambient radiation monitoring was accomplished in accordance with their procedures. All survey readings were properly recorded and the information was eventually relayed to the EOF due to communication problems.

The team did encounter problems finding county road 318 off of route 56. Excellent initiative was displayed by the team members who informed their leader that county road 321 would end near the point where road 318 was indicated to be present on the map. Whereupon, their leader concurred and requested a soil sample be taken at this point.

State field monitoring team 4 described verbally the equipment and procedures for the measurement of airborne radioiodine concentrations as low as 10^{-7} microcuries per cc in the presence of noble gases. Team 4 represented a second shift team which was sent to an area about three miles from the reactor site. All necessary survey instruments were available to conduct radiological monitoring for airborne radioiodines.

Team 4 was not directed, by Field Team Control, to demonstrate their ability to conduct airborne radioiodine monitoring, the team members instead adequately described the procedures they would follow.

The State field monitoring teams have the ability to obtain samples of particulate activity in the airborne plume and should be able to promptly perform laboratory analyses. Field monitoring team 4 had all the necessary equipment to obtain particulate samples in the airborne plume. Their survey instrument and air pump had been recently calibrated during 1989 and were operable. However, the team was never instructed by their leader to obtain

particulate activity samples nor were they ever placed anywhere near the plume. Therefore, the team adequately described the procedures that would be followed.

The team was finally instructed to take a soil sample which was promptly and efficiently collected. Upon completion of the sample, they met with a courier at the designated point and transferred the sample which was promptly delivered to the BRC mobile laboratory in Granbury for analyses.

The staging area in Granbury received the notification to distribute and administer KI to emergency workers because a release containing radioiodines was occurring. The second shift emergency workers present at the staging area were provided with and simulated the taking of KI in a timely manner and completed their KI form. Actual KI was present at the staging area.

The State BRC field teams demonstrated the ability to maintain staffing on a continuous 24-hour basis by an actual shift change. The BRC field monitoring team 4 was adequately briefed at the staging area as to meteorological and plant conditions, and specific response objectives prior to deployment. They were very competent and knowledgeable of their emergency response roles. The BRC field monitoring team leader at the EOF instructed the team to replace team 2 at a designated point, which was accomplished in a timely manner.

In summary, FEMA exercise objectives 2, 4, 6, 7, 8, 9, 16, and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION:

89-1 See ARCA 89-1 text in Section 2.1.1.3

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** Field monitoring team 4 was directed to proceed to a location on county road 318, off route 56. The road is shown on the monitoring point maps carried by the team. However, the road is both difficult to locate and was closed off by a gate.

  Recommendation: Maps used by monitoring teams should be periodically reviewed to ensure that all indicated locations are accessible. Also, team training should stress appropriate responses when accessibility problems are encountered.

2.1.1.5.5 BRC Contamination Control Team #1 at Traffic/Access Control Point (TCP) #1

BRC Contamination Control Team #1 was, as were all BRC personnel, pre-staged at the BRC Staging Area in Granbury. At that location, the team performed instrument checks, inventoried team equipment and installed and checked the communications systems assigned to them; cellular telephones and hand-held radios on BRC frequencies. The cellular telephones were found to be operational at the staging area, but no contact was made on the hand-held

radios. The team members expressed some concern over the poor communications capability available to them. During the pre-deployment briefing, the team was told that they should pretend to go to one location, the intersection of Highways 56 and 51, northwest of the CPSES, but really go to a different location, the intersection of State Roads 144 and 67 east of Glen Rose. Then, they were told to actually establish the traffic control point in a roadside park approximately 1 1/2 miles north of that intersection. These instructions proved to be a source of some confusion during the early stages of the exercise. The remainder of the pre-deployment briefing was excellent as all information available at the staging area was provided to the departing teams.

The team departed the staging area at 10:05 a.m. still somewhat confused over their "pretend", "real" and "actual" setup locations. While en route to their destination, they attempted, unsuccessfully, to establish communications, with field team control, using both the cellular telephone and the hand-held radio. They arrived at the "actual" traffic control point location at 10:34 a.m. Following their arrival, they made numerous attempts to contact BRC field team control to report that no law enforcement officer (State DPS Trooper) had arrived at the TCP. The State DPS trooper initially assigned to man this traffic/access control point reported to the County EOC, was issued dosimetry and departed for the TCP. While en route to the TCP, he was diverted to respond to a REAL emergency call. Thus the lack of law enforcement support at the TCP was the result of this diversion and was permissible under the exercise parameters.

Several fragmentary, garbled, messages were overheard on the BRC hand-held radio, including the declaration of General Emergency, recommendation to take KI and the evacuation recommendation for certain sectors. However, despite many attempts, no transmissions from the TCP were acknowledged, by any other operating site. The cellular telephone was, itself, a poor communications system as most calls could not be completed and, when calls did get through, they tended to breakup and lose clarity. When the second-shift DPS trooper arrived, communication, via law enforcement radio, was possible but not utilized. However, this system relies on relaying information and is subject to misunderstanding and confusion.

Following setup of the traffic control point, the first activity occurred when a car containing two workers from a simulated drill rig site arrived at the TCP. Despite some initial confusion caused by the absence of a TCP law enforcement officer, the vehicle and personnel were appropriately handled, monitored for contamination, and directed to report to the nearest decontamination center. Shortly after their departure from the TCP, the site controller advised the team that there had been an accident approximately 1/2 mile north of their location. After some discussion, one team member was dispatched to the accident site to investigate. He quickly assessed the situation and returned to the TCP where the newly arrived second-shift DPS officer made a radio call requesting an ambulance. The ambulance crew was briefed on the situation when they arrived at the TCP, and a member of the team accompanied them to the accident site for monitoring and contamination control support.

The second-shift contamination control team reported to the TCP at approximately 1:15 p.m. and was provided a briefing by the first-shift team leader. During the briefing, another player vehicle arrived with an individual requesting access to the (simulated) plume area. The need for his entry was

evaluated and appropriate briefings and precautions, including ingestion of KI, were provided to him prior to allowing him to proceed.

The second shift experienced the same communications problems as the first shift had noted. Both the cellular telephone and the hand-held radio were ineffective despite extensive efforts by the team, including shifting antennas and even moving to other locations. Exercise activities at this site were terminated when a DPS vehicle, dispatched by radio from the Staging Area, arrived to advise them of the end of the exercise.

In summary, FEMA exercise objectives 2, 6, 16, 20 and 34 were met at this location. Objective 4 (communications) was not met during the exercise but met during a remedial drill held September 6, 1989.

DEFICIENCIES:

89-1 See 89-1 text in Section 2.1.1.3.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.1.5.6 BRC Contamination Control Team #2 at Traffic/Access Control Point (TCP) #2

State BRC Contamination Control Team #2 was pre-staged at the BRC staging area at the Hood County Courthouse Annex. Following equipment checks and pre-deployment briefings, the team departed for their assigned traffic/access control point, the intersection of Highways 67 and 51, west of Glen Rose.

While en route, the team attempted, unsuccessfully, to make communications contact with other exercise activity locations. Continued attempts, using the primary system, cellular telephone, and the backup system, BRC hand-held radio, following arrival at the assigned TCP, were still unsuccessful. A Somervell County Sheriff's Deputy and, later, a State DPS Trooper were able to provide communications contact using law enforcement radio frequencies.

The traffic/access control personnel, Somervell County Sheriff's Deputy, State DPS Trooper and the BRC contamination control team, demonstrated processing of four individuals (players) at the TCP. They denied access to all individuals except when controller intervention allowed an individual to enter the area. In this case, the team provided dosimetry and KI instructions to the entering personnel. A vehicle, with two passengers, leaving the area was monitored and found to be contaminated. The passengers were directed to proceed to the Stephenville decontamination center.

Shortly after this vehicle departed the TCP, the controller advised the team that the vehicle had been in an accident. One team member was dispatched to the accident scene to investigate. He quickly returned and advised the law enforcement support trooper that an ambulance was required. As it had been previously agreed that the Stephenville F.D. ambulance would not run all the way

to the accident scene, but to another scene closer to Stephenville, no further response to this accident activity took place at this TCP.

A shift change of all TCP personnel was accomplished at approximately 12:30 p.m. The second shift was thoroughly briefed and the first shift held a short critique prior to their departure from the TCP.

In summary, FEMA exercise objectives 2, 6, 16, 20 and 34 were met at this location. Objective 4 (communications) was not met during the exercise but met during a remedial drill held September 6, 1989.

DEFICIENCIES:

89-1 See 89-1 text in Section 2.1.1.3.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.1.6 BRC Mobile Laboratory

The BRC Mobile Laboratory was located adjacent to the Hood County Courthouse Annex (BRC Staging Area) in Granbury. All of the BRC State staff, including the laboratory staff, assembled at this location.

The staff demonstrated adequate knowledge of the procedures for receiving and analyzing environmental radiation samples resulting from a radiation release at Comanche Peak.

Because FEMA and the State agreed in advance that the laboratory staff could be prestaged in order to meet required timeliness, mobilization was adequately demonstrated. Dispatch of the laboratory staff in a real crisis would be from Austin, Texas.

The mobile lab communications consisted of a BRC radio and a commercial telephone. At times, the radio was difficult to hear. The radio was not used by the laboratory other then to monitor field monitoring team activity so they could prepare for the reception of samples.

After collecting air samples, the field monitoring teams sent them to the lab by courier. The lab checked the samples for contamination, logged them and placed them in proper counting cells for counting. The samples were counted according to standard procedures. The data was then phoned to dose assessment at the EOF. Hard copies of the data were faxed to assure the correctness of the data transfer.

The mobile lab adequately demonstrated a shift change by replacing the first shift with the second shift "in toto" at 12 noon. Both shifts were very knowledgeable about all aspects of the lab operation and performed their duties very professionally and enthusiastically.

In summary, FEMA exercise objectives 2, 4, 6, 8, 9 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.1.7 State Operations at News Center

The News Center for Comanche Peak Steam Electric Station operates from the plant's Nuclear Operations Support Facility (NOSF), which also houses the Emergency Operations Facility (EOF). An alternate news center is located in Cleburne. Both facilities are equipped to serve as central clearinghouses for release of information to the news media regarding an emergency at Comanche Peak.

Although plans require activation of the News Center following notification of an Alert, Center officials, at their discretion, utilize an option of activating their facility following Notification of Unusual Event (NOUE). A NOUE was declared at 7:50 a.m. and the Center was fully activated and staffed within an hour.

Besides public information officers from the utility, exercise participants included representatives from the Texas Bureau of Radiation Control (BRC) and Texas Department of Public Safety (DPS), who also represented Hood and Somervell Counties. An official with the utility's Dallas corporate headquarters was also on hand to field questions from the media regarding "real world" situations exclusive of the exercise. A bi-lingual interpreter was available to translate news releases written in English into Spanish.

News Center communications included a bank of 60 telephones, some with conferencing capability, computers for word processing, a special nuclear informational network, and several fax machines. Utilizing these systems, the Center maintained reliable and continuous communications with Hood and Somervell Counties, the Texas State EOC in Austin, the Waco Disaster District EOC, the BRC office in Austin, the BRC staging area in Granbury, utility corporate headquarters in Dallas, and FEMA and NRC regional offices.

In addition to having the News Center, as well as the NOSF itself, monitored for radiation exposure, the News Center manager for each shift made a point of advising members of the working press that in the event of a need to evacuate the facility, they would be advised about the procedures necessary to implement such an action.

Facility components, including furnishings, lighting and ventilation plus a supply of word processing computers, copiers and fax machines all provided an excellent working environment in which the Center staff could operate.

Throughout the exercise, utility personnel, working in concert with State public information representatives, consistently exhibited a high degree of professionalism, knowledge and cooperation.

News releases produced by public information participants were timely, accurate and factual. Seven news conferences, all attended by a large

contingent of "real world" electronic and print media representatives, were conducted during the exercise. The conferences were well orchestrated by two utility officials, one representing each shift. Information presented during each conference was first discussed and prioritized at a pre-briefing among the various conference spokespersons.

Rumor control activities at the News Center were directed by a rumor control manager, who exhibited an outstanding degree of dedication and professionalism, along with a staff of 11 persons who responded to more than 300 calls during the exercise. Several of the exercise rumor callers reported being able to overhear exercise information being broadcast over the public address speaker system. Some of this information had not been approved for public release. The rumor control manager recognized this problem and instructed her staff to attempt to prevent announcements being overheard. We recommend that permanent steps be undertaken to minimize the possibilities of callers overhearing announcements of information not yet cleared for public release.

A shift change in the News Center was expeditiously and efficiently demonstrated between 12:30-1:53 p.m. with key staff members from the outgoing staff briefing personnel of the incoming staff.

In summary, FEMA exercise objectives 2, 4, 5, 6, 13, 14, 15 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** Several of the exercise rumor control callers reported being able to overhear public address system announcements while they were on the telephone. Some of this information had not been cleared for public release.

  Recommendation: Undertake appropriate actions to minimize the possibilities of rumor callers overhearing announcements of information not yet cleared for public release.

2.1.2 Local Government Operations

2.1.2.1 Somervell County EOC

The Somervell County EOC is located at the Law Enforcement Center in Glen Rose.

Personnel manning the facility effectively demonstrated the ability to monitor, understand and use Emergency Classification Levels (ECLs) through the implementation of emergency functions and activities corresponding to ECLs as required by the scenario. ECL notifications were received from CPSES over a dedicated ringdown telephone and the ECLs were appropriately posted on the EOC operations chart.

EOC personnel also demonstrated the ability to fully alert, mobilize and activate personnel for both facility and field-based emergency functions. Activation of the EOC was ordered by the County Judge at 8:55 a.m. and was completed an hour later.

The judge and his alternate demonstrated their ability to direct, coordinate and control emergency activities and all the staff shared in the decision-making process. Message handling and distribution was also demonstrated. Protective action decisions and implementation of these decisions were effectively coordinated with all appropriate organizations.

The ability to communicate from the EOC with all appropriate locations, organizations and field personnel was demonstrated. However, during the early stages of the exercise, the Sheriff's dispatcher exhibited some confusion about the protective actions being implemented. The dispatcher did not have a status board available in the communications area.

EOC personnel demonstrated the adequacy of facilities, equipment, displays and other materials to support emergency operations. The EOC operations room is adequate; however, more space could possibly increase its effectiveness. Excellent access control and security procedures were demonstrated by Sheriff's Deputies assigned to the facility.

The ability to continuously monitor and control emergency worker exposure was also adequately demonstrated. Emergency workers deployed to the field from the EOC were issued necessary equipment with instructions on proper use and record keeping procedures. However, the Radiological Defense Officer (RDO) was unaware who could authorize emergency worker exposures in excess of the authorized mission exposure limit.

The staff demonstrated the ability to use PARs and make appropriate decisions and recommendations to the general public in a timely manner.

On four occasions, the EOC staff effectively demonstrated in a timely manner the ability to alert the public within the 10-mile EPZ by sounding sirens (simulated). They also demonstrated the ability to begin dissemination of an instructional message within 15 minutes following a decision by the County Judge. Prescripted messages were used; however, not all of the protective action areas were described in terms of familiar landmarks and boundaries. The public had been advised to refer to maps in previously distributed brochures.

The County representative at the News Center participated in periodic news briefings. The County kept in phone contact with their News Center representative and also faxed him EBS messages. Rumor control was established at the News Center and rumors, if not answered at the EOC, were referred to the News Center.

The ability to make the decision to recommend the use of KI to emergency workers, based on predetermined criteria as well as to distribute and administer it once the decision was made to do so, was adequately demonstrated.

EOC personnel demonstrated the ability and resources necessary to implement appropriate protective actions for the impacted permanent and transient plume EPZ population. During the exercise, the pre-identified special needs population was either sheltered or evacuated as appropriate. Special

transportation was arranged by the County School Superintendent, who served as the transportation coordinator. Evacuation of students at a day care facility, two scout camps and for the transit dependent was coordinated from the EOC. Reception centers were notified of the impending arrival of evacuees.

The objective to demonstrate the ability and resources necessary to implement appropriate protective actions for school children within the plume EPZ was demonstrated as a mini-scenario, out-of-sequence exercise before the EOC had been fully activated.

The staff demonstrated the organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas. DPS troopers and County Sheriff's deputies manned traffic and access control points in the County. Communications with personnel at these points was maintained by the Sheriff's office, which also kept officers informed of changes in protective actions. Traffic controllers responded to simulated impediments on the Brazos River bridge in a timely manner and removed the impediment.

Personnel at the EOC properly demonstrated the ability to identify the need for and call upon the Federal Government and other outside support agencies for assistance. Although Federal assistance was not needed, assistance was requested for simulated equipment through the Disaster District 6A Disaster Committee and the Division of Emergency Management.

The ability to maintain staffing on a continuous 24-hour basis was successfully demonstrated with an actual shift change. Briefing of the incoming staff was excellent.

Coordination of the evacuation of the on-site personnel through Somervell County was made with the Sheriff's office for traffic control assistance.

The Somervell County Judge, the entire EOC staff and all the volunteers are to be commended for the enthusiasm and professionalism displayed throughout the exercise.

In summary, FEMA exercise objectives 1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 18, 19, 20, 26, 34 and 35 were met at this location.

Objectives 32 and 33 were met under Section 2.2.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION:

89-3 **Description:** Two EBS messages failed to list protective action areas in terms of familiar landmarks and boundaries, even though the public was advised to refer to the maps in previously distributed brochures. (NUREG-0654 E.7)

Recommendation: All PAR areas should be described in EBS messages in terms of familiar landmarks and boundaries.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** The RDO was not aware of who could authorize exposure in excess of the authorized exposure limit.

  Recommendation: Provide additional training for the RDO in this area.

- **Description:** During the early stages of the exercise, the Sheriff's dispatcher exhibited some confusion about the protective actions being implemented. The dispatcher did not have a status board available in the communications area.

  Recommendation: A simplified status board should be maintained in the communications area to provide dispatchers with current protective action and ECL information.

2.1.2.1.1 Somervell County School Evacuation Demonstration

This was an out-of-sequence mini-scenario item to demonstrate an evacuation of the Glen Rose school system.

At 7:38 a.m., the Glen Rose Independent School District Superintendent received a message advising evacuation of the schools to Stephenville Reception/Care Center. The superintendent immediately advised the transportation supervisor by two-way radio to prepare the buses and drivers to evacuate the school, and also called the high school principal and advised him to evacuate the schools. The transportation supervisor called in a bus driver (representative of the buses that would be used in an actual evacuation) and dispatched the bus to the high school. The driver was given two packets of material that contained maps and forms to be filled out by the teacher accompanying the students. One form, "No. of Students", was given to the principal and the other form was filled out while en route to the relocation center. This form contained the student's name and registration information to be given to the registration desk.

Upon arrival of the bus at the high school, the principal made a public address announcement for the students to board the bus. The vice principal then made a walk through to verify the school had been evacuated.

The bus departed for the Stephenville Reception/Care Center at 9:15 a.m. with one teacher and two students. At 10:00 a.m., the bus arrived at the reception center.

Due to the out-of-sequence demonstration, the Reception/Care Center was not activated at this time. The bus driver explained that he would contact the School Superintendent by radio and advise they had arrived at the Reception/Care Center. The students would be unloaded and the registration forms given to the registration desk. The buses are two-way radio equipped. The driver contacted the Superintendent by radio from the Reception/Care Center.

In summary, FEMA exercise objectives 2 and 19 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.2.1.2 Squaw Creek Park Evacuation Demonstration

Squaw Creek Park, located adjacent to CPSES, is a recreation area which includes a 3,600-acre lake. Recreational activities at the park include boating, fishing, scuba diving, swimming and camping. Access to the park is controlled by an operations center which can communicate with CPSES via radio and telephone. The operations center also maintains an internal radio system and outside commercial telephone lines. Park visitors must register at the operations center security gate upon entering and exiting the area. The registration process at this location is halted once an alert is declared at the plant.

Throughout the exercise, evacuation alerting procedures at the park were thorough and professionally handled.

Upon declaration of the Site Area Emergency at 9:23 a.m., evacuation procedures were initiated. A siren system encompassing the entire shoreline of the lake can be heard all the way to the park operations center. Additionally, two boats are assigned to run shoreline routes with sirens to alert any boaters of the need for evacuation. By using a DRS 100 device which can emit a beeping sound 25 feet underwater, divers are alerted about the need to evacuate. The device is used at designated spots and at any spot marked with a diving flag or an empty boat. Another siren system alerts inland visitors to the park about evacuation.

During the exercise, alerting at the park was completed by 10:05 a.m. Given the number of people at the park on the day of the exercise, evacuation would have been completed by 10:15 a.m. Officials at the park effectively demonstrated planned procedures.

2.1.2.2 Hood County EOC

The Hood County EOC is located in the Law Enforcement Building in Granbury. There is a 24-hour dispatcher in a communications room to monitor the utility hotline and other backup communication networks.

The Hood County EOC Sheriff's dispatcher received a call at 7:48 a.m. from the utility notifying them of an "unusual event" at the plant. The dispatcher made a call to the Hood County Judge notifying him of the event. The dispatcher began notifying EOC staff, by telephone, with an exceptionally well organized, up-to-date call-down list which was completed in 13 minutes. At 8:30 a.m., the EOC received an Alert notification. The staff began setting up the EOC at 8:30 a.m, hooking up dedicated phone lines and arranging a staff working area. At 8:45 a.m., the Hood County Judge declared the EOC activated and held his first full staff meeting at 8:55 a.m. The EOC received a Site Area Emergency

notification at 10:00 a.m., followed by the General Emergency at 11:00 a.m. All changes in ECLs were received in hard copy promptly by fax from the utility.

The Hood County Judge was effectively in charge of the EOC operations; using his staff in decision making and conducting periodic briefings. It is recommended that organizations represented in the EOC participate in these periodic briefings giving their organization status. The judge utilized the expertise of the liaisons provided by TU and the State Health Department.

Incoming and outgoing messages were logged in and promptly distributed in hard copy to all EOC staff. Staff members effectively utilized a copy of emergency plans and procedures.

The ability to communicate with all appropriate locations, organizations, and field personnel was demonstrated at the Hood County EOC during the exercise. The EOC has the ability to communicate via dedicated telephone lines (with conference capability) with the following organizations: Comanche Peak Control Room, Technical Support Center, Emergency Operations Facility; DPS/Waco; Somervell County; and the WBAP Radio Station (EBS). There are six commercial lines available for staff use as primary and backup lines. There is a dedicated phone line for the facsimile machine. These communication links performed flawlessly. There are two computer systems linking the County EOC to the County Data Bank, the National Crime Information Center and the Texas Crime Information Center. There is a Motorola Modcom Radio System for communication between the EOC, the fire departments of Hood and Somervell Counties, the DPS, and Granbury City Police Department.

The facilities and equipment are more than adequate to support EOC operations. Located within the Law Enforcement Building is an area capable of supporting 24-hour operations with accommodations for sleeping and eating. There is adequate office equipment also available. Access to the facility was controlled by the Hood County Fire Department Rescue Unit volunteers. These volunteers superbly maintained EOC security by monitoring the personnel entering the facility. A sign-in/sign-out sheet was kept to provide documentation. No one was permitted entry without authorization from the judge.

The status boards and necessary maps were prominently displayed facilitating viewing and access. All appropriate information was posted and updated on the status boards. Several improvements could be made to the displays which might enhance their effectiveness: an overlay for plotting the plume on the EPZ map, a larger and more readable EOC operations chart, an ECL display placard showing current level, a board or flip chart showing events and time (timeline chart).

Each emergency worker (EW) entering the plume EPZ was issued two direct-reading dosimeters with different ranges (0-5R and 0-200R) plus a permanent record dosimeter (TLD). All dosimeters were appropriately zeroed and documentation was kept on each EW for exposure control. Proper documentation for the use of the equipment was relayed to each EW. The EWs knew proper procedures regarding readings and exposures. The task of issuing dosimetry and briefing EWs was performed by the Hood County Fire Department volunteer RMs. The RMs performed excellently in monitoring all personnel entering the EOC. Each person was surveyed for contamination by the RM, who used the equipment specified in the plan. One person attempting to enter the EOC was found to be "contaminated"

and was transferred to the Fire Station Emergency Worker Decontamination Center for decontamination.

The ability to make appropriate protective action decisions based on relevant factors was demonstrated by the Hood County Judge and his staff. Protective action recommendations received from the State and utility were reviewed by the EOC staff and used as a basis for decision making. Hood County officials effectively coordinated activities and resources with the Somervell County EOC prior to implementation of protective actions. During the exercise, Hood County formulated and acted upon two separate protective actions which included sheltering in Area 4D and evacuation of Area 4C. The ability to initially alert the public within the 10-mile EPZ and begin dissemination of an instructional message within 15 minutes of the decision was demonstrated at Hood County. A free play message which called for the evacuation of Area 4C in Hood County was interjected by the Controller at 10:19 a.m. This activation was initiated out of sequence with the scenario in order to assure that later recovery and reentry demonstrations would occur.

Initially, the injection of the controller message caused some confusion with the County officials because the message contradicted the status of the ongoing emergency. Just prior to controller interjection, the EOC received from the utility a PAR which conflicted with the controller message. After clarification of this discrepancy by the controller, the Judge made the decision at 10:33 a.m. to evacuate Area 4C, and authorized siren system activation at 10:35 a.m. Concurrently, the judge directed his staff to generate an EBS message and to contact WBAP Radio Station to broadcast the subject message at 10:35 a.m. Thus, the 15-minute A/N requirement was adequately met. Proper procedures were followed to activate the sirens (simulated) and the EBS message was relayed to the radio station. Somervell County EOC was notified of the implementation of the protective action by the Hood County EOC and a hard copy of the EBS message was transmitted to the News Center.

The ability to coordinate the formulation and dissemination of accurate information and instructions to the public in timely fashion after the Alert was demonstrated by the County EOC. At 10:57 a.m., the decision was made, based upon PARs received from the State and utility, to shelter in Area 4D. Sirens were activated by Hood County at 11:02 a.m. and the second EBS message generated by Hood County was transmitted to the EBS station at 11:00 a.m. EBS messages contained all required information, including familiar landmarks and boundaries for the affected planning areas. The EOC was equipped with a radio for monitoring EBS broadcasts.

The ability to brief the media in an accurate, coordinated, and timely manner was performed by the Hood County EOC in the following limited manner: the PIO generated Hood County news releases and transmitted them via the facsimile machine to the News Center at the Comanche Peak EOF. These news releases included information for the public complementing EBS information. Each news release was approved by the judge before dissemination. The News Center is responsible for disseminating all news releases to the public.

Rumor control at the Hood County EOC was demonstrated when the judge received a call concerning a rumor regarding the sirens. He handled this appropriately by passing along the correct information. The judge was very

aware that the rumor control function is mainly a function performed by the News Center and would forward any such calls to them.

At 9:00 a.m., the BRC EOC liaison notified the RO at Hood County EOC recommending the distribution of KI to EWs. Hood County had ample supplies of KI on hand and simulated distribution. At 11:08, the Bureau of Radiation Control recommended that all EWs going into the plume areas ingest their KI per instructions. The judge concurred with the recommendation that Hood County EWs ingest their KI.

At the Hood County EOC, protective actions were implemented for Areas 4C and 4D. There are up-to-date lists of special needs and handicapped persons and information on these people was readily available. Transportation needs were identified and resources secured by the EOC staff. Evacuation of the populace to the reception center in Stephenville was demonstrated through simulation.

Objective 19 was met with a demonstration of the Hood County school evacuation (See Section 2.1.2.2.1).

Traffic control was promptly initiated by the Hood County Sheriff's Department and Granbury City Police representatives at the EOC. Traffic control points were established at the time of the site evacuation in order to facilitate evacuation traffic flow and to prohibit reentry into the facility area. The traffic control point at Highway 51 and South Morgan Street was manned by Granbury City police. The roadblock at Highways 51 and 56 was manned by DPS troopers. Additional roadblocks were established by the County upon evacuation of area 4C at Highways 51 and 210, 210 and 212a, 144 and 213. An additional traffic control point was established at Highway 51 and 221 following the General Emergency announcement. There were no simulated impediments to evacuation.

Hood County EOC is not responsible for requesting federal assistance; this is a function controlled by the State. Hood County relies on the State to provide additional resources and supplies as needed, and would contact the State District office in Waco to request them. During the plume portion of the exercise, Hood County did not require any additional assistance from the State to conduct their emergency response.

Hood County EOC demonstrated the ability to maintain continuous 24-hour staffing by a shift change which occurred between 11:30 a.m. and 12:30 p.m. The second shift was fully staffed and all incoming staff were briefed about the status of the exercise upon arrival. Second shift staff demonstrated appropriate knowledge and capability of their emergency response role and function.

The ability to coordinate the evacuation of on-site personnel was demonstrated by the Hood County EOC by discussions with the utility and the EOC staff. At 9:25 a.m., a call was received from the plant advising of an evacuation of nonessential personnel from the plant site. Hood County's response was limited to the establishment of a road block and a traffic control point (see objective 20).

In summary, FEMA exercise objectives 1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 18, 19, 20, 26, 32, 33, 34, and 35 were met at this location.

Objectives 32 and 33 were met under Section 2.2.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** Some organizations represented at the EOC were not included in the periodic briefings conducted by the judge.

  Recommendation: It is recommended that all organizations represented in the EOC participate in these periodic briefings giving their organization status.

- **Description:** Several improvements should be made to the displays to enhance their effectiveness.

  Recommendation: Suggested improvements would include an overlay for plotting the plume on the EPZ map, a larger and more readable EOC operations chart, an ECL display placard showing current level, and a board or flip chart showing events and time (timeline chart).

2.1.2.2.1 Hood County School Evacuation Demonstration

A well formulated plan exists for guiding the Hood County schools in implementing protective action measures should an emergency occur. The Superintendent of Hood County schools received the message recommending evacuation at 10:35 a.m. He immediately summoned two assistants and directed them to notify the other schools of the impending evacuation. The Superintendent then called his transportation supervisor at 10:41 a.m. and instructed him to summon his bus drivers for the evacuation. He then notified the Granbury Police Department and requested assistance for traffic control, at which time an officer was dispatched to Middle School. At 10:59 a.m., the bus arrived at Middle School where it was met by two simulated students, one teacher and one nurse with simulated medical records. The teacher provided the bus driver a form reflecting the total number of students boarding his bus. If it was necessary to issue KI and/or dosimeters, this would be conducted by the Hood County EOC staff.

Each bus driver was issued a packet containing maps which depicted routes to the relocation center. Officials stated there were sufficient buses to accommodate all students in the school system. Buses were not equipped with radios, but they have been ordered.

Evacuation of the school was demonstrated by the Middle School principal. Four rooms were evacuated and once the entire school was empty, a physical room-by-room search was conducted by school officials.

When total evacuation was completed, the bus departed the Middle School at 11:03 a.m. and arrived at the Cleburne Reception/Care Center at 11:50 a.m. Adequate sheltering was available and administered by the American Red Cross.

In summary, FEMA exercise objectives 2 and 19 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.2.2.2 Hood General Hospital & Ambulance Service

Hood General Hospital (HGH) is the primary care hospital for accident victims resulting from an emergency at CPSES.

Facilities at HGH are ideal for receiving radiation contaminated victims. The decontamination room is a dedicated facility separated from the rest of the hospital by sliding doors. Since it is used for no other purpose, it can be maintained in a high state of readiness; the floor is always covered with herculite and the only items in the room are those that would actually be needed in an emergency. As a result, activation time is very rapid.

When evaluators arrived at 11:00 a.m., all staff which would be participating in the exercise were present and performing their normal duties. So, a callout was not necessary. The hospital received a call at 8:35 a.m. placing them on alert. At 10:20 a.m., the Sheriff's Office called to tell them to "clear disaster drill and ER area". Procedures contained in the Hood County Disaster Plan which pertain to HGH state that the Hospital Director should receive calls from a "recognized source" (presumably at the Hood County EOC) at each change in ECL. The administrator received no calls other than the two noted above. It is possible that the calls were received at some other point in the hospital, but this could not be verified.

At 12:05 p.m., the hospital emergency room (ER) received notification from the plant that an accident victim needed to be transported to the hospital. The extent of injuries was unknown. The ambulance driver and assistant departed for the plant at 12:06 p.m. The ambulance was able to communicate with the hospital and CPSES via cellular phone or radio. No communications problems or delays were observed.

The decon staff was using procedures developed by Radiation Management Consultants, Inc. (RMC), dated March, 1989. There are a total of 18 ER doctors at HGH. Of these, eight had participated in the most recent in-service training regarding handling of radiation accident victims. This training was provided by RMC. In addition, two doctors had participated in off-site training courses provided by RMC. All of the ambulance staff had received in-service training as well.

At 12:18 p.m., an injury update was received by the hospital. It indicated that the patient had possible severe head injuries. Anticipating that the head injuries might be beyond the ability of HGH to treat, the ER Director alerted Harris Hospital and Careflight that the patient might need to be transported for more extensive treatment.

At 12:36 p.m., a health physicist (HP) arrived from the plant and began to prepare for arrival of the patient. He used a check source to ensure proper

functioning of the survey meters. He also recorded and announced the background radiation level. Survey meters in use were: 1) one Eberline ion chamber (used to alert staff of any high level radiation hazards in the room); 2) one Ludlum model 177 survey meter; and, 3) two Bicron portable friskers. All units had been calibrated within the last three months.

At the hospital, dosimetry was distributed to the decon room personnel by the buffer zone assistant. The assistant was careful to record the dosimeter ID numbers and match them with the social security number of the staff member to whom they were assigned. The assistant did not zero the units or record the initial readings on the dosimetry log sheet. When asked about this by an evaluator, she indicated that this job was done by the utility during their routine checks of the supply cabinet. The dosimetry distributed consisted of a single 0 to 200 mR pencil dosimeter and a TLD badge.

The ambulance crew did not know the authorized exposure levels but were supposed to ask at the plant. The same was true for authorization to incur a dose in excess of authorized limits. The HP from the plant stated that authorized exposure for this mission was 50 mR. The HP collected dosimetry equipment for the ambulance crew and recorded readings on log sheets. The dosimetry packets made up for the ambulance crew contained only one exposure record capable of holding 12 people. It is recommended that each staff member have their own exposure record to ensure that all exposure records are properly recorded in case the crew gets split up.

The patient arrived at the hospital at 12:58 p.m. The entrance to the decon room is separate from the regular ER entrance and was roped off and well marked with radiation danger signs. The ramp to the decon room was covered with herculite and taped. An HP from the plant performed the following functions to ensure contamination control at the entrance to the decon room:

- Took area smears on ramp
- Checked his feet
- Checked patient area of ambulance and all areas touched by patient and crew.

After the gurney on which the patient had been transferred to the decon room had been brought back out, it was thoroughly monitored. The victim's shoes read 150 CPM and were rolled up with the ramp cover. The ambulance crew was thoroughly monitored before and after they removed their anti-contamination clothing. Good technique was demonstrated by the plant HP. The crew checked clean and was allowed to place the gurney back in the ambulance. The crew was dismissed back to the EMS area. The HP monitored the ambulance including wheels, floor, and air filter. The HP declared the area clean. He then reported to the decon room to assist the other HP, who was also from the CPSES.

The transfer of the patient from the ambulance to the decon room was very smooth. The decon staff consisted of; three persons who actually performed the decontamination function (ER director, head nurse and another nurse), an HP from the utility and a buffer zone assistant who recorded the vital signs as they were reported by the decon team.

Once inside the decon room, the patient was transferred to the decon gurney. Extreme care was used and the transfer was accomplished with minimal

discomfort to the patient. The HP performed a total body survey of the patient and found contamination on a wound on the right arm (400 cpm) right knee (200 cpm) and on a wound on the left side of the forehead (150 counts per minute). Fluid samples were taken and prepared for analysis by a third party. Nasal, ear and mouth swabs were taken to check for internal contamination.

Dressings were removed from the wounds and the decontamination process began. Water wash of contaminated areas was followed by monitoring of these areas until all contamination was removed. At one point, the decon water container overflowed onto the floor. The staff realized the potential for spread of contamination and were careful to wipe up spilled water. All staff then changed their outer layer gloves.

Once the patient had been fully decontaminated, he was transferred to another gurney. The gurney was monitored and found to be clean. The gurney was then moved into the clean portion of the ER. The patient was admitted to the hospital and sent to X-Ray for a full cervical series and then on to ICU.

After the patient had been moved from the decon area, the staff removed Anti-C clothing and were monitored. When found to be clean, they were allowed into the clean portion of the ER.

The HP collected dosimeters from the decon staff and recorded the readings on the log sheets.

In summary, FEMA exercise objectives 2, 4, 6, 23 and 24 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION:

89-4 **Description:** Each hospital decon crew member failed to zero or record initial dosimeter readings. (NUREG-0654 K.3.a, K.3.b)

Recommendation: Ensure that dosimeters are correctly zeroed or initial readings are recorded.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** The hospital REA received no calls after 10:35 a.m. regarding the exercise situation, except the calls related to the patient. Calls relating to plant conditions or ECLs went to the wrong area of the hospital and were not relayed to the hospital administrator. County procedures require that a "recognized source", presumably the County EOC, notify the hospital of each change in ECLs.

  Recommendation: Designate one hospital office, with a unique phone number, to receive all calls, and insure that incoming information is passed to the REA.

- **Description:** Ambulance dosimetry kits contained only one dosimetry record document capable of recording the readings of 12 persons.

  Recommendation: Issue individual record documents so each emergency worker can record his/her own dose readings.

2.1.2.3 Stephenville Reception/Care Center

The County Judge of Somervell County notified the Mayor of Stephenville of the need to activate the Reception/Care Center. The mayor, in turn, called the reception center manager and staffing began at 10:50 a.m. The first staff arrived at 11:07 a.m. and the reception center was fully staffed at 11:30 a.m. The Red Cross handles the congregate care, with the City of Stephenville handling the registration, monitoring and decontamination.

The Stephenville R/C center & M/D station is located in a recreation hall/gymnasium which is in a city park. A large covered pavilion is also located just east of the recreation hall and provides a very good assembly and waiting area for the evacuees until they can be monitored, decontaminated (if required), registered and processed. Access to the park can be easily controlled.

Evacuees arriving at the Stephenville R/C Center & M/D station are directed by Stephenville police officers to the vehicle monitoring station. The Stephenville Fire Department will then monitor the vehicles for contamination. The contaminated vehicles are parked in a designated area, to be decontaminated later. A fire department pumper truck is available to wash down the contaminated vehicles. The clean vehicles are sent to a designated parking area near the recreation hall. There is adequate parking for both contaminated and non-contaminated vehicles.

Evacuees are then directed to the personnel monitoring station. Clean personnel are directed to the registration desk where their registration data is entered into a computer. The evacuee is then directed to the Red Cross desk where vouchers are issued for food and housing at local restaurants and motels. The contaminated evacuees would be directed to either the men's or ladies' shower facilities for decontamination. After showering, the personnel are monitored again to ensure they are free of contamination. The decontaminated personnel would then be issued temporary clothing and directed to the registration desk.

With a few exceptions, the Stephenville R/C Center & M/D station is a very good facility to receive and register evacuees and then send them to local motels and restaurants for care.

The communications for the reception center consisted of three telephones, a facsimile machine, and police and fire department radios. This provided adequate communications for the reception center staff. A complete shift change was conducted at 1:00 p.m. by all staff, including the State BRC support personnel at the R/C Center.

At 1:40 p.m., a contaminated vehicle arrived at the monitoring checkpoint and was monitored by the fire department. Upon being advised of a reading above background level by the controller, the monitor directed the driver to park his car in the contaminated parking area and then for the driver to proceed to the personnel monitoring area to be monitored. The contaminated vehicle will be washed down later. A 1,000 gallon fire truck was available to wash down the vehicles. The washdown and re-monitor procedure was discussed with the fireman and found to be sufficient for decontamination of the vehicles.

Personnel monitoring takes place outside the east entrance to the recreation hall. A clean person would proceed directly to the registration desk. A contaminated person would be directed outside the hall, via roped off walkways, to the men's or women's shower facilities for decontamination by showering. If monitored clean after the shower, the person would be directed to the registration desk. If still contaminated, the person would be directed back to the shower. The women's shower facility works very well, with a door at each end of the facility for entrance from the outside and exit into the recreation hall without crossing a contaminated area. The men's shower facility has a problem because the entrance and exit are at one end of the facility. This creates a problem with the person having to walk across the "dirty" area after being decontaminated. The procedures for decontamination in the men's shower room will require additional training and/or another door into the men's shower room.

All the emergency workers were issued a high and low range self reading dosimeter plus a TLD. Some of the workers were not aware of the maximum exposure level they would be allowed.

A total of 40 local workers have received radiological monitoring training, so there are more than an adequate number of persons available for radiological monitoring. Additional monitoring equipment will be required to rapidly monitor vehicles and evacuees. Monitoring of several evacuees was demonstrated and was observed to be very thorough. The disposable gloves stored at the R/C Center were too small. Several of the gloves split when the monitors tried to put them on.

In summary, FEMA exercise objectives 2, 4, 6, 21, 22, 25 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION:

89-5 **Description:** Local emergency workers are permitted, by their procedures, to acquire a maximum (non-life threatening situation) exposure of 25 Rem. None of the local personnel questioned could describe the meaning of this number related to a reading on their monitoring equipment. State emergency workers are required to report when their exposures reach 200 mR, and be removed from the area when their exposure reaches 1 R. This differential, and the lack of understanding of the meaning of the local exposure limit, may create considerable confusion and, possible resentments among those permitted the larger exposures. (NUREG-0654 J.12)

Recommendation: Training for local emergency workers should be expanded to include information on the meaning of the allowable radiation dosages and the rationale for the difference between the State and local allowances, especially for personnel operating outside the plume exposure EPZ.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** Monitoring of arriving evacuees, at the entrance door to the R/C Center, could create a "choke-point" that would restrict access to the center, even if multiple monitoring points were established.

  Recommendation: The entire "flow" of evacuees, from their vehicles, through personnel monitoring, and into the R/C Center needs to be reviewed, and more workable procedures established.

- **Description:** Management of the flow through the male decontamination area in the R/C Center is very complex. Since decontaminated men must exit the area through the same narrow door by which they entered, there is a possibility of recontamination of their feet by stepping on contamination in the entranceway.

  Recommendation: Careful planning, and training of decontamination personnel is required to minimize this potential problem. Opening a new exit from the men's room decontamination area would be a permanent solution to the problem.

- **Description:** The disposable gloves available at the R/C Center were too small and, in some cases, split when personnel tried to put them on.

  Recommendation: Provide gloves in a range of sizes for use at the Reception/Care-Monitoring/Decontamination Center.

2.1.2.4 Harris Hospital & Stephenville FD Ambulance

The Harris Hospital in Stephenville is a well-equipped and well-staffed facility.

At 10:25 a.m., the Somervell County Sheriff's Department notified the hospital that 175-180 evacuees from Somervell County were being relocated to Stephenville and that the hospital would be receiving patients from this group.

Hospital emergency room personnel immediately began preparing for receipt of injured contaminated individuals. Personnel immediately proceeded to dress out in protective clothing and the treatment area was appropriately prepared and marked within 16 minutes of the notification.

At 1:05 p.m., the Stephenville Fire Department received a request for transportation of an injured, contaminated patient. An ambulance was dispatched and arrived on the scene 10 minutes later.

Mobilization was effectively demonstrated by both the hospital and fire department staffs.

Effective communication was adequately demonstrated between hospital personnel, ambulance crew and the fire department dispatcher. Although radio communication between the ambulance and the hospital was breaking up, all messages were transmitted, on a different frequency, through the fire department dispatcher, via telephone. Information regarding the patient's contamination level, injury, vital signs and estimated time of arrival at the hospital were provided in this manner. Mis-communication occurred between Somervell County and the hospital. When the County called the hospital to advise that a large number of persons were being evacuated from the Glen Rose area, the hospital understood the message to mean that a large number of patients were being sent to their facility. No attempt was made by hospital personnel to verify or clarify this message by a call back to Somervell County.

Emergency room personnel were equipped with designated direct-reading dosimeters and TLD badges and were well versed in exposure and contamination control. Dosimeters were properly zeroed and the survey meter being used had been recently calibrated. The two State radiology officials were appropriately involved in exposure cont[illegible]forts as well. Also, ambulance personnel were issued self-reading dosi[illegible] which were properly zeroed.

Ambulance personn[illegible]e knowledgeable in the use of direct reading dosimeters and portabl[illegible]ey instruments. Survey equipment was recently calibrated and equipp[illegible] earphones for efficient surveying. Personnel were also aware of the p[illegible]al for cross-contamination during transfer of the patient at the hospital and took necessary precautions. Hospital security was available and demonstrated until the ambulance and crew were monitored and cleared.

There was an excellent demonstration involving the adequacy of medical facilities, equipment, procedures and personnel to effectively treat injured, contaminated patients. Blood and tissue samples were taken and appropriately marked. Gloves and gowns were changed as needed to prevent cross-contamination. Contamination levels were documented by emergency room personnel in the buffer zone. Decontamination procedures were demonstrated in a proper manner.

Two areas which could not be decontaminated (according to the scenario), were appropriately isolated with gloves and bandages. Exit procedures were also well demonstrated. The State radiology representative and the emergency room physician both provided excellent leadership in fulfilling their assigned roles. All staff participating in the exercise executed their responsibilities in a thorough and knowledgeable manner.

In summary, FEMA exercise objectives 2, 4, 6, 22, 24 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.1.2.5 Cleburne Reception/Care Center

The Cleburne Reception/Care Center (and Monitoring/Decontamination Station) at the Cleburne High School girls' gym was staffed and ready to receive evacuees by 11:10 a.m., although the actual calls and contacts made to mobilize the staff were not observed. Adequate staff were present from the police department (traffic control and security), fire department (monitoring and decontamination), water department (monitoring and decontamination), Red Cross (registration and congregate care), ambulance crew (medical support), and animal control (to care for evacuees' pets).

Communications systems available at the center included a cellular telephone and the police department's mobile command van, equipped with a self-contained power supply and radio contact to 16 agencies. Also, the Red Cross registration desk was equipped with a facsimile machine. The facility had communication links to all EOCs, hospitals and other participating agencies. No problems or delays in communications were observed during the exercise.

All emergency workers were provided two direct-reading dosimeters, reading maximum exposures of 5 R and 200 R, and a TLD. Proper instructions were given to each worker to read and record any exposure detected.

The monitoring/decontamination station had enough capacity to accommodate the number of evacuees and emergency workers expected. There was ample parking space at the facility for both clean and contaminated vehicles in separate lots. Security personnel, signs, and barriers were used to separate clean and contaminated personnel and equipment.

For this exercise, two vehicle monitors and six personnel monitors were mobilized for each shift; rosters indicated the availability of more monitors. Acceptable monitoring procedures for both personnel and vehicles were demonstrated. Monitors wore gloves and used survey meters with plastic bags over the probes. They monitored all areas of vehicles or persons thoroughly. However, some inconsistency was observed in the speed at which persons were monitored; times ranged from 1 minute 30 seconds to 6 minutes 40 seconds for clean individuals, and longer for contaminated individuals. Clean individuals were given a clearance tag and sent to the registration area. For contaminated individuals or vehicles, records were kept of the levels and location of contamination.

Decontamination procedures were in accord with the plan, using men's and women's shower/locker rooms equipped with instructional placards, floor coverings, bags for contaminated clothing and waste, soap, shampoo, cotton swabs, and towels for cleaning. Floor coverings were used between the initial monitoring area and the shower/locker rooms, and within the locker rooms, but not in the initial monitoring area itself. Procedures were reportedly in place, but were not demonstrated during the exercise, for monitoring and control of

ground contamination in the initial personnel monitoring area after contaminated individuals had passed through.

Correct contamination control procedures were generally followed in the locker rooms. However, one individual, after being found to be contaminated, placed his personal belongings in a plastic bag which he retained during decontamination. The belongings were not monitored and could have been contaminated. Disposable coveralls, booties, and vouchers for additional clothing were available for individuals needing a change of clothing. Personnel knew and followed correct procedures for a contaminated individual who had to be referred to a medical facility for further decontamination.

In the reception area of the facility, a security guard checked evacuees for their monitoring clearance tags. Evacuees were registered by the Red Cross. Registration information and data on their subsequent location was kept on both paper forms and computer file. Vouchers were available for food at local restaurants, lodging at local motels, or other special needs. Preparations had been made to accommodate an expected number of about 1500 evacuees. Should greater numbers arrive, the concept of operations would support using additional motels for evacuee lodging. The reception center and at least some of the motel and restaurant facilities could accommodate handicapped evacuees. The reception center had a nursing station and an ambulance on hand for medical care. Emergency service personnel and communications were on hand to ensure public safety. A PIO was present to provide current information on the incident.

All organizations demonstrated a shift change during the exercise. The second shift was fully staffed and appropriately briefed on past and current activities by the team leader of each group. The second shift staff demonstrated fully their understanding and knowledge of emergency response roles and functions. Twenty-four hour staffing capability was demonstrated.

In summary, FEMA exercise objectives 2, 4, 6, 21, 22. 25 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION:

89-6 **Description:** A contaminated person was instructed to seal his personal belongings in a bag which he retained after showering and being found clean. The personal belongings, which were not monitored, could still have been contaminated inside the bag. (NUREG-0654 J.12)

Recommendation: Review the procedures for contamination control of personal belongings, and ensure that all monitoring personnel receive continued training and practice in correct procedures.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** Some inconsistency was observed in the speed at which persons were monitored; times ranged from 1 minute 30 seconds to 6 minutes 40 seconds for clean individuals, and longer for contaminated individuals.

  Recommendation: Continued practice and refresher training should be given to develop consistency in appropriate monitoring speeds.

- **Description:** Floor coverings were not used in the initial monitoring area. Procedures were not demonstrated for monitoring and control of ground contamination in that area after contaminated individuals had passed through.

  Recommendation: Consider covering the initial monitoring area for ease of cleanup.

2.1.2.6 Walls Regional Hospital, Cleburne and Glen Rose VFD Ambulance Service

Both the staff of Walls Regional Hospital and the staff of the Glen Rose VFD Ambulance Service were well equipped, professionally trained and generally knowledgeable regarding the demonstration of their duties throughout this exercise.

At 11:00 a.m., the Somervell County Sheriff's office alerted the VFD Ambulance Service to be on standby. Three ambulance crew members arrived and were issued dosimetry kits. The ambulance crew did know their radiation exposure limits. At 1:00 p.m., the Sheriff's office called the ambulance service to request them to respond to an accident on Highway 144 involving a possible injured/contaminated patient. The hospital emergency department supervisor was also notified to prepare the area for the possible reception of an injured/contaminated patient.

At about 1:10 p.m., the ambulance service crew arrived at the accident site, surveyed the area and the patient for contamination and administered medical care. The patient was immediately and appropriately wrapped to prevent the spread of any contamination. The ambulance crew advised the hospital at 1:25 p.m. that they were en route with the patient, who, besides being injured, had been verified as being contaminated. En route to the hospital, vital signs and contamination levels of the patient were transmitted to the hospital. Excellent communication was demonstrated with each transmittal.

Meanwhile, at the hospital, the receiving staff was donning protective clothing. Each person was issued a 0-200 mR dosimeter and a film badge.

The ambulance arrived at the hospital at 1:45 p.m. and both the ambulance crew and hospital receiving staff demonstrated an appropriate transfer of the patient from the ambulance stretcher to a hospital stretcher. The ambulance and crew were then properly monitored by hospital health physicists. No contamination was indicated and the ambulance and its crew were released.

Handling and care of the patient were demonstrated in an effective and professional manner by the hospital staff and an excellent interface between the Health Physicist and the medical team was observed. A physician effectively controlled the treatment and decontamination procedures as did the buffer zone nurse in controlling all access to and from the treatment area.

Upon exiting the treatment area, each member was monitored by health physicists and instructed in the proper manner to disrobe and exit from the step-off pad. The buffer zone nurse recorded the final reading on each dosimeter as staff members left the treatment area.

In summary, FEMA exercise objectives 2, 4, 6, 23, 24 and 34 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** Ambulance service personnel were not aware of their radiation exposure limits.

  Recommendation: Assure that personnel are properly trained to be aware of their radiation exposure limits.

2.2 RECOVERY/REENTRY/RELOCATION TABLETOP

A recovery, reentry and relocation tabletop was held following the plume EPZ portion of the Comanche Peak Steam Electric Station (CPSES) full-scale graded qualifying exercise. The tabletop was held at the CPSES EOF and consisted of the following agencies and participants:

FEMA, Region VI
State of Texas Division of Emergency Management
State of Texas Bureau of Radiation Control
TU Electric/Comanche Peak Steam Electric Station
County Judge from Hood County
County Judge from Somervell County
Mayor of Glen Rose
Representative from Stephenville
Representative from Cleburne
Representative from the American Red Cross
Representative from American Nuclear Insurers

Overall recovery operations require the cooperative involvement of Federal, State, local and private agencies and organizations. The direction and control of the recovery effort was the responsibility of the specially convened committee made up of the above listed representatives.

Recovery begins when an accident at a nuclear plant is stabilized, the release has terminated and other required conditions have been met. Recovery may consist of four separate phases, several of which may be in progress at the

same time. Even within a specific phase, action items may be undertaken simultaneously or otherwise modified to meet the situation. The four phases as defined by the State of Texas are reentry, restoration, return and relocation.

At the beginning of the exercise, the participants were provided with information such as plant status, areas evacuated, location of evacuees and information concerning where and what kind of radiation samples had been taken by field monitoring teams. They were also given the preliminary findings of the mobile laboratory based on an analysis of the aforementioned samples. A footprint of the impacted area was being determined by the State Bureau of Radiation Control.

Considerable discussion was generated around the table from the local judges, the State, FEMA and the utility. They examined each of the four phases and made inputs as to what each would be doing and what additional assistance would be needed as the exercise progressed.

The issue of compensation to the residents of the effected area was well explained, including the role of the legal staff at the plant, the American Nuclear Insurers and the Price-Anderson accountant.

During the course of the exercise, the participants gave detailed attention to the following:

1. Decision making
2. Medical support
3. Physical relocation
4. Accident assessment
5. Agricultural products handling
6. Animal husbandry
7. Handling of displaced persons
8. Alternate highway routes
9. Communications problems

The following impressions were expressed by the Federal evaluators:

1. The high level of commitment on the part of the utility, i.e., offering space at the plant for a Federal Response Center and a News Center, as well as the hiring of contractors for the clean up.

2. The strong emphasis that was placed on the importance of public information.

3. The thoughtful discussions of long range issues such as:

   - moving farm animals
   - soil removal
   - security for evacuated areas
   - psychological effects on residents
   - clean up issues such as washing of buildings, applying fixatives,etc.

4. The significant level of participation, i.e. County Judges, Mayor, TU Vice President, State DEM, State BRC, FEMA, representatives from Stephenville and Cleburne and the American Nuclear Insurers.

5. The difficulty of compressing a possible two-year experience into a two-hour tabletop exercise.

6. The realization by participants that many situations would have to be considered on a case-by-case basis.

7. Many problems cannot be ascertained until they are actually encountered.

8. The tabletop exercise was an excellent training experience for all participants.

In summary, FEMA exercise objectives 32 and 33 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.3 EXERCISE DAY 2 - INGESTION PATHWAY ACTIVITIES

2.3.1 State EOC

During the ingestion exposure pathway portion of the exercise, activities at the State EOC consisted primarily of coordination of state agency support of the field teams. The State Department of Health coordinated with their representatives in the mobile laboratory. Health Department Bureaus represented at the BRC Staging Area included: Milk and Dairy, Water and Hygiene, Food and Drug, and Veterinarian Services. In addition, Parks and Wildlife was represented in the EOC. All information and coordination requested by the field teams was logged and responded to by the EOC staff in a timely manner. Several cognizant state agencies which were not physically present in the EOC were contacted by telephone and requested to provide information for use by the field teams.

In summary, the state EOC personnel and council members performed adequately. The staff clearly demonstrated their ability to satisfy those portions of objectives 4 and 30 that were within the purview of the State EOC.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

2.3.2 BRC Staging Area

The staff manning the BRC Staging Area in Granbury demonstrated their ingestion pathway exercise objectives professionally and in a timely manner.

Written procedures were followed and a sampling plan was initiated. Decisions were made based upon known releases, equivalent dose projections and laboratory analyses of samples collected. Samples included milk, water, vegetation and soil. Both preventive and emergency protective actions were formulated and implemented.

Public information activities, including the writing and distribution of press releases developed from information provided by State field monitoring teams, were adequately handled by two BRC representatives.

Overall, personnel manning the facility demonstrated a thorough knowledge and awareness of the significance of radiological data, procedures to determine if PAGs were exceeded and the appropriate ingestion pathway recommended actions. All organizational expertise was represented to sustain a long term effort.

Regarding equipment, it is recommended that the protective action status display board be enlarged or modified to accommodate the numerous entries which need to be posted during the ingestion pathway phase of an emergency.

FEMA exercise objectives Nos. 29 and 30 assigned to the BRC Staging Area for the ingestion pathway phase were met. The State and the utility are in the process of developing a report involving total population dose exposure which, when completed, will adequately meet objective no. 31.

The objective 31 report was received by FEMA Region VI on September 13, 1989.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** The protective action status display board is not adequate to handle the volume of status entries which must be posted.

  Recommendation: Use of acetate overlays or flip charts.

2.3.3 BRC Field Teams

2.3.3.1 Sample Collection Team 1

This sample collection team was made up of a Texas Department of Health, Milk and Dairy Products Division Regional Inspector and a BRC Health Physicist. For training purposes, a new Health Physicist assigned to the Arlington, Texas office of the Texas Department of Health accompanied the collection team. The

team leader directed this team to a dairy that actually lay outside of the area in which there probably would have been deposition; this was considered acceptable since the main thrust was the ability to locate the dairy in question and to properly collect samples. The team had no problem in finding the dairy. Radiation levels were continuously monitored from the staging area to the dairy. Prior to departing the vehicle, members donned shoe covers and gloves. A radiation survey was conducted at waist height; no ground deposition survey was conducted since there was nothing to indicate that a deposition survey was necessary. The milk had already been collected that morning, but the inspector discussed the appropriate technique for milk sample collection. The inspector took a sample of stored feed for analysis. In addition, he concluded that pasture grazing was the primary feed route and if this had been in the plume pathway, he knew the appropriate milk gathering company and would have made contact with that company.

The inspector found an open stock watering tank which lay beyond an electric fence; he was instructed to simulate the sample collection by drawing water from a tap. Soil and pasture vegetation samples were collected near, but not across the electric fence. All samples were collected in accordance with BRC procedures. Following sample collection, the BRC Health Physicist double bagged the samples to prevent cross contamination. The dairy inspector should have been involved in this procedure by holding the clean outer bag open to receive the sample. The samples were properly labeled indicating sample location, sample type, sample area or volume, and collection date.

In summary, FEMA exercise objective 27 was met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** The dairy inspector field team member did not adequately assist the BRC team member during the sample collection and bagging process.

  Recommendation: Provide additional training, to all team members, on sample collection/bagging assistance techniques.

2.3.3.2 Sample Collection Team 2

Ingestion sample collection team 2 was comprised of one BRC Health Physicist and a Department of Health Dairy Sanitarian. The field team leader directed team 2 to go to the Montye Hankins dairy to demonstrate sample collection. The dairy sanitarian had no difficulty in locating the dairy. The BRC team member monitored radiation levels en route to the dairy. Prior to getting out of their vehicles, the team members donned shoe covers and gloves. The BRC team member conducted radiation surveys at a height of one meter. No ground deposition surveys were conducted. The dairy sanitarian demonstrated the appropriate sample collection techniques while collecting milk samples from each bulk milk holding tank. The dairy sanitarian determined that the dairy cows

received most of their feed from pasture grazing and he also determined that the milk in the bulk tanks was less than 24 hours old.

The BRC team member collected a water sample from an open stock watering tank near the dairy barn. A soil and a pasture vegetation sample were collected from the area where the dairy cows were grazing. All samples were collected in accordance with BRC procedures. Following sample collection, the BRC team member double bagged the samples to prevent cross contamination. The dairy sanitarian should have been involved in this procedure, e.g., holding the clean outer bag open to receive the sample. The samples were labeled, indicating sample location, sample type, and collection date.

In summary, FEMA exercise objective 27 was met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** The dairy sanitarian field team member did not adequately assist the BRC team member during the sample collection and bagging process.

  Recommendation: Provide additional training, to all team members, on sample collection/bagging assistance techniques.

2.3.3.3 Sample Collection Team #3

The field sampling team was provided with direct-reading dosimeters (0-200 mR and 0-20 R) and a permanent record dosimeter (TLD). The dosimeters were zeroed and initial readings were recorded on an exposure record form. The BRC team member was very knowledgeable of radiological exposure control procedures.

The State field sampling team demonstrated the use of equipment and procedures for collection and transport of samples of vegetation, food crops, milk, water and animal feeds. Field sampling team 3 was made up of Health Department personnel (e.g., one BRC and one Milk and Dairy person) who were sent from the staging area to two dairy farms. The farms were located north of Meridian and north of Cransfills Gap where milk, surface water, animal feed, vegetation, and soil samples were to be collected. The team was provided with sampling equipment; however, some equipment described in procedure 10, page 44, for collection of milk samples, such as a funnel and special plastic gallon container, was not available.

The other samples collected were in accordance with BRC procedures. The procedures do not include references to marking the sample collection location so that the spot can be located later for additional sampling, if required. It is recommended that the BRC procedures be revised to require the team to monitor their environment (simply good health physics practice), and to require some form of marking of sample collection locations.

Excellent contamination/cross-contamination procedures were followed by the team. Samples were carefully bagged and sampling equipment (e.g., trowel) was decontaminated after each sample was taken. The sampling labels were completed and placed on the samples, which were properly stored in the rear of the vehicle.

In summary, FEMA exercise objective 27 was met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION:

89-7 **Description:** Equipment (e.g., funnel, special plastic container) for milk sampling, as described in Procedure 10, Attachment 1, was not available for field sampling team 3. (NUREG-0654 I.8)

Recommendation: All equipment necessary for conducting milk sampling should be provided to field sampling teams.

AREAS RECOMMENDED FOR IMPROVEMENT:

- **Description:** BRC procedures do not require marking of sample collection locations for later additional sampling.

  Recommendation: Revise BRC procedures to require marking of] sample collection locations.

2.3.4 BRC Mobile Laboratory

During the ingestion pathway phase of the exercise, over 30 environmental samples, including water, milk, soil and vegetation, were received and processed at the mobile laboratory.

At one point, a controller injected a sample, reading in excess of 0.1 mR/hr., which is the point at which a sample is sent to another lab for analysis. The lab staff demonstrated this procedure adequately. The mobile lab staff performed in a dedicated and professional manner.

In summary, FEMA exercise objectives 4 and 28 were met at this location.

DEFICIENCIES: None.

AREAS REQUIRING CORRECTIVE ACTION: None.

AREAS RECOMMENDED FOR IMPROVEMENT: None.

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

Individual exercise site narratives, in Section 2 of this report, have provided listings of Deficiencies and/or Areas Requiring Corrective Action, with corrective recommendations, noted during the July 25-26, 1989 exercise. The evaluations were based on applicable planning standards and evaluation criteria set forth in Section II of NUREG-0654/FEMA REP-1, Rev. 1 (November 1980), and pre-approved FEMA exercise objectives, and have been approved by the RAC Chairman, FEMA Region VI.

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 and/or Corrective Actions noted in the exercise will be corrected, and that such corrections will be incorporated into emergency response plans as appropriate.

FEMA Region VI will request that the State of Texas, Hood and Somervell Counties, submit measures that they will, or intend to, take to correct those problems noted in this report. If corrective actions are necessary, FEMA Region VI will request that a detailed plan, including dates for scheduling and implementing the corrective actions be provided, if such actions cannot be instituted immediately.

On September 6, 1989, a successful Remedial Drill was held to demonstrate that corrective actions had been accomplished to remedy the communications Deficiency (89-1) and the overall Area Requiring Corrective Action on field team communications (ARCA 89-1) identified in the exercise.

Table one provides, by exercise operating location or activity group, a consolidated summary of all Deficiencies and/or Areas Requiring Corrective Actions. As previously noted, there was one Deficiency identified during the July 25-26, 1989 exercise which was corrected in a Remedial Drill conducted September 6, 1989. The Table is designed so that space is available to add: (1) the proposed corrective actions that will be undertaken by the State or local jurisdiction, and (2) the projected, and actual dates of completion of these actions.

TABLE 1 Remedial Actions for the 1989 Comanche Peak Steam Electric Station Exercise

Deficiencies and/or Areas Requiring Corrective Action -- with FEMA/RAC Recommendations for Correction	FEMA Exercise Objective No(s)	NUREG 0654 Reference	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy	Actual Completion Date
DEFICIENCIES						
BRC OPERATIONS AT THE EOF AND STATE CONTAMINATION CONTROL TEAMS						
89-1 Description: The Contamination Control Teams, located at the Traffic/Access Control Points, were unable to reliably and continuously communicate, using either primary or backup systems, with any other exercise activity site. Recommendation: Determine the actual cause of the communication problems, take appropriate remedial actions and redemonstrate communications, between the EOF and the State Contamination Control Teams, within 120 days of the exercise date. Note: The Remedial Drill, held on September 6, 1989, following the installation of a new, higher antenna, and acquisition of more powerful field radio units, demonstrated that this problem had been resolved, and that a reliable communications capability now exists. Thus, Objective #4 regarding communications is now met.	4	H.2 & H.3			Corrective action for this DEFICIENCY was successfully demonstrated at a September 6, 1989 Remedial Drill throughout the 10-mile EPZ	9/6/89

TABLE 1 (Cont'd)

Deficiencies and/or Areas Requiring Corrective Action -- with FEMA/RAC Recommendations for Correction	FEMA Exercise Objective No(s)	NUREG 0654 Reference	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy	Actual Completion Date
AREAS REQUIRING CORRECTIVE ACTION						
BRC OPERATIONS AT THE EOF AND STATE FIELD MONITORING TEAMS						
89-1 Description: Communications between BRC Field Team Control, at the EOF, and the BRC Field Monitoring Teams, using the BRC frequencies in the DPS vehicle radio, was sporadic. The field teams could, usually, receive transmission but were often unable to make contact with their control. Recommendation: Determine the root cause of the sporadic communications, between BRC Field Team Control and the field teams, on the BRC frequencies, and initiate appropriate actions to ensure reliable, continuous, field team communications.	4	H.2 & H.3			Corrective action for this ARCA was demonstrated during the September 6, 1989 Remedial Drill	9/6/89

TABLE 1 (Cont'd)

Deficiencies and/or Areas Requiring Corrective Action -- with FEMA/RAC Recommendations for Correction	FEMA Exercise Objective No(s)	NUREG 0654 Reference	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy	Actual Completion Date
AREAS REQUIRING CORRECTION ACTION (CONT'D) BRC OPERATIONS AT THE CPSES EOF (CONT'D) NOTE: A plan-of-action, containing both immediate and long term initiatives, designed to correct this issue, has been developed through joint efforts of the BRC and the utility. This plan has been reviewed and approved by FEMA Region VI and will be instituted by the appropriate entities. The Remedial Drill, held on September 6, 1989, also demonstrated that a reliable, continuous communications capability now exists between the EOF and the State Field Monitoring Teams.						

TABLE 1 (Cont'd)

Deficiencies and/or Areas Requiring Corrective Action -- with FEMA/RAC Recommendations for Correction	FEMA Exercise Objective No(s)	NUREG 0654 Reference	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy	Actual Completion Date
AREAS REQUIRING CORRECTIVE ACTION (CONT'D)						
89-2 Description: Plant conditions were not factored into EBRC dose projections in a timely manner. More than one hour elapsed before the projections accounted for the loss of the containment spray, and some time elapsed before the loss of the HEPA filters, due to the hydrogen explosion, was included. Recommendation: Provide additional training to dose projection personnel stressing the need for timely updates of the computer program with current plant conditions.	10	I.10	Appropriate corrective action will be initiated and results demonstrated at the next scheduled exercise.		FEMA Region VI accepts the State proposed corrective actions. Results will be evaluated at the next exercise.	

TABLE 1 (Cont'd)

Deficiencies and/or Areas Requiring Corrective Action -- with FEMA/RAC Recommendations for Correction	FEMA Exercise Objective No(s)	NUREG 0654 Reference	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy	Actual Completion Date
AREAS REQUIRING CORRECTIVE ACTION (CONT'D)						
SOMMERVELL COUNTY EOC						
89-3 Description: Two EBS messages issued by the EOC failed to list Protective Action Areas in terms of familiar landmarks and boundaries. The public was advised to refer to previousluy distributed brochures. Recommendation: All PAR areas should be described in EBS messages in terms of familiar landmarks and boundaries.	13	E.7	Appropriate corrective action will be initiated and results demonstrated at the next scheduled exercise.		FEMA Region VI accepts the local proposed corrective actions. Results will be evaluated at the next exercise.	
HOOD COUNTY HOSPITAL & AMBULANCE						
89-4 Description: Hospital personnel failed to zero or record initial dosimeter readings.	6	K.3.a, K.3.b	Appropriate corrective action will be initiated and results demonstrated at the next scheduled exercise.		FEMA Region VI accepts the local proposed corrective actions. Results will be evaluated at the next exercise.	

TABLE 1 (Cont'd)

Deficiencies and/or Areas Requiring Corrective Action -- with FEMA/RAC Recommendations for Correction	FEMA Exercise Objective No(s)	NUREG 0654 Reference	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy	Actual Completion Date
AREAS REQUIRING CORRECTIVE ACTION (CONT'd) Recommendation: Ensure that dosimeters are correctly zeroed or initial readings are recorded.						
STEPHENVILLE RECEPTION/CARE CENTER						
89-5 Description: Local Emergency Workers are allowed, by their procedures, a maximum exposure of 25 rem. None of the personnel knew the meaning of this number related to a reading on their instruments. Also, State personnel, at the R/C Center are required to report when their exposures reach 200 mR, and to leave the area at exposures of 1R. This difference could cause confusion.	21	J.12	Appropriate corrective action will be initiated and results demonstrated at the next scheduled exercise.		FEMA Region VI accepts the State and local proposed corrective actions. Results will be evaluated at the next exercise.	

TABLE 1 (Cont'd)

Deficiencies and/or Areas Requiring Corrective Action -- with FEMA/RAC Recommendations for Correction	FEMA Exercise Objective No(s)	NUREG 0654 Reference	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy	Actual Completion Date
AREAS REQUIRING CORRECTIVE ACTION (CONT'D)						
Recommendation:						
Training for local emergency workers should be expanded to include information on the meaning of the allowable radiation dosages and the rational for the difference between the State and local allowances, especially for personnel operating outside the plume exposure EPZ.						
CLEBURNE RECEPTION/CARE CENTER						
89-6 Description:						
The belongings of a contaminated person were placed in a plastic bag and then returned to the individual without being monitored for possible contamination.	21	J.12	Appropriate corrective action will be initiated and results demonstrated at the next scheduled exercise.		FEMA Region VI accepts the local proposed corrective actions. Results will be evaluated at the next exercise.	

TABLE 1 (Cont'd)

Deficiencies and/or Areas Requiring Corrective Action -- with FEMA/RAC Recommendations for Correction	FEMA Exercise Objective No(s)	NUREG 0654 Reference	State (S) and Local (L) Proposed Corrective Actions	Proposed Completion Date	FEMA Evaluation of State and Local Corrective Actions and Determination of Adequacy	Actual Completion Date
AREAS REQUIRING CORRECTIVE ACTION (CONT'D)						
Recommendation:						
Review the procedures for contamination control of personal belongings, and ensure that all monitoring personnel receive continued training and practice in correct procedures.						
89-7 Description:						
Some sampling equipment for milk, described in State procedures, was not included in the team equipment kit.	27	I.8	Appropriate corrective action will be initiated and results demonstrated at the next scheduled ingestion pathway exercise.		FEMA Region VI accepts the State proposed corrective actions. Results will be evaluated at the next exercise.	
Recommendation:						
All equipment necessary for conducting milk sampling should be provided to field sampling teams.						

4 EVALUATION OF FEMA EXERCISE OBJECTIVES

4.1 SUMMARY OF FEMA OBJECTIVES REMAINING TO BE MET

Table 2 provides a consolidated listing of those FEMA objectives which, according to the FEMA RVI RAC Chairman, have not been satisfactorily met or tested, and which should be incorporated into exercise objectives on or by the sixth year of the six-year exercise cycle in which all objectives must be tested and met. These objectives should be considered in the development of future exercise objective lists; 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.

4.2 FEMA OBJECTIVES STATUS TRACKING - COMANCHE PEAK

Table 3 provides a comprehensive tracking system of all FEMA exercise objectives, NUREG-0654 Reference Elements, latest exercise objectives, jurisdictional responsibilities, exercise dates, identified deficiencies and/or required corrective actions, and the date that specific FEMA objectives were met by State and local agencies. This system will track the progress and status of this data through the initial six-year exercise cycle in which all FEMA objectives must be tested and met.

TABLE 2 Summary of FEMA Objectives Remaining to be Met as of September 15, 1989, at the Comanche Peak Station

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With one exception, all 36 FEMA Exercise Objectives, for the initial six year exercise cycle, were met at either the 1989 exercise or the subsequent Remedial Drill. The single remaining objective to be met is:

36	Demonstrate the ability to carry out emergency response functions (i.e., activate EOC's, mobilize staff that report to the EOC's, establish communications linkages and complete a telephone call-down) during an unannounced/off-hours drill or exercise.	State and locals Not met

TABLE 3 FEMA Exercise Objectives Tracking Chart — Comanche Peak Steam Electric Station

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local(s)
OBJECTIVE 1 - (Old Obj. No. 37) EMERGENCY CLASSIFICATION LEVELS Demonstrate the ability to monitor, understand and use emergency classification levels (ECL) through the appropriate implementation of emergency functions and activities corresponding to the ECLs	D.4 (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 2 - (Old Obj. No. 1 & 6) MOBILIZATION OF EMERGENCY PERSONNEL Demonstrate the ability to fully alert, mobilize and activate personnel for both facility and field based emergency functions	E.1, E.2, I.8 (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 3 - (Old Obj. No. 3) DIRECTION AND CONTROL Demonstrate the ability to direct, coordinate and control emergency activities	A.1.d, A.1.e, A.2.a (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 4 - (Old Obj. No. 5) COMMUNICATIONS Demonstrate the ability to communicate with all appropriate locations, organizations and field personnel	G.3.a, H.2, H.3 (S&L)	Y	X	X	7/26/89	DEF 89-1 7/26/89 BRC OPNS @ EOF and Contam. Control Teams. ARCA 89-1 7/26/89 BRC OPNS at EOF and Field Monitoring Teams. Remedial Drill 9/6/89 Removed the DEF & ARCA.	Not met 7/26/89 EOF and CC Teams. Met 7/26/89 All other locations. Met 9/6/89 EOF and CC Teams.	7/26/89

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local(s)
OBJECTIVE 5 - (Old Obj. No. 4) FACILITIES, EQUIPMENT AND DISPLAYS Demonstrate the adequacy of facilities, equipment, displays and other materials to support emergency operations	J.10.a, J.10.b G.3.a, H.2, H.3 (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 6 - (Old Obj. No. 20) EMERGENCY WORKER EXPOSURE CONTROL Demonstrate the ability to continuously monitor and control emergency worker exposure	K.3.a, K.3.b (S&L)	Y	X	X	7/26/89	ARCA 89-4 7/26/89 Hood Gen. Hospital	7/26/89	7/26/89
OBJECTIVE 7 - (Old Obj. No. 7) FIELD MONITORING Demonstrate the appropriate equipment and procedures for determining field radiation measurements	I.8, I.11 (S)	Y	X	-	7/26/89		7/26/89	-
OBJECTIVE 8 - (Old Obj. No. 8) RADIOIODINE SAMPLING Demonstrate the appropriate equipment and procedures for the measurement of airborne radioiodine concentrations as low as 10^{-7} microcuries per cc in the presence of noble gases	I.9 (S)	Y	X	-	7/26/89		7/26/89	-

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local(s)
OBJECTIVE 9 - (New Objective) PARTICULATE SAMPLING Demonstrate the ability to obtain samples of particulate activity in the airborne plume and promptly perform field analysis	I.8, I.11 (S)	Y	X	-	7/26/89		7/26/89	-
OBJECTIVE 10 - (Old Obj. No. 10) PLUME DOSE PROJECTION Demonstrate the ability, within the plume exposure pathway, to project dosage to the public via plume exposure, based on plant and field data	I.10 (S)	Y	X	-	7/26/89	ARCA 89-2 7/26/89 BRC OPNS at EOF	7/26/89	-
OBJECTIVE 11 - (Old Obj. No. 10) PLUME PROTECTIVE ACTION DECISIONS Demonstrate the ability to make appropriate protective action decisions, based on projected or actual dosage, EPA PAGs, availability of adequate shelter, etc.	J.10 (S)	Y	X	-	7/26/89		7/26/89	-
OBJECTIVE 12 - (Old Obj. No. 13) PUBLIC ALERTING AND NOTIFICATION Demonstrate the ability to initially alert the public within the 10-mile EPZ and begin dissemination of an instructional message within 15 minutes of a decision by appropriate State and/or local official(s)	E.6 App. 3 (L)	Y	X	X	7/26/89		7/26/89	7/26/89

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local(s)
OBJECTIVE 13 - (Old Obj. No. 14&25) EMERGENCY PUBLIC INFORMATION Demonstrate the ability to coordinate the formulation and dissemination of accurate information and instructions to the public in a timely fashion after the initial alert/notification has occurred	E.5, E.7, G.4.b (S&L)	Y	X	X	7/26/89	ARCA 89-3 7/26/89 Somervell Co. EOC	7/26/89	7/26/89
OBJECTIVE 14 - (Old Obj. No. 24) MEDIA BRIEFINGS Demonstrate the ability to brief the media in an accurate, coordinated and timely manner	G.3.a, G.4.c (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 15 - (Old Obj. No. 26) RUMOR CONTROL Demonstrate the ability to establish and operate rumor control in a coordinated and timely fashion	G.4.c (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 16 - (Old Obj. No. 21&22) KI FOR EMERGENCY WORKERS Demonstrate the ability to make the decision to recommend the use of KI to emergency workers and institutionalized persons, as well as to distribute and administer it once the decision has been made	J.10.e, J.10.f (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local(s)
OBJECTIVE 17 - (Old Obj. No. 21&22) KI FOR THE GENERAL PUBLIC Demonstrate the ability to make the decision, if the State plan specifies to recommend the use of KI for the general public, as well as to distribute and administer it once the decision has been made	J.10.3, J.10.f (S&L)	N	-	-			-	-
		Note: State policy is that no distribution of KI will be made to the General Public						
OBJECTIVE 18 - (Old Obj. No. 15 &18) PLUME PROTECTIVE ACTIONS Demonstrate the ability and resources necessary to implement appropriate protective actions for the impacted plume EPZ population	J.9, J.10 (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 19 - (Old Obj. No. 19) SCHOOL PROTECTIVE ACTIONS Demonstrate the ability and resources necessary to implement appropriate protective actions for school children within the plume EPZ	J.9, J.10.g (L)	Y	-	X	7/26/89		-	7/26/89
OBJECTIVE 20 - (Old Obj. No. 16&17) TRAFFIC AND ACCESS CONTROL Demonstrate the organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas	J.10.j, J.10.k (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local
OBJECTIVE 21 - (Old Obj. No. 27) REGISTRATION, MONITORING AND DECON. Demonstrate the adequacy of procedures, facilities, equipment, and personnel for the registration, radiological monitoring and decontamination of evacuees	J.12 (L)	Y	-	X	7/26/89	ARCA 89-5, 7/26/89 Stephenville R/C Center. ARCA 89-6 7/26/89 Cleburne R/C Center	-	7/26/89
OBJECTIVE 22 - (Old Obj. No. 28) CONGREGATE CARE OF EVACUEES Demonstrate the adequacy of facilities, equipment and personnel for the congregate care of evacuees	J.10.h (L)	Y	-	X	7/26/89		-	7/26/89
OBJECTIVE 23 - (Old Obj. No. 30) EMERGENCY MEDICAL TRANSPORTATION Demonstrate the adequacy of vehicles equipment, procedures and personnel for transporting contaminated, injured or exposed individuals	L.4 (L)	Y	-	X	7/26/89		-	7/26/89
OBJECTIVE 24 - (Old Obj. No. 31) MEDICAL SERVICES FACILITIES Demonstrate the adequacy of hospital facilities, equipment, procedures and personnel for handling contaminated injured or exposed individuals	L.1 (L)	Y	-	X	7/26/89		-	7/26/89

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local(s)
OBJECTIVE 25 - (Old Obj. No. 29) DECONTAMINATION Demonstrate the adequacy of facilities, equipment, procedures and personnel for decontamination of emergency workers, equipment and vehicles, and for waste disposal	K.5.a, K.5.b (L)	Y	-	X	7/26/89		-	7/26/89
OBJECTIVE 26 - (Old Obj. No. 32&35) SUPPLEMENTARY ASSISTANCE (FED/OTHER) Demonstrate the ability to identify the need for and call upon Federal and other outside support agencies for assistance	C.1.a, C.4 (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 27 - (Old Obj. No. 9) INGESTION PATHWAY SAMPLE COLLECTION Demonstrate the appropriate use of equipment and procedures for collection and transport of samples of vegetation, food crops, milk, meat, poultry, water and animal feeds	I.8 (S)	Y	X	-	7/26/89	ARCA 89-7 7/26/89 Sample Collection Team #3	7/26/89	-
OBJECTIVE 28 - (Old Obj. No. 9) INGESTION LABORATORY OPERATIONS Demonstrate the appropriate laboratory operations and procedures for analyzing samples obtained under objective 27 by field teams	I.8 (S)	Y	X	-	7/26/89		7/26/89	-

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local(s)
OBJECTIVE 29 - (Old Obj. No. 11) INGESTION DOSE PROJECTION Demonstrate the ability to project dosage to the public for ingestion pathway exposure and to determine appropriate protective measures based on field data, FDA PAGs and other relevant factors	I.10, I.11, J.11 (S)	Y	X	-	7/26/89		7/26/89	-
OBJECTIVE 30 - (Old Obj. No. 12) INGESTION PROTECTIVE ACTION IMPLE. Demonstrate the ability to implement both preventive and emergency protective actions for ingestion pathway hazards	J.9, J.11 (S)	Y	X	-	7/26/89		7/26/89	-
OBJECTIVE 31 - (Old Obj. No. 33) TOTAL POPULATION EXPOSURE Demonstrate the ability to estimate total population exposure	M.4 (S)	Y	X	-	7/26/89		7/26/89	-
OBJECTIVE 32 - (Old Obj. No. 34) CONTROLLED REENTRY AND RECOVERY Demonstrate the ability to determine appropriate measures for controlled reentry and recovery based on estimated population exposure, EPA PAGs and other relevant factors	M.1 (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89

TABLE 3 (Cont'd)

FEMA Objective Number and Description	NUREG 0654 Reference	Objective at this Exercise (Yes/No)	Jurisdictional Responsibility		Date of Exercise	Deficiency or Area Requiring Corrective Action (By Tracking Number and Date)	Date Objective Met	
			State	Local			State	Local(s)
OBJECTIVE 33 - (Old Obj. No. 34) REENTRY AND RECOVERY IMPLEMENTATION Demonstrate the ability to implement appropriate measures for controlled reentry and recovery	M.1 (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 34 - (Old Obj. No. 2) 24 HOUR STAFFING Demonstrate the ability to maintain staffing on a continuous 24-hour basis by an actual shift change	A.2.a, A.4 (S&L)	Y	X	X	7/26/89		7/26/89	7/26/89
OBJECTIVE 35 - (Old Obj. No. 23) EVACUATION OF ON SITE PERSONNEL Demonstrate the ability to coordinate assistance to the evacuation of on-site personnel	J.2 (L)	Y	-	X	7/26/89		-	7/26/89
OBJECTIVE 36 - (NR-1 Requirement) UNANNOUNCED AND OFF HOURS OPERATIONS Demonstrate the ability to carry out emergency functions (i.e., activate EOCs, mobilize staff at EOCs, establish communications and complete call-down during unannounced or off-hours drill or exercise	PR-1	N	X	X	-		Not tested 7/26/89	Not tested 7/26/89