



# Federal Emergency Management Agency

Region II  
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New York, NY 10278-0002

June 26, 1995

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**DAVE**

Dear Mr. ~~Silk~~:

Enclosed please find the final Artificial Island Post Exercise Assessment for the May 24, 1994, Plume Pathway Exercise.

Thank you very much for your assistance and your comments regarding this document.

If you have any questions, please contact Robert L. Acerno at 212-225-7026.

Sincerely,

*Robert L. Acerno*  
for Susan D.C. O'Neill  
Acting Chairperson  
Regional Assistance Committee

Enclosure

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## **Participation By State And Local Governments**

### **Region II Participating Governments**

The State of New Jersey

Salem County

Elsinboro

Lower Alloways Creek

Mannington

Pennsville

Quinton

Salem City

Cumberland County

Greenwich

Stow Creek

### **Nonparticipating Governments**

None

## Acronyms

ACP	Access Control Point
AINGS	Artificial Island Nuclear Generating Station
ANL	Argonne National Laboratory
ARC	American Red Cross
ARCA	Area Requiring Corrective Action
ARFI	Area Recommended for Improvement
BNE	Bureau of Nuclear Engineering (New Jersey)
CAP	Civil Air Patrol
CCEOC	Cumberland County Emergency Operations Center
CCM	Cumberland County Municipalities
CPCS-1	Common Program Control Station
DOC	U.S. Department of Commerce
DOE	U.S. Department of Energy
DOH	Department of Health
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DRD	Direct Reading Dosimeter
EBS	Emergency Broadcast System
ECL	Emergency Classification Level
ED	Emergency Director
EIS	Emergency Information System
EMC	Emergency Management Coordinator
EMRAD	Emergency Radio System
ENC	Emergency News Center
EOC	Emergency Operations Center
EOF	Emergency Operations Facility (licensee, near site)
EPA	U.S. Environmental Protection Agency
EPZ	Emergency Planning Zone
ERPA	Emergency Response Planning Area
FCP	Forward Command Post
FDA	U.S. Food and Drug Administration
FEMA	Federal Emergency Management Agency
FM	Field Monitoring
FNARS	FEMA National Radio System
FNATS	FEMA National Teletype System
FNAVS	FEMA National Voice System

GE	General Emergency
GPM	Gallons Per Minute
HHS	U.S. Department of Health and Human Services
KI	Potassium Iodide
KLT	K.L. Travis and Associates
NAWAS	National Warning System
NETS	Nuclear Emergency Telephone Systems
NJDEP&E	New Jersey Department of Environmental Protection and Energy
NJDOH	New Jersey Department of Health
NJOEM	New Jersey Office of Emergency Management
NJSP	New Jersey State Police
NRC	U.S. Nuclear Regulatory Commission
NTHMC	Natural and Technological Hazards Management Consulting
NUREG-0654	Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants (NUREG-0654/FEMA-REP-1, Rev. 1)
PAD	Protective Action Decision
PAG	Protective Action Guide
PAR	Protective Action Recommendation
PIO	Public Information Officer
PSE&G	Public Service Electric and Gas Company (the licensee)
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Service
RADEF	Radiological Defense
REA	Radiological Exposure Area
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
SAE	Site Area Emergency
SCEOC	Salem County Emergency Operations Center
SEOC	State Emergency Operations Center (New Jersey)
SFM	State Field Monitoring
SOP	Standard Operating Procedure
TAC	Technical Assessment Center
TCP	Traffic Control Point
TLD	Thermoluminescent Dosimeter
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
WBSS	Emergency Broadcast System (EBS) Gateway Radio Station

## **Summary**

On May 24, 1994, a team of 22 Federal personnel evaluated an exercise of the Radiological Emergency Response Plans (RERP) and the levels of State, county, and municipal preparedness for the Artificial Island Nuclear Generating Station (AINGS) in Salem County, New Jersey. The full-participation exercise was conducted by Public Service Electric and Gas Company (PSE&G) and the New Jersey Office of Emergency Management (NJOEM). Following the exercise, a preliminary evaluation was made by the Federal evaluation team. A briefing for exercise participants was held at the Salem County EOC on May 27, 1994, at 1000. Detailed written evaluations were prepared and are included in this report. A public critique was held at 1400 on May 27, 1994, at the Salem County Fire Training Center in Salem County, New Jersey.

During the May 24, 1994, full-participation exercise, one Deficiency, three Areas Requiring Corrective Action (ARCA), and one Plan Issue were identified.

During a full-participation exercise, FEMA requires that most components of the State and local emergency response organizations participate. The following operations and activities were specified for demonstration for the Federal evaluators to observe and evaluate during this exercise:

- State Emergency Operations Center (SEOC)
- Bureau of Nuclear Engineering (BNE)-Forward Command Post (FCP)
- Emergency Operations Facility (EOF)
- Emergency News Center (ENC)
- Emergency Broadcast System (EBS) Gateway Radio Station - WBSS
- Salem County EOC (SCEOC)
- Cumberland County EOC (CCEOC)



### **Summary (con't)**

- Municipal Emergency Operations Centers (EOC)
- Evacuation of School Children
- Evacuation of Mobility Impaired Persons
- Back-up Route Alerting
- Access Control Point (ACP)
- Siren Activation (Simulated) and EBS Messages
- Radiological Field Monitoring
- Congregate Care Centers
- Reception Center
- Emergency Worker Decontamination Center
- School Interviews (EV-2)

## **1 Introduction**

### **1.1 Exercise Background**

On December 7, 1979, the President directed FEMA to assume lead responsibility for all offsite nuclear planning and response. FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

- Taking the lead in offsite emergency planning and in the review and evaluation of RERPs developed by State and local governments.
- Determining whether such plans can be implemented on the basis of the observation and evaluation of exercises of the plans conducted by State and local governments.
- Coordinating the activities of those Federal agencies with responsibilities in the radiological emergency planning process:
  - U.S. Department of Commerce (DOC)
  - U.S. Nuclear Regulatory Commission (NRC)
  - U.S. Environmental Protection Agency (EPA)
  - U.S. Department of Energy (DOE)
  - U.S. Department of Health and Human Services (HHS)
  - U.S. Department of Transportation (DOT)
  - U.S. Department of Agriculture (USDA)
  - U.S. Food and Drug Administration (FDA)
  - U.S. Department of the Interior (DOI)

The State of New Jersey's RERP for the Artificial Island Site (Salem and Hope Creek Nuclear Generating Stations) was formally submitted to FEMA Region II's Regional Assistance Committee (RAC) on February 2, 1982. Formal submission was followed by a critique and ongoing evaluation. A public meeting was held to acquaint citizens with the contents of the plans, to answer their questions, and to receive suggestions for changes in the plans.

The following exercises have been conducted by FEMA Region II to assess the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect the public in the event of a radiological emergency involving the AINGS.

Exercise Number	Exercise Date	Published Date	HQs Transmittal to NRC
1	04/08/81	04/24/81	-
2	10/13/82	01/10/83	07/08/83
3	10/26/83	02/06/84	04/27/84
4	10/23/84	02/19/85	02/26/85
Remedial	04/23/85	06/19/85	07/31/85
5	11/12/86	05/12/87	06/17/87
6	11/29-12/01/88	12/15/89	06/13/90
7	10/31/90	07/08/91	07/24/91
Remedial	01/23/91	07/08/91	07/24/91
8	10/28/92	07/26/93	08/12/93

The ninth full-participation exercise, the subject of this report, was conducted on May 24, 1994. A Federal Evaluation team comprised of staff from FEMA Region II, the Region II RAC, and personnel from FEMA's contractors evaluated the exercise. Twenty-two evaluators were assigned to evaluate the emergency response activities of State and local jurisdictions. These evaluators were divided into three teams. Team leaders coordinated team operations.

Following the exercise, Federal evaluators met to compile their evaluations. Evaluators presented observations specific to their assignments. Teams of evaluators developed preliminary assessments for each jurisdiction and team leaders then consolidated the evaluations of individual team members.

The findings presented in this report are based on the evaluations of the Federal evaluators, with final determinations by the FEMA Region II RAC Chairperson. One Deficiency, three ARCAs, and one Plan Issue were identified during the exercise. FEMA requests that State and local jurisdictions submit a schedule of corrective actions since the FEMA Regional Director is responsible for certifying to the FEMA Office of the Associate Director, Preparedness, Training, and Exercises Directorate, Washington, D.C., that each Deficiency and Area Requiring Corrective Action (ARCA) identified during the exercise has been or will be corrected.

As is allowed under FEMA policy, a number of demonstrations were evaluated out-of-sequence prior to the full-participation exercise on May 24, 1994.

OUT OF SEQUENCE DEMONSTRATION	EVALUATORS	DATE CONDUCTED
SALEM COUNTY CONGREGATE CARE	G. BROZOWSKI	05/02/94
SALEM COUNTY SCHOOL INTERVIEWS SALEM COUNTY SCHOOL BUS RUN	G. BROZOWSKI	05/02/94
STATE ACCESS CONTROL POINT	R. ACERNO	05/16/94
SALEM COUNTY RECEPTION CENTER	R. ACERNO G. BROZOWSKI	05/16/94
CUMBERLAND COUNTY SCHOOL INTERVIEWS	R. ACERNO	05/17/94
CUMBERLAND COUNTY SCHOOL BUS RUN	R. ACERNO	05/17/94
CUMBERLAND COUNTY CONGREGATE CARE CENTER	G. BROZOWSKI	05/17/94
SALEM COUNTY EMERGENCY WORKER DECONTAMINATION CENTER	R. ACERNO G. BROZOWSKI	05/17/94

## 1.2 Federal Evaluators

Twenty-two Federal evaluators evaluated offsite response functions. The names of these individuals, their affiliations, and their exercise assignments are listed below:

<u>Evaluator</u>	<u>Affiliation</u>	<u>Exercise Location and/or Function(s)</u>
R. Acerno	FEMA	Site Manager, SEOC, Team Leader
G. Brozowski	FEMA	SEOC, Operations
L. Bruce	FEMA	Administrative Support
J. Canfarelli	ANL	Administrative Support
V. Cochran	FEMA	SCEOC, Communications
A. Davis	FEMA	ENC
M. Farrell	FEMA	CCEOC, Team Leader
B. Gasper	ANL	CCEOC, Communications/Operations
R. Graham	USDA	Quinton EOC
J. Hardin	KLT	EOF, Dose Assessment
C. Hunckler	ANL	New Jersey State Radiological Monitoring Team
P. Kelley	DOE	County Radiological Monitoring Team
R. Kowieski	NTHMC	Stow Creek EOC, Greenwich EOC
A. Lookabaugh	ANL	Mannington EOC
J. Magruder	EPA	County Radiological Monitoring Team
L. Mazzella	FEMA	EBS Gateway Station WBSS

<u>Evaluator</u>	<u>Affiliation</u>	<u>Exercise Location and/or Function(s)</u>
C. McCoy	ANL	SEOC, Communications
S. McIntosh	FEMA	Region II RAC Chairperson
S. Nelson	ANL	Pennsville EOC, Salem City EOC
S. O'Neill	FEMA	SCEOC, Team Leader
D. Petta	DOT	Elsinboro EOC, Lower Alloways Creek EOC
D. Silk	NRC	EOF, Dose Assessment
J. Staroba	ANL	New Jersey State Radiological Monitoring Team
E. Wojnas	NTHMC	BNE-FCP
B. Young	ANL	ENC

Note: L. Bruce, J. Canfarelli, and S. McIntosh were not evaluators. L. Bruce and J. Canfarelli provided administrative support, and S. McIntosh provided oversight as the RAC Chairperson.

### **1.3 Exercise Criteria**

The exercise evaluations presented in Section 2 are based on applicable planning standards and evaluation criteria set forth in Section II of NUREG-0654/FEMA-REP-1, Rev.1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants", dated November, 1980. For the purpose of exercise evaluation, FEMA used FEMA-REP-14, "Radiological Emergency Preparedness Exercise Manual," dated September, 1991, and FEMA-REP-15, "Radiological Emergency Preparedness Exercise Evaluation Methodology, dated September, 1991. FEMA classifies exercise inadequacies as Deficiencies, ARCAs, or Plan Issues. Deficiencies are observed or identified inadequacies of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant. Because of the potential impact of Deficiencies on emergency preparedness, they should be corrected within 120 days of the exercise through appropriate remedial actions, including remedial exercises, drills, or other actions. ARCAs are observed or identified inadequacies of organizational performance in an exercise that are not considered, by themselves, to adversely impact public health and safety. ARCAs must be corrected by the next scheduled biennial exercise. ARCAs may be reclassified as a Deficiency when the collective impact of two or more ARCAs on an organization's emergency functioning precludes adequate protection of public health and safety or when an organization repeatedly demonstrates the inability to correct one or more previously identified ARCAs over a period of two or more biennial exercises. ARFIs are observed or identified problem areas during an exercise which are not considered to adversely impact public health and safety. While not required, the correction of ARFIs would enhance an organization's level of emergency preparedness. A Plan Issue is an observed or identified issue during an exercise which does not involve participant or organizational performance, but rather involves inadequacies in an organization's existing plan or procedures. A Plan Issue should be corrected by no later than the next annual plan review and update.

### **1.4 Exercise Objectives**

The licensee PSE&G, FEMA Region II, the NRC, and the State of New Jersey planned a full-participation exercise of their respective RERPs for the offsite response organizations. The exercise involved the activation and participation of the staff and response facilities of the AINGS, as well as the emergency organizations and response facilities of the State of New Jersey and the local counties and municipalities.

The exercise was intended to demonstrate many, but not necessarily all, of the licensee's, State's, and local governments' abilities to respond to an accident at AINGS. The exercise scenario was designed to activate the various levels of the AINGS RERPs and PSE&G corporate RERP. Although the scenario accurately simulated operating events, it was never intended to assess all of the operator's diagnostic capabilities. Rather, it was designed to provide sequences that would ultimately demonstrate the operator's ability to respond to events resulting in the

exercise of offsite plans and procedures.

The exercise demonstrated a number of primary emergency preparedness functions. At no time was the exercise permitted to interfere with the safe operation of the AINGS.

The following table shows the exercise objectives taken from FEMA-REP-15, and the locations where these objectives were scheduled to be demonstrated. A full description of these objectives is contained at the end of this section.

Table 1 - Exercise Objectives

Objective Number	State EOC	State FA <sup>a</sup>	BNE-FCP <sup>b</sup>	EOF	ENC <sup>c</sup>	Salem EOC	Salem Munic <sup>d</sup>	Salem FA	Cumberland EOC	Cumberland Munic	Cumberland FA
1			X	X			X			X	X
2			X	X	X		X		X	X	X
3	X		X	X		X	X		X	X	
4	X	X	X	X			X	X	X	X	X
5		X	X		X	X	X	X	X	X	X
6		X						X			X
7				X							
8		X						X			X
9	X			X							
10	X					X	X		X	X	
11	X				X						
12					X						
13											
14	X	X	X	X		X		X	X		X
15							X			X	
16								X			X
17		X									
18											
19								X			X
20											
21											
22								X			
30	X	X	X	X			X	X		X	

<sup>a</sup> - Field Activities

<sup>c</sup> - Emergency News Center

<sup>b</sup> - Bureau of Nuclear Engineering - Forward Command Post

<sup>d</sup> - Municipality



## **1.5 Objective Descriptions**

### **Objective 1 Mobilization of Emergency Personnel**

Demonstrate the ability to fully alert, mobilize and activate personnel for both facility and field-based emergency functions.

### **Objective 2 Facilities-Equipment, Displays, and Work Environment**

Demonstrate the adequacy of facilities, equipment, displays and other materials to support emergency operations.

### **Objective 3 Direction and Control**

Demonstrate the ability to direct, coordinate and control emergency activities.

### **Objective 4 Communications**

Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.

### **Objective 5 Emergency Worker Exposure Control**

Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers

### **Objective 6 Field Radiological Monitoring - Ambient Radiation Monitoring**

Demonstrate the use of appropriate equipment and procedures for determining field radiation measurements.

### **Objective 7 Plume Dose Projection**

Demonstrate the ability to develop dose projections and protective action recommendations (PAR) regarding evacuation and sheltering.

**Objective 8    Field Radiological Monitoring - Airborne Radioiodine and Particulate Activity Monitoring**

Demonstrate the appropriate use of equipment and procedures for the measurement of airborne radioiodine concentrations as low as  $10^{-7}$  (.0000001) microcuries per cubic centimeter in the presence of noble gases and obtain samples of particulate activity in the airborne plume.

**Objective 9    Plume Protective Action Decision Making**

Demonstrate the ability to make appropriate Protective Action Decisions (PAD), based on projected or actual dosage, EPA Protective Action Guidelines (PAG), availability of adequate shelter, evacuation time estimates, and other relevant factors.

**Objective 10   Alert and Notification**

Demonstrate the ability to initially alert and notify the public within the 10-mile Emergency Planning Zone (EPZ) and begin dissemination of an instructional message within 15 minutes of a decision by the appropriate State and/or local official(s).

**Objective 11   Public Instructions and Emergency 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 and notification has occurred.

**Objective 12   Emergency Information - Media**

Demonstrate the ability to coordinate the development and dissemination of clear, accurate, and timely information to the news media.

**Objective 13   Emergency Information - Rumor Control**

Demonstrate the ability to establish and operate rumor control in a coordinated and timely fashion.

**Objective 14   Implementation of Protective Actions - Use of Potassium Iodide**

Demonstrate the ability and resources 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.

**Objective 15 Implementation of Protective Actions - Special Populations**

Demonstrate the capability and resources necessary to implement appropriate protective actions for special populations.

**Objective 16 Implementation of Protective Actions - Schools**

Demonstrate the ability and resources necessary to implement appropriate protective actions for school children within the plume EPZ.

**Objective 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.

**Objective 18 Reception Centers - Registration, Monitoring, and Decontamination**

Demonstrate the adequacy of procedures, facilities, equipment and personnel for the registration, radiological monitoring, and decontamination of evacuees.

**Objective 19 Congregate Care**

Demonstrate the adequacy of facilities, equipment, and personnel for congregate care of evacuees.

**Objective 20 Medical Services - Transportation**

Demonstrate the adequacy of vehicles, equipment, procedures and personnel for transporting contaminated, injured, or exposed individuals.

**Objective 21 Medical Services - Facilities**

Demonstrate the adequacy of medical facility's equipment, procedures, supplies, and personnel for the treatment of contaminated, injured, or exposed individuals.

**Objective 22 Monitoring and Decontamination**

Demonstrate the adequacy of facilities, equipment, supplies, procedures, and personnel for the decontamination of emergency workers, equipment, and vehicles.

**Objective 30 Continuous 24-Hour Staffing**

**Demonstrate the capability to maintain staffing on a continuous, 24-hour basis through an actual shift change.**

## 1.6 Exercise Scenario Overview

### 1.6.1 Initial Conditions

The initial conditions of the Artificial Island Nuclear Generating Station are as follows:

1. Reactor is at 97% Power, Middle of Life (MOL), with Power Ascension in progress following an intermediate Recirculating Pump Runback that occurred at 1023 this morning with the unit at 100% Power, due to a trip of the "B" Secondary Condensate Pump (SCP) on Low Suction Pressure when the "D" Condensate Demineralizer was returned to service. In addition to the runback, Main Steamline Rad Monitors HIGH (1.5 times normal) Alarm (ALERT on RM-11) were received on all 4 channels. Offgas Pretreatment Rad monitors also went into ALERT (RM-11). Rad levels subsequently decreased on all channels and alarms cleared. However, readings are currently higher than previous values. The "B" SCP was restarted at 1107.
2. The Chemistry Technician has obtained the required sample for a power change exceeding 15% in an hour. The Technician reported at 1348 that the results of the Reactor Coolant System (RCS) sample indicated that Dose Equivalent Iodine (DEI) has increased from 0.4  $\mu\text{Ci}/\text{gram}$  to 2.8  $\mu\text{Ci}/\text{gram}$ . Prior to this event, Reactor Coolant Chemistry analysis had indicated that several fuel pins were leaking, causing a minor increase in Reactor Coolant Activity. The leakage started one month ago and the Nuclear Fuels Group estimates approximately 0.01 % clad defects currently.
3. "A" Residual Heat Removal (RHR) Pump (1A-P-202) is Out of Service to replace the Pump Motor that failed during performance of OP-IS.BC-0001 early this morning. The Old Motor has been removed. Warehouse personnel have spent the day attempting to locate a replacement motor, which has yet to be found. Tech Spec LCO 3.6.2.2/3.6.2.3 was entered this morning at 0457. Work is scheduled around-the-clock.
4. "C" Reactor Building Exhaust Fan (1C-V-301) is Out of Service to allow I&C to troubleshoot intermittent tripping of the fan on Low Flow. Troubleshooting is continuing.

## **1.6.2 Narrative Exercise Summary**

### **Drill Commences - 1600**

At 1610, the Control Room Staff will successfully place the Reactor Core Isolation Cooling System (RCIC) in Full Flow Test Mode in accordance with OP-IS.BD-0001, Quarterly RCIC In-Service Test. At 1620, the Control Room will receive indication that the RCIC Turbine Exhaust Diaphragm has ruptured in the Torus Compartment Area as a result of Turbine Exhaust Diaphragm pressure exceeding 10 psig, due to a failure of the RCIC Turbine Exhaust Check Valve (IFC-V-003). At the time the RCIC Turbine Exhaust Diaphragm ruptured, an Equipment Operator was reported to be in the vicinity of the RCIC Turbine Exhaust piping in the Torus Room.

At 1630, an ALERT will be declared by the simulated Senior Nuclear Shift Supervisor (SNSS) based on ECG Section 2B, RCIC Steam Line break outside the Drywell.

At 1640, the Control Room Crew will receive indication that Turbine Building Motor Control Center (MCC) 10-B-132 has been lost. The MCC was lost when a custodian, performing general area cleaning around Unit Substation 10-B-130, panicked when he heard the Radiation Alert Alarm sound and bumped the MCC Feeder Breaker 52-13013 with his broom handle. The loss of this Motor Control Center will cause the "B" Feedwater Heater String to be lost, causing Reactor Power to increase. As a result, the Nuclear Shift Supervisor (NSS) directs Control Rods be inserted in accordance with the Stuff Sheet due to the Major Loss of Feedwater Heating.

At 1642, the Reactor Manual Control System (RMCS) will lock up due to a failed transponder card associated with Control Rod 14-27. This will cause the Reactor to be operated with a Non-Symmetric Control Rod pattern, resulting in a slight increase in Main Steamline Radiation Monitors and Reactor Coolant System (RCS) Activity (Does not exceed Tech Spec Limit of 4  $\mu\text{Ci/g}$  Dose Equivalent iodine).

At 1709, the Control Room Crew receives indication that the "B" RHR Heat Exchanger has experienced multiple tube failures. Since the RHR System is operating at a higher pressure than the SACS System, the leakage is from RHR to SACS. As a result, the "B" SACS Rad Monitor is alarming at 3.0 E-05  $\mu\text{Ci/cc}$ . Level in the "B" SACS Head Tank is increasing. The crew will take actions to secure the "B" RHR Pump and Isolate the "B" RHR Heat Exchanger. SNSS/EDO directs TSC/OSC personnel to expedite repairs on the "A" RHR Pump Motor. The NSS determines that with the "A" RHR Pump Inoperable and the "B" RHR Heat Exchanger Inoperable, the plant must be placed in a Hot Shutdown condition within the next 12 hours and begins making preparation for Reactor Shutdown.

At 1810, the operator and I&C Technician enter the Turbine Building West Side Condenser Bay at Elevation 102 feet. They find an EHC leak at an O-Ring on the #7 Turbine

Bypass Valve Servo Valve. EHC fluid is spraying by the failed O-Ring. Over the next five minutes, the leak will gradually worsen.

At 1815, a Turbine Trip and Reactor Scram occur due to low EHC Pressure. The EHC leak results in a loss of the Turbine Bypass Valves for Reactor Pressure Control. SRVs will be required for Reactor Pressure Control, adding significant heat to the Torus. The "A" and "B" RHR Loops are unavailable at this time for Torus Cooling. Following the Reactor Scram, the NCO observes that only half the Control Rods have completely inserted. He later determines that the Control Rods that have not inserted are all associated with the North Bank of the Scram Discharge Volume. A Hydraulic Lock has occurred. These Control Rods have moved only a couple of notches from their original fully withdrawn positions. The NSS enters EOP 101 and 207. Reactor Power is 12%. Implementation of EOP 207 includes lowering of Reactor Water Level when Suppression Pool Temperature exceeds 110 Degrees F until Reactor Power is less than 4% (APRM Downscapes) or Reactor Water Level reaches the Top of Active Fuel. The NSS will order the "A" & "B" SLC Pumps started before Torus Temperature reaches 110 Degrees F. The NCO observes that both pumps start. However, SLC Tank Level is decreasing at a very slow rate. SLC Tank Temperature has decreased to 61 Degrees F. Sodium Pentaborate has begun to crystallize in the suction line, causing a significant reduction in flow.

At approximately 1830, a **SITE AREA EMERGENCY** will be declared by the EDO based on ECG Section 3B, Conditions requiring operation of the Standby Liquid Control System with subsequent failure to reduce Reactor Power.

At 1844, the Control Room Crew will reset the Reactor Scram, which will allow the Scram Inlet and Outlet Valves to reclose, allowing the Scram Air Header to repressurize. In addition, resetting the scram allows the Scram Discharge Volume Vent and Drain Valves to reopen, allowing the Scram Discharge Volume to begin to drain.

At 1846, an Instrument Air Leak will develop on the air supply header to the Scram Discharge Volume Vent and Drain Valves. These valves, which fail closed on a Loss of Instrument Air, will close as Air Header pressure decreases. As Scram Air Header Pressure decreases, the Scram Inlet and Scram Outlet Valves open, resulting in 11 Control Rods inserting 2 notches into the Reactor, however the majority of Control Rods previously withdrawn are still withdrawn from the core. The Scram Discharge Volume Vent and Drain Valves will fail closed, preventing the North Bank Scram Discharge Volume from draining. At this point, only individual Control Rod insertion is possible. Reactor Power is currently 9%. The OSC will organize a team to attempt repair of the broken Instrument Air Line.

At 1853, as the magnitude of the Instrument Air Leak worsens, other components supplied by that air header in the Reactor Building begin to fail. Specifically, the Outboard MSIV's will close, isolating the Feedwater System as a method of inventory makeup to the Reactor Vessel.

**At 1915**, Reactor Water Level will have been lowered to the Top of Active Fuel (TAF) in accordance with EOP 207, in an attempt to reduce Reactor Power by increasing the void population in the Reactor Core. Reactor Power is currently 4%. In accordance with EOP 207, the NSS will direct Reactor Water Level be maintained between the Top of Active Fuel -161" and -190" using CRD, and HPCI until All Control Rods are inserted.

**At 1925**, the "B" CRD Pump Trips on Low Suction Pressure due to a clogged Suction Strainer. Without a CRD Pump in service, no individual Control Rod Motion is possible. Loss of the CRD Pump also causes Loss of CRD Charging Header pressure to the CRD HCU Accumulators. As the Charging Header Depressurizes, the CRD Mechanism Under Piston area pressure will decrease below Reactor Pressure, the Mechanism Ball Check Valve will lift, allowing Reactor Coolant System Pressure to be directed to the Under Piston Area of the CRD Mechanism. By 1940, due to operation with Reactor Water Level below the Top of Active Fuel (Steam Cooling with injection), some fuel damage is postulated to occur, based on increased Reactor Coolant Activity at the start of the drill.

**At 2000**, DAPA Rad Monitors will indicate greater than 200 R/HR. Reactor Power is oscillating between 3% and 7%. **The ERM should declare a GENERAL EMERGENCY based on ECG Section 3C, Condition requiring the operation of SLC with Severe Loss of Fuel Cladding.** The OSC will continue repair efforts to restore RPS, CRD and the SLC System, in order to allow the Control Room crew to complete the Reactor Shutdown.

**At 2010**, an OSC team will have successfully swapped CRD Pump Suction Filters so that a CRD Pump can be placed back in service, allowing manual Control Rod Insertion. **At 2020**, an OSC repair team will have successfully restored the SLC Tank operating Heater, and the SLC Tank Sodium Pentaborate will begin to return to a liquid. The Control Room Crew will observe that the SLC Injection rate begins to slowly increase based on SLC Tank Level.

**At 2040**, the Control Room will receive indication that Reactor Building Radiation levels have drastically increased on the 102' Elevation. The increase in Reactor Building Radiation Level is due to a rupture of the North Bank Scram Discharge Volume, resulting from the continued pressurization of the Scram Discharge Volume. Reactor Coolant is discharging directly into the Reactor Building. **This is a Loss Of Coolant Accident (LOCA) Outside Containment (Containment Bypass).** The leak allows the North Bank Scram Discharge Volume to depressurize resulting in a complete removal of the Hydraulic Lock and allowing all Control Rods to fully insert into the Reactor. However, due to the degree of fuel failure that has already occurred, dose rates in the North Scram Discharge Volume Area have increased to 600 R/HR as large amounts of fission products are transported into the Reactor building. The OSC Team repairing the Instrument Air Leak will notify the OSC that the area in which they are working (Reactor Building, Elevation 102') is filling up with steam, and that they are evacuating the area. A radiological release to the atmosphere takes place through FRVS Vent.

**Monitored Release Path: RPV -> > NORTH BANK SCRAM DISCHARGE VOLUME  
-> > REACTOR BUILDING -> > FRVS VENT.**



The NSS directs Emergency Depressurization of the Reactor in accordance with EOP 103, significantly reducing the volume of fission products entering the Reactor Building. Over the next 2 hours, FRVS continues to process these fission products.

By 2230, the FRVS Vent Effluent readings will have decreased significantly. The ERM and his staff in the EOF will decide whether the Emergency Conditions have stabilized and are in fact improving.

When the exercise objectives were demonstrated, the Head Referee would terminate the exercise.

Table 2 - Events and Offsite Facilities Matrix \*

Event	New Jersey State	BNE-FCP	EOF	ENC	Salem	Salem Municip	Cumber	Cumber Municip
Notification of Warning Point	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notification of Personnel	A	A	A	A	A	A	A	A
Activation of EOC	A	N/A	A	N/A	A	A	A	A
Activation of ENC	N/A	N/A	N/A	A	N/A	N/A	N/A	N/A
Activation of Reception Center	N/A	N/A	N/A	N/A	A	N/A	N/A	N/A
Activation of Congregate Care Centers	N/A	N/A	N/A	N/A	A	N/A	A	N/A
Activation of Emergency Worker Decontamination	N/A	N/A	N/A	N/A	N/A	A	N/A	N/A
Siren Activation	S	N/A	N/A	N/A	S	N/A	N/A	N/A
Back-up Route Alerting	N/A	N/A	N/A	N/A	A	N/A	A	N/A
EBS Message Broadcast	S	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Conduct Dose Assessment	A	N/A	A	N/A	N/A	N/A	N/A	N/A
Protective Action Recommendations	A	N/A	A	N/A	N/A	N/A	N/A	N/A
Dispatch Field Survey Teams	N/A	A	N/A	N/A	A	N/A	A	N/A
School Evacuation Bus Runs	N/A	N/A	N/A	N/A	A	N/A	A	N/A
Access Control Point	N/A	N/A	N/A	N/A	A	N/A	N/A	N/A
KI Administration	S	S	S	N/A	S	N/A	S	N/A
Evacuation of Mobility Impaired	N/A	N/A	N/A	N/A	S	N/A	S	N/A
School Interviews	N/A	N/A	N/A	N/A	A	N/A	A	N/A
Medical Drill	N/A	N/A	N/A	N/A	A	N/A	N/A	N/A

\* N/A = Not applicable, S = Simulated, A = Actual  
Refer to the List of Acronyms for description of abbreviations

**Table 3 - Emergency Classification Timeline<sup>a</sup>**

Emergency Classification	Utility Declared	New Jersey State EOC	Salem County EOC	Cumberland County EOC	Emergency News Center	Salem/Cumberland Counties Municipalities <sup>b</sup>
Alert Notification	1630	1638	1650	1652	1652	1710
Facility Declared Operational	1655	1655	1720	1750	1800	1725
Site Area Emergency Notification	1822	1831	1841	1844	1822	1852
General Emergency Notification	2000	2009	2016	2016	2000	2023
Release Started	2045	2050	2150	2210	2045	2158
Release Terminated	2305	2305	2308	2305	2305	N/A
Exercise Terminated	2310	2312	2310	2318	2310	2325

<sup>a</sup> Times that events were observed at each location: N/A = not applicable.

<sup>b</sup> Average time reported.

Table 4 - Protective Action Decisions and Public Notification Timeline - Plume Phase

EBS Message Number	Decision Making Jurisdiction	Protective Action	Decision Time	Siren Activation Time <sup>a</sup>	EBS Activation Time <sup>a</sup>	Responsible Jurisdictions
1	New Jersey State	Advised Public of Site Area Emergency No protective action	1852	1900	1905	New Jersey State
2	New Jersey State	Shelter ERPA 1	2045	2053	2058	New Jersey State Salem Cumberland
3	New Jersey State	Evacuate ERPA 1	2150	2158	2203	New Jersey State Salem Cumberland
4	New Jersey State	Advised residents in ERPAs 1, 2, 3, 4, and 5 to place livestock on stored feed, cover drinking water, delay consumption of contaminated foodstuffs, and wash all vegetables	2312	2320	2325	New Jersey State Salem Cumberland

<sup>a</sup> - Simulation

## **2. Exercise Evaluation**

### **2.1 State Of New Jersey**

#### **2.1.1 State Emergency Operations Center**

There were ten objectives demonstrated at the New Jersey SEOC during this exercise. Nine objectives were met, and one was not met.

**SEOC Objective 1 - MET** - The New Jersey Office of Emergency Management (NJOEM) received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**SEOC Objective 2 - MET** - NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**SEOC Objective 3 - MET** - The Deputy Director of NJOEM was clearly in charge of the SEOC. The executive staff effectively utilized the computerized Emergency Information System (EIS), to observe and expedite obtaining information and resources, which was displayed at every work station in the SEOC and was projected on large screens in several rooms. An updated printout of all events was frequently distributed to key staff members.

Frequent briefings were held to insure that all present were knowledgeable regarding the status of events. The Deputy Director of NJOEM issued instructions to staff on adherence to the plan (frequently making reference to the RERP and SOPs), copies of which were available for reference, and involved the staff, other agency representatives and elected officials in discussions prior to making decisions. He directed coordination with other jurisdictions and consulted with appropriate officials (including the Governor's Authorized Representative and the Attorney General's Representative) in the authorization and implementation of Protective Action Decisions (PAD).

**SEOC Objective 4 - MET** - Communication systems were available, operated properly, and communication links were established with all appropriate locations. There were no delays caused by breakdowns or malfunctions in equipment.

The SEOC in West Trenton, New Jersey, served as the communications center for the direction and control of all emergency and disaster operations in the State. It contained state-of-the-art radio and land-line equipment necessary to provide communications with the Utility, EOCs of the affected counties and municipalities, departments of State government, the ENC, the EBS network, federal agencies, and contiguous states. The NJSP Communications Bureau was the warning point for the NJOEM, the New Jersey Bureau of Nuclear Engineering (NJBNE), the Department of Environmental Protection and Energy (NJDEPE), and all support agencies.

The telephone system included six tie-lines, thirty-four direct inward-dial lines, and 114 trunk-lines. Twenty-four of these telephones were available in the SEOC. The dedicated telephone system included a ring-line and a net-line. All internal telephones had conferencing capability. Dedicated telephone lines linked staff at the Utility with staff at the NJSP Communications Center at the NJSP Headquarters in West Trenton, New Jersey. The dedicated and commercial telephones were the primary system, and the Radio Amateur Civil Emergency Service (RACES) nets were used for back-up communications between State, county, and municipal EOCs. The RACES Packet system provided staff with hard copy between the State and counties. Communications with Federal emergency response agencies was via telephone by SEOC staff.

Other communications systems available included NJSP radio nets and the U.S. Coast Guard and New Jersey Marine and Law Enforcement nets. The Emergency Radio System (EMRAD) nets and RACES nets are activated at the SAE or GE ECLs, with State to county control from the SEOC. Every county and municipality in the EPZ was equipped with EMRAD. All EBS Gateway Radio Stations were EMRAD-equipped or had individual tone-alerting with alarms in the stations. A contract was let for the first of three phases to install a SAGE system which will eventually replace the EMRAD system for EBS use.

The FEMA National Radio System (FNARS) was not in service, awaiting delivery and installation by FEMA staff.

In addition, the telex packet system, and four facsimile machines provided hard-copy, while radio systems provided staff with multiple redundancies and back-ups in the event of failure of one or more systems. All incoming and outgoing communications were appropriately logged, duplicated and passed to SEOC staff for action or information. Frequent reviews of action status were held to insure that no required actions or responses were overlooked. Emergency messages were verified by the person contacted via return telephone call after completion of the initial contact message.

Staff members at the SEOC communicated with staff at the SCEOC and the CCEOC, the ENC, other departments of State government, (through their authorized representatives at the SEOC), the EBS Network, and Federal Agencies. The SEOC staff directed all requests for assistance to the appropriate State or Federal agency.

**SEOC Objective 9 - NOT MET** - The capability to make timely and appropriate Protective Action Decisions (PAD) was not met.

When the GE ECL was received at the SEOC at 2009 (declared at 2000), the PAR from the plant was to Evacuate Sectors N, NNE, and NE, 0-5 miles (ERPA 1) and Shelter all other Sectors 0-5 miles. It was not until 2045 that the first PAD was made, and that was to Shelter ERPA 1, 0-5 miles. At 2027, NJBNE staff issued a PAR to shelter all sectors in the emergency planning zone (EPZ), zero to five miles. At 2045, the State (SEOC) decision to shelter was made. Even after the SEOC was notified of a release at 2050, and the recommendation from

the plant was to Evacuate all Sectors 0-5 miles (ERPA 1) and Sectors N, NNE, and NE 5-10 miles, the decision to Evacuate ERPA 1 (PAD 2) was not made until 2150. The untimely State decision to evacuate is the basis for FEMA's finding of a Deficiency. The problem is in the process that led to an untimely decision to evacuate and the responsibility to correct that process lies with the New Jersey Office of Emergency Management in conjunction with the New Jersey Bureau of Nuclear Engineering (NJBNE). The untimeliness of the decision making process with respect to evacuation resulted in the potential for endangerment of the public health and safety due to unnecessary radiation exposure.

The third PAD was made at 2312, sirens activated at 2320 (simulated) and broadcast of the the EBS message simulated at 2325. This PAD, made after the release terminated (2305), advised residents in ERPA's 1, 2, 3, 4, and 5 to place livestock and milk producing animals on stored feed, protect and cover drinking water and animal feed supplies, delay consumption of contaminated food stuffs until degree of contamination is known, and wash all vegetables prior to consumption.

Coordination with other 10-mile EPZ jurisdictions was successfully carried out by the SEOC staff.

**SEOC Objective 10 - MET** - For the first alert and notification sequence the Deputy Director of NJOEM was the approval authority. The test message at 1852 was based upon plant status and informed the public of the SAE ECL, and to "stay tuned to the EBS station". Activation of the sirens was simulated at 1900, and broadcast of the ESB message was simulated at 1905. Total elapsed time of the first alert and notification sequence was 13 minutes. For all subsequent releases, the Governor's Authorized Representative and the Deputy Director of NJOEM consulted and approved the alert and notification messages. Alerting was simulated via the fixed siren system, and notification of the public was accomplished (simulated) via the EBS Radio Station WBSS. For each protective action sequence the decision was made concerning the need to provide emergency alerting and notification to the public.

SEOC staff completed the first alert and notification sequence and the following activities within 13 minutes:

	EBS #1	EBS #2	EBS #3	EBS #4
DECISION TIME	1852	2045	2150	2312
SIREN ACTIVATION	1900	2053	2158	2320
EBS BROADCAST	1905	2058	2203	2325

Coordination steps were taken with personnel at the EBS Radio Station WBSS to ensure that the correct message was broadcast. This included clarification of which prescribed message was to be used; approval of the message by the releasing authority; initiation and dissemination of the emergency message to the public via telephone calls; and transmission of hard-copy of the message to EBS Radio Station WBSS and to staff at the SCEOC, CCEOC, and the ENC.

**SEOC Objective 11 - MET** - The capability to coordinate the formulation and dissemination of accurate information and instructions to the public was successfully demonstrated by the SEOC staff on four separate occasions.

The organization responsible for the development and release of emergency information and instructions to the public is the NJOEM. Authorization and release was a collaborative effort of the Deputy Director of NJOEM and the Governor's Authorized Representative.

Pre-scripted messages were used and modified as necessary. The messages accurately reflected the PADs of the decision-makers. The first message, EBS 1, was to advise the public of the SAE ECL at AINGS. The public was told to remain tuned to EBS Radio Station WBSS for further information and instructions. The first PAD, EBS 2, was to Shelter ERPA 1. The second PAD, EBS 3, was to Evacuate ERPA 1. The third PAD, EBS 4, was to advise residents in ERPAs 1, 2, 3, 4, and 5 that animals should be placed on stored feed and protected water and to caution the public against the consumption of vegetables until contamination is known, and to wash all vegetables prior to consumption. Arrangements were made to periodically rebroadcast the EBS messages after the initial broadcast to keep residents informed. The contents of the messages were effectively verified with personnel at the EBS Radio Station via telephone, followed immediately by a facsimile. Facsimiles of each message were also immediately transmitted to staff at the ENC, the SCEOC, and the CCEOC.

A log was maintained of informational and instructional messages disseminated to the public. Copies of EBS and News Releases were retained by the PIO. Copies of all messages would have been made available to the Rumor Control Staff and Public Affairs Officials but the Rumor Control function was not required to be demonstrated during this exercise (see SEOC Objective 13 on page 26). Assigned organizations effectively coordinated the contents of messages for the public with all appropriate staff, organizations, and other jurisdictions.

All EBS messages contained accurate information and were written in clear, understandable language. The content was consistent with the Public Information Brochure, and the information broadcast was consistent with the PADs. There was a clear differentiation between previous and current information and instructions.

ERPAs were described in the EBS messages in terms of familiar landmarks and boundaries for the affected areas. They advised the public how to maximize protection when sheltering, what to take and what to leave when evacuating, evacuation routes, the location of reception and congregate care centers, information for special populations and transportation-dependent populations, and rumor control numbers. It also advised them to stay tuned to the



EBS Radio Station and to refer to their Public Information Brochure.

**SEOC Objective 13 - MET -** NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**SEOC Objective 14 - MET -** At 2152, a briefing was held between BNE staff and the DOH representative at the SEOC to discuss KI. There were ample supplies of KI throughout the State, and all Emergency Workers were instructed in the use of KI. No recommendation to ingest KI was issued due to the low concentrations of iodine being released from the plant. Staff members at the SCEOC and the CCEOC were notified by the SEOC staff not to take KI at 2254 and 2255, respectively.

**SEOC Objective 30 - MET -** NJOEM received partial credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

Due to the real ALERT on April 7, 1994, partial credit was given to NJOEM for maintaining staff on a 24-hour basis with the exception of the PIO, the Support Room Coordinator, and the Communications Coordinator. These three staff performed a shift change during the exercise.

At 1804, a shift change of the PIO was performed. The outgoing PIO briefed the incoming PIO of the status of the Press Releases and that EBS messages had not yet been broadcast. The incoming PIO continued operations without difficulty.

At 1827, a shift change of the Support Room Coordinator was performed. The outgoing Coordinator briefed the incoming Coordinator on the number of messages sent to the counties via the EIS system, and on the status of agency representatives that reported to the SEOC. The incoming Coordinator continued operations without difficulty.

At 1859, a shift change occurred between the incoming and outgoing Communications Coordinator. The outgoing Coordinator briefed the incoming Coordinator on the status of the radio equipment and the number of messages received and transmitted. The incoming Coordinator continued operations without difficulty.

**DEFICIENCIES** (Remediated at NJOEM with FEMA-observed training on SOP-901 on March 23, 1995)

1. **Description:** After the SEOC was notified of a release at 2050, and the PAR from the plant was to Evacuate all Sectors 0-5 miles (ERPA 1) and Sectors N, NNE, and NE 5-10 miles, the decision to Evacuate ERPA 1 (PAD 2) was not made until 2150. The untimely State decision to evacuate is the basis for FEMA's finding of a Deficiency. The problem is in the process that led to an untimely

decision to evacuate and the responsibility to correct that process lies with the New Jersey Office of Emergency Management and New Jersey Bureau of Nuclear Engineering (NJBNE). The untimeliness of the decision making process with respect to evacuation resulted in the potential for endangerment of the public health and safety due to unnecessary radiation exposure. Presented below is an overview of the basic exercise facts regarding the timeliness of the decision-making process during this exercise.

1. A General Emergency (GE) was declared at 2000, indicating that plant conditions were degrading and, that if a release of radioactivity did occur, the Protective Action Guidelines (PAG) would likely be exceeded.
2. Protective Action Recommendations (PAR) from the Utility were issued at 2007 and again at 2045 calling for evacuation.
3. At 2027, the NJBNE issued a PAR to shelter all sectors in the emergency planning zone (EPZ), zero to five miles. At 2045, the State (SEOC) decision to shelter was made.
4. The release began at 2045.
5. By 2100, the source term was significant enough to result in a projected dose at five miles of 1.2 rem Total Effective Dose Equivalent (TEDE). The projected dose was more than the PAG of 1 rem, warranting evacuation.
6. At 2141, the NJBNE issued a PAR calling for the evacuation of all sectors in the EPZ, zero to five miles. By this time, the plume had reached the inhabited portions of the EPZ.
7. At 2150, the SEOC issued a Protective Action Decision (PAD) to evacuate.

**Recommendation:** The Governor's Authorized Representative and the Deputy Director of NJOEM should be more proactive regarding information on which they base their decisions, particularly if PARs are not forthcoming in a timely manner from the NJBNE. Also, FEMA-observed training on the revised portions of the plan revisions and SOP-901.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCAs were observed at the SEOC during this exercise.

## **PLAN ISSUES**

No Plan Issues were observed at the SEOC during this exercise.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the SEOC during this exercise.

### **2.1.2 State Field Activities - State Radiological Field Monitoring Team**

Six objectives were demonstrated by the State Radiological Field Monitoring Team (Vanguard Team A) during this exercise. All six objectives were met.

**SFA-FM Objective 4 - MET** - The primary communication system for the State Radiological Field Monitoring Team (Vanguard A, first shift) was a two-way emergency radio system in their 4-wheel drive State vehicle. The team communicated effectively at all times and from all locations with the BNE-FCP staff via this system. Commercial telephone with a dedicated number at the BNE-FCP for field activities was the back-up system, and was successfully demonstrated during the exercise. Information and instructions were always clear, and proper radio techniques and protocol were always observed. No problems or undue delays with radio communication were encountered or observed at any time. The State Field Teams (Vanguard A, first and second shifts) personnel communicated with staff at the BNE-FCP where the teams data was disseminated to the SEOC and the SCEOC.

**SFA-FM Objective 5 - MET** - The three-member Vanguard A team received their individual dosimetry kits at the BNE-FCP upon arrival and assembly at 1600. Each contained one TLD, printed instructions, an exposure record keeping form, KI (April 1995), and two DRDs (0-200 mR and 0-20 R). All dosimeters had been calibrated on May 16, 1994. All dosimeters were zeroed at the BNE-FCP before deployment on their chargers, and records initiated on the appropriate log sheets. All team members read and reviewed all their instructions and forms.

All field team members knew their exposure limits (1.25 R), whom to contact, and what to do in the event that limit was exceeded. Dosimeters were read every 30 minutes, as instructed via radio from staff at the BNE-FCP, and the readings were reported to the BNE-FCP in a timely manner. The records, along with the dosimetry, were given to the Lead Supervisor at the BNE-FCP at the end of the exercise.

The field team members were aware of the reason for the administration of KI and ingestion procedures. No order was ever received by the team ordering the administration of KI. All team members were very knowledgeable and followed all their dosimetry procedures and required practices.

**SFA-FM Objective 6 - MET** - Upon arrival at the BNE-FCP, the Vanguard A Team (first shift) conducted an instrument, equipment and supply inventory following their SOPs and checklist. They verified that all the required portable survey meters and support equipment for conducting ambient radiation monitoring activities were available and within required calibration dates, and proceeded to conduct battery and instrument operational checks. One instrument was replaced because it was inoperable. Spare instruments (double set) were also available in their vehicle. Probes were plastic-wrapped for contamination control and other sampling supplies prepared for later use. The team had excellent maps of sampling points and roads, forms, flashlights, and other safety devices (luminous vests, etc.), and respirators (inspected monthly). The team was thoroughly briefed by the BNE-FCP Lead Person on all pertinent information such as ECLs, plant conditions, and monitoring points before deployment to the field at 1806.

The team knew the area well, and took the required ground and waist-level measurements (all background) properly when instructed to by staff at the BNE-FCP. The results were transmitted promptly back to staff at the BNE-FCP. The team employed a dash-mounted instrument with an external probe (covered) mounted outside the window as they travelled from point-to-point for continuous ambient air monitoring. There was no release during the team's term of deployment, so no plume was ever encountered.

The second shift team had both low range and high range gamma survey instruments (Ludlum Model 17-1, 0-50 mR and 0-500 R/hr). All instruments had been calibrated on February 17, 1994. An inventory list was used during checkout to ensure that no equipment was missing prior to dispatch. Back-up monitoring equipment was available at the BNE-FCP. Battery and source checks were demonstrated by team personnel. Low range survey instruments were checked for proper response to normal background radiation. The team was supplied with maps of the area to be surveyed along with marked, pre-determined monitoring and sampling locations. The team's vehicle was appropriate for the local terrain. Team personnel were briefed on meteorological conditions, exposure control procedures, use of KI, and survey procedures. They arrived at the monitoring and sampling locations without delay. Radiation readings were obtained at one meter heights and ground level using the appropriate instrumentation (Ludlum model 3 with 44-9 probe). All readings were logged in accordance with a pre-determined format and reported via radio to staff at the BNE-FCP. The instruments were enclosed in plastic to prevent contamination.

**SFA-FM Objective 8 - MET** - Upon arrival at the BNE-FCP, the Vanguard A Team (first shift), conducted a complete instrument, equipment and supply inventory for airborne radioiodine and particulate activity monitoring and sample collection. They followed their checklist and verified that all their instruments were within calibration dates (January 1994 and February 1994) and that they operated properly.

An air sample was collected before deployment to the field in the event this first shift team did not encounter a radiological release before relief by the second shift. All equipment was set up properly for the demonstration. The following equipment was available to the field monitoring team: An air sampler with a flow rate meter; silver zeolite cartridges; a power

verter for an electrical source; count rate instruments (E-140/HP 260 probe); and a recently calibrated barium-133 source. The team collected a 10 cubic foot air sample with a RADECO air sampler using a 2 CFM rate for 5 minutes. The particulate filter and the silver zeolite cartridge were removed according to procedure in a low background area after purging the samples of noble gases. The samples were placed in fixed-geometry fixtures and counted according to procedures using the Eberline E140/HP 260 probe. They were then double bagged, tagged and labeled (simulated) and held for later delivery to the mobile laboratory accompanied by the required chain of custody forms. The team demonstrated very careful cross-contamination prevention and handling procedures of samples. They would have transmitted all their measurement data via radio to staff at the BNE-FCP if they had actually collected an air sample in the plume.

**SFA-FM Objective 14 - MET** - The Vanguard A Team (first shift) had in their individual dosimetry kit, a bottle of KI (expiration date April 1995), instructions on its use, and documentation. If more dosages were needed, KI was available in sufficient quantities at the BNE-FCP. All team members knew the principle of KI administration, ingestion procedures, and possible personal side effects.

No release occurred during the teams term of deployment, so no order was received to administer KI.

**SFA-FM Objective 30 - MET** - The Vanguard A Team demonstrated the capability to maintain staffing on a continuous, 24-hour basis through an actual shift change. A current, up-to-date roster of key personnel for each shift was provided. The actual notification was accomplished via the "call down" system. All key functions on the team were staffed and the incoming shift was briefed by the outgoing shift on the current status of the emergency. The incoming shift was knowledgeable and efficient in their duties and responsibilities as an emergency response team, and the shift change was accomplished in a manner that facilitated continuous, uninterrupted operations.

## **DEFICIENCIES**

No Deficiencies were observed for the New Jersey State radiological field monitoring activities during this exercise.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCA's were observed for the New Jersey State radiological field monitoring activities during this exercise.

## **PLAN ISSUES**

No Plan Issues were observed for the New Jersey State radiological field monitoring activities during this exercise.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed for the New Jersey State radiological field monitoring activities during this exercise.

### **2.1.3 State Field Activities - Access Control Point**

A New Jersey State ACP was evaluated out-of-sequence on May 16, 1994. Two objectives were demonstrated during the New Jersey State ACP activation. Both objectives were met.

**SFA-ACP Objective 5 - MET** - At 1345, a free-play message, inserted earlier by the Federal evaluator at the SEOC, directed staff to dispatch a NJSP Trooper to activate ACP 3A. The Troop Operations Representative at the SEOC contacted the NJSP-FCP Commander in Woodstown, New Jersey. An officer from the NJSP was briefed on radiation exposure control by the Radiological Officer, and the officer's DRDs were zeroed before deployment using chargers at the NJSP-FCP. Initial readings were recorded on exposure record cards. The officer arrived at ACP 3A at 1405. His emergency kit contained the required TLD, two DRDs (0-200 mR and 0-20 R), and an exposure record card. All dosimeters had been calibrated on April 19, 1994. The officer was familiar with dosimeters, knew how to read them, and understood what the readings meant. He read his dosimeters at 30 minute intervals, recorded his readings, and transmitted them via radio to the Radiological Officer at the NJSP-FCP. The officer knew that he was to notify the Radiological Officer upon reaching the exposure limit of 1.25 R. He also had unexpired KI (April 1995) in sufficient quantity, along with instructions on KI use. The officer knew that KI was to be ingested only if an order was received from the State Commissioner of Health and relayed to him by the NJSP-FCP Commander.

**SFA-ACP Objective 17 - MET** - A NJSP Officer established ACP 3A per the extent-of-play agreement. The officer received instructions to deploy to his assigned location at 1350, and arrived promptly at 1405 at the intersection of Salem-Hancocks Bridge Road and Hancocks Bridge Quinton Road in Lower Alloways Creek, to establish the ACP. He was in constant communication with staff at the NJSP-FCP via a police radio in his vehicle, and had a portable police radio as back-up. At 1410, he confirmed his position with the NJSP-FCP Commander, and communicated his dosimetry readings to the Radiological Officer. At 1415, he notified the Commander that the ACP was established. The officer then controlled access by setting up cones (simulated) at ACP 3A. He understood his mission and was adequately prepared to carry it out. He had the proper equipment (radio, flash-lights, intercoms, bull-horns, etc.) to

effectively establish the ACP and had accurate knowledge of evacuation of special facilities, e.g., nursing homes; and special populations, e.g., mobility impaired. At 1435, after the officer logged and communicated his dosimetry reading to the Radiological Officer, the demonstration was terminated.

The NJSP Officer should be commended for his thorough knowledge of the methods used to establish an ACP.

#### **DEFICIENCIES**

No Deficiencies were observed for the New Jersey State ACP demonstration.

#### **AREAS REQUIRING CORRECTIVE ACTIONS**

No ARCA's were observed for the New Jersey State ACP demonstration.

#### **PLAN ISSUES**

No Plan Issues were observed for the New Jersey State ACP demonstration.

#### **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFI's were observed for the New Jersey State ACP demonstration.

#### **2.1.4 Bureau of Nuclear Engineering-Forward Command Post**

Seven objectives were demonstrated at the BNE-FCP during this exercise. All seven objectives were met.

**BNE-FCP Objective 1 - MET** - BNE staff members were ordered by NJBNE management to activate the BNE-FCP in Woodstown, New Jersey, at the Alert ECL which was declared at 1630. BNE-FCP staff members were notified via pager and telephone, and received notification of the SAE ECL at 1822, and verified the ECL at 1825. They were also notified of a GE ECL at 2000 and verified the ECL at 2008. BNE-FCP staff members were mobilized at 1725, and mobilization and activation of the BNE-FCP was completed at 1747. Pagers, telephone and facsimile machines were used to notify individual members of the response organization. Up-to-date personnel rosters were used to notify personnel for each shift. No staff were pre-positioned at the BNE-FCP. The following personnel were mobilized: BNE-FCP Lead; BNE-FCP Assistant Lead; Lead Health Physicist; Assistant Health Physicist; BNE-FCP Radio Operator; Department of Health Representative; posting; communications; and support/courier. The organization utilized effective procedures to alert, notify, and mobilize emergency personnel to activate the facility in a timely manner.

**BNE-FCP Objective 2 - MET** - The BNE-FCP had adequate space, furnishings, lighting, restrooms, ventilation, and a generator to supply back-up power to support emergency operations. Also available were five telephones, a computer, a word processor, a copier, and two facsimile machines. Information and data displayed on 10-mile EPZ maps included ERPAs, evacuation routes, reception centers, radiological monitoring points, ECLs, and weather information. The status board was maintained by staff in a timely manner. The BNE-FCP procedures were referred to by staff on a regular basis. Access to the facility was controlled via a single entrance/exit and sign-in/out sheet.

**BNE-FCP Objective 3 - MET** - The BNE-FCP Lead was in charge of emergency response in the facility. He issued instructions to the staff members, provided instructions on adherence to the Plan and SOPs, and ensured that copies were available for reference and use. He conducted staff meetings and briefings on a regular basis. He also provided for retention of messages for incoming and outgoing information, provided leadership, and involved staff in the decision-making process.

**BNE-FCP Objective 4 - MET** - The primary means of communication in the BNE-FCP consisted of five commercial telephones. Two of the telephones were dedicated lines to the BNE staff members in the EOF. A radio system with battery powered back-up, a remote monitoring (crest system) computer link, and two facsimile machines were also available. Staff members at the BNE-FCP maintained communications with staff members at the EOF. No delays were caused by equipment breakdowns or malfunctions.



**BNE-FCP Objective 5 - MET - TLD's and DRDs ( 0-200 mR and 0 to 20 R) were issued to all emergency workers. Records were maintained of DRDs which had been calibrated and tested for electrical leakage on May 16, 1994. TLD's would be submitted to the BNE-FCP Lead for processing at the end of the exercise. Instructions were available on the use of DRDs, and staff took dosimetry readings every 30 minutes. Dosimeter chargers, which were checked for proper operation, were available to team members. The dosimeters were zeroed and recorded prior to deployment.**

Emergency workers were aware that the maximum authorized mission exposure limit was 1.25 R, and they were authorized to terminate their mission if the maximum exposure was reached. Their exposure records were tracked and reviewed by a Department of Health Representative in the BNE-FCP who forwarded them to the NJDEPE. Emergency Workers were made aware of the potential need to take KI for thyroid blocking.

**BNE-FCP Objective 14 - MET - KI (May 1995) was available in sufficient quantities to emergency workers at the BNE-FCP and to the field monitoring teams dispatched from the BNE-FCP. The availability of KI was confirmed by a physical inspection in the BNE-FCP. The State Commissioner of Health authorizes the taking of KI. A decision was made not to administer KI to emergency workers. Instructions were available on the use of KI by emergency workers, including the reason for taking KI, doses and time period within which KI should be taken, and possible personal side effects.**

**BNE-FCP Objective 30 - MET - The extent-of-play agreement identified the Lead in the BNE-FCP as the only staff member to demonstrate a shift change. The incoming shift staff member was thoroughly briefed by the outgoing shift staff member on the current status of the emergency. The incoming shift demonstrated excellent knowledge of his emergency response role and function. The shift change was accomplished in a manner that facilitated continuous, uninterrupted operations.**

## **DEFICIENCIES**

No Deficiencies were observed at the BNE-FCP during this exercise.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCA's were observed at the BNE-FCP during this exercise.

## **PLAN ISSUES**

No Plan Issues were observed at the BNE-FCP during this exercise.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the BNE-FCP during this exercise.

### **2.1.5 Emergency Operations Facility**

There were eight objectives demonstrated at the EOF during this exercise. Six objectives were met, and two were partially met.

**EOF Objective 1 - MET** - The NJBNE staff members successfully demonstrated the capability to alert and fully mobilize the EOF. The Utility notified staff at the SEOC of the Alert ECL at the plant at 1638 (Declared 1630). The NJBNE staff members assigned to the EOF were pre-positioned due to logistics and per the extent-of-play agreement. NJBNE staff members "arrived" at the EOF at 1730, and set up their work station. By 1750, all eight NJBNE staff members had arrived. At 1820, the Lead State Radiological Assessment Officer (Lead SRAO) informed PSE&G staff that the NJBNE at the EOF was activated. Staff response and activation of the EOF was performed in a timely manner.

**EOF Objective 2 - MET** - The adequacy of facilities and equipment to support emergency operations was successfully demonstrated by NJBNE staff at the EOF. The working environment supported the personnel throughout the exercise. Communication links (telephones, facimile machines, and computers) were sufficient in number and performed well during the exercise. Status boards were displayed and provided all necessary information for NJBNE staff. The status boards were up-dated on a timely basis to display current meteorological data, monitoring team data, and plant status. There were four copies of the RERP at the NJBNE work area in addition to several site data/system books available for reference. PSE&G's security force controlled access at the EOF.

**EOF Objective 3 - PARTIALLY MET** - Generally, good direction and control was demonstrated in response to the exercise play. Briefings were held regularly, and staff was included during the decision making process. Staff members were frequently asked what information they needed and their requests were transmitted to the Utility.

However, the PAR and the PAR upgrade were not issued expeditiously. The first PAR was issued approximately 25 minutes after the GE ECL was declared. The PAR upgrade was not issued until approximately one hour after the release began. With respect to protecting the public health and safety, the Lead SRAO should have reminded the NJBNE staff of promptly upgrading PARs as additional release data became available (See ARCA 1 for the EOF).

**EOF Objective 4 - MET** - The capability to communicate with all appropriate emergency personnel was successfully demonstrated by NJBNE staff at the EOF. NJBNE staff regularly up-dated other emergency personnel at the SEOC, BNE-FCP, and the ENC via telephone and facimile machine. They also received (simulated) data from the radiological monitors in the 10-

mile EPZ via computer link. The NJBNE staff received and posted information such as plant status, meteorological data, and field monitoring team data and location. They also followed procedures regarding transmittal of data.

**EOF Objective 7 - PARTIALLY MET** - The capability to develop dose projections and PARs regarding evacuation and sheltering was partially met by the NJBNE staff at the EOF.

Protective Action Recommendations (PAR) from the Utility were issued at 2007 and again at 2045 calling for evacuation. NJBNE staff at the EOF did not explain the difference between the NJBNE and Utility PARs in a manner that was helpful to the decision makers. (See ARCA 2 for the EOF).

See Plan Issue assessed to the NJBNE on page 37.

**EOF Objective 9 - MET** - Only the chief decision-maker at the SEOC can authorize PADs. NJBNE staff members at the EOF do not make PADs, but perform independent assessments to provide PARs. The NJBNE Lead SRAO considered dose projections, EPA PAGs, evacuation time estimates, and meteorological conditions in developing PARs. The PARs the Lead SRAO communicated to staff at the SEOC were:

NJBNE/EOF PAR 1: Shelter 0 to 5 miles; transmission time 2027.

NJBNE/EOF PAR 2: Evacuate 0 to 5 miles; transmission time 2141.

**EOF Objective 14 - MET** - The Lead SRAO performed assessments necessary to determine the radioiodine concentration and make recommendations regarding the need to recommend KI to emergency workers. The NJDEPE dose assessment model that provided dose projection was run at 2138, with a source term of 120 Ci/s gross noble gases. This was the definitive dose projection upon which the PAR for evacuation was based. This dose projection included a projected thyroid dose of about 90 R CDE at 0.5 miles, the approximate location of the AINGS site boundary. At 5 miles, the dose to the thyroid would be approximately 9 R. Therefore, KI was not recommended to emergency workers. KI is not given to institutionalized individuals or the general public in New Jersey.

**EOF Objective 30 - MET** - The NJBNE staff members successfully demonstrated the capability to maintain staffing on a continuous, 24-hour basis through an actual shift change. Per the extent-of-play agreement, the incoming Lead SRAO was pre-positioned at the EOF and "arrived" at 1850. The incoming Lead SRAO was briefed by the outgoing Lead SRAO as well as by the other NJBNE staff. The change of the Lead SRAO was accomplished in a manner that facilitated continuous, uninterrupted operations.

## **DEFICIENCIES**

No Deficiencies were observed at the EOF during this exercise.

## AREAS REQUIRING CORRECTIVE ACTION

1. **Description:** The PAR and the PAR upgrade were not issued expeditiously. In protecting the public health and safety, the Lead SRAO should have reminded the NJBNE staff of promptly upgrading PARs as additional release data became available. (NUREG-0654, I.8)

**Recommendation:** Emphasize the importance of timely PARs to NJBNE staff during training. Procedure SOP-205, EOF, should establish a target time-frame for issuing PARs after GE ECLs are declared or after significant changes in plant status (e.g., within a specified number of minutes).

2. **Description:** Protective Action Recommendations (PAR) from the Utility were issued at 2007 and again at 2045 calling for evacuation. NJBNE staff at the EOF did not explain the difference between the NJBNE and Utility PARs in a manner that was helpful to the decision makers (SOP-305, Protective Action Recommendations for Plume Exposure, Attachment 305-6). (NUREG-0654, J.10.m)

**Recommendation:** NJBNE staff should explain the difference between the NJBNE and Utility PARs in the "Basis for Difference" block in a manner that is helpful to the decision makers.

## PLAN ISSUES

1. **Description:** FEMA's review of NJBNE's Standard Operating Procedure (SOP) 305 (the Logic Diagram for the development of PARs dated March 1994) clearly indicated that the process delineated there does not foster the timely development of PARs in advance of the release of radionuclides into the environment. Based on this process, an evacuation recommendation will not occur for some serious plant conditions until a release is evident. Even then, the decision to evacuate or shelter would be based on the release time compared to the evacuation time; a time relationship that becomes more critical due to the delayed decision. In addition, SOP-305, including the Logic Diagram, particularly those portions of the plan that relate to protective action decision making, has inconsistencies which are not in accordance with the Environmental Protection Agency's "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" (EPA-400-R-92-001, October 1991).

**Recommendation:** The action necessary to resolve the Plan Issue requires modification to SOP-305, including Attachment 305-5.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the EOF during this exercise.

### **2.1.6 Emergency News Center and Emergency Broadcast Station**

Eight objectives were demonstrated at the ENC and at EBS Radio Station WBSS during this exercise. All eight objectives were met.

**ENC Objective 1 - MET -** NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**ENC Objective 2 - MET -** There was adequate space, furnishings, supplies, and ventilation at the ENC to support emergency operations. The status boards were up-dated in a timely manner. Boards and maps were posted which indicated the 10-mile EPZ evacuation routes, locations of congregate care and reception centers, field monitoring points, population by ERPAs, ECLs, weather data, special facilities, and TCPs. Security was adequate, and access to and from the ENC was controlled by local police. NJOEM staff used the EIS as the status board to update and provide briefings to the group prior to the media briefings.

**ENC Objective 4 - MET -** NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70. This objective was not waived for the EBS Gateway Station WBSS.

Staff at the EBS Gateway Station WBSS successfully demonstrated the capability to communicate with the appropriate emergency personnel. At 1752, a test facsimile message was transmitted to ensure that the facsimile machine functioned properly. Station personnel had both telephone and facsimile machine capability. The EBS SOPs and the standard pre-scripted messages were available for reference. EBS message 1 was received at 1856, siren activation (simulated) at 1900, and broadcast was simulated at 1905. Station personnel were very knowledgeable of the EBS SOPs.

**ENC Objective 5 - MET -** Representatives from the NJOEM, NJBNE, NJDEPE, Salem County Office of Emergency Management, Cumberland County Office of Emergency Management, the Delaware Emergency Management Agency, and PSE&G staffed the ENC. Each had their own SOP for complying with Objective 5, and SOP-408 was available for review during the exercise. Interviews with representatives from the various agencies indicated knowledge of the maximum permissible exposure limits (administrative levels). TLDs and DRDs (0-200 mR and 0-20 R) were issued to NJOEM staff. All dosimeters had been calibrated on April 19, 1994. Early in the exercise an announcement was made instructing occupants at the facility that if the ENC was in the path of the plume the policy was to evacuate and relocate personnel to the back-up ENC in Moorstown, New Jersey. Personnel were also instructed to avoid the ongoing road construction in Salem County.

The ENC is a new facility specifically designed as a News Center, and this was the first time the facility was activated for a FEMA-graded exercise. The ENC was used for the real Alert on April 7, 1994.

**ENC Objective 10 - MET** - Staff at the EBS Gateway Station WBSS successfully demonstrated the capability to promptly alert and notify the public within the 10-mile EPZ and disseminate an instructional message to the public.

Radio station personnel received a copy of EBS message 1 at 1856, siren activation (simulated) was at 1900, and broadcast was simulated at 1905. Station personnel verified that they had received the correct message. All activities were completed within 15 minutes of the initial decision by the decision-maker at the SEOC.

**ENC Objective 11 - MET** - The capability to coordinate the formulation and dissemination of accurate information and instructions to the public was successfully demonstrated at the ENC. NJOEM staff members at the ENC coordinated with Utility representatives, State of Delaware staff, and various agency officials from New Jersey on Press Releases and Media Briefings via conferences conducted before each briefing and distributing copies of the News Bulletins as the emergency situation developed. Status boards were up-dated frequently, Press Releases were widely distributed to all agency representatives and the media, and Rumor Control was handled adequately. Staff members at the SEOC were responsible for formulating the content of the EBS messages. All EBS messages were double-checked for content and accuracy by NJOEM staff members. The decision time for EBS message 1 was 1852. Sirens were activated (simulated) at 1900, and the message was broadcast (simulated) at 1905. Subsequent EBS messages from the SEOC were transmitted in the same manner. All EBS messages accurately reflected the PADs of the decision-maker at the SEOC.

**ENC Objective 12 - MET** - The ENC was the focal point for approved information released to the public through the media representatives. Media Briefings were held hourly during the exercise. A group consisting of representatives from NJOEM, NJDEPE, NJDOH, Delaware OEM, and PSE&G answered media questions accurately and in a timely manner. Press Releases were distributed and conferences were held involving operations. A media information packet was distributed to each press person. Displays of the plant and ERPAs, as well as ECL definitions were prominently placed in the ENC. Information regarding the emergency was accurate, disseminated in a timely manner, and covered all issues to properly inform the public on the status of the radiological emergency.

**ENC Objective 30 - MET** - NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

## **DEFICIENCIES**

No Deficiencies were observed at the ENC during this exercise.

### **AREAS REQUIRING CORRECTIVE ACTION**

No ARCAs were observed at the ENC during this exercise.

### **PLAN ISSUES**

No Plan Issues were observed at the ENC during this exercise.

### **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the ENC during this exercise.

## **2.2 Salem County**

### **2.2.1 Salem County Emergency Operations Center**

Eight objectives were demonstrated at the SCEOC during this exercise. All eight objectives were met.

**SCEOC Objective 1 - MET** - NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**SCEOC Objective 2 - MET** - NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**SCEOC Objective 3 - MET** - The Emergency Management Director of the SCEOC displayed the capability to command and control emergency operations throughout the exercise. He appropriately discussed, with the Radiological Officer and other key Salem County representatives, actions the SCEOC staff would take in response to the evolving emergency situation. He issued instructions to the staff, followed procedures, and designated a staff member to conduct periodic briefings to update staff regarding ECLs and plant conditions. He authorized the implementation of PADs made by the SEOC decision-maker by providing for the evacuation of the special needs population, including the transit dependent, at 2012. He also authorized the opening of six congregate care centers (simulated).

**SCEOC Objective 4 - MET** - NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**SCEOC Objective 5 - MET** - Information regarding Emergency Worker exposure control was obtained via discussion with the SCEOC Director and the RADEF Officer due to the fact that the SCEOC is more than 18 miles from the plant, well out of the 10-mile EPZ. They both provided accurate information on dosimetry and exposure control requirements.

**SCEOC Objective 10 - MET** - Staff members at the SCEOC were responsible for notifying the public via activation of a fixed siren system (simulated). They performed this function when directed by the New Jersey Deputy State Director at the SEOC. They activated the siren system (simulated) four times. The first siren activation, at 1900, was to notify the public of the SAE ECL. The second, at 2053, the third, at 2158, and the fourth at 2320, were to notify the public of PADs ordered by the NJOEM Deputy State Director and the Governor's Authorized Representative at the SEOC. All four simulated siren activations were conducted without any problems.

**SCEOC Objective 14 - MET** - All emergency workers were aware that the New Jersey State Commissioner of the Department of Health was the only official who could authorize the use of KI. The decision is then transmitted from the SEOC to the RAD Officer at the SCEOC. KI is not authorized for institutionalized individuals or the general public in New Jersey.



**SCEOC Objective 30 - MET - NJOEM** received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

## **DEFICIENCIES**

No Deficiencies were observed at the SCEOC during this exercise.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCA's were observed at the SCEOC during this exercise.

## **PLAN ISSUES**

No Plan Issues were observed at the SCEOC during this exercise.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFI's were observed at the SCEOC during this exercise.

### **2.2.2 Salem County Municipal Response Activities**

Municipal response activities were evaluated at the following Municipal EOCs: Elsinboro, Lower Alloways Creek, Mannington, Pennsville, Salem City, and Quinton. These Municipal EOCs demonstrated eight objectives during this exercise. All eight objectives were met.

**SCM Objective 1 - MET - NJOEM** received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70. Only Mannington EOC and Pennsville EOC demonstrated Objective 1.

Although staff at the Elsinboro EOC were not required to demonstrate Objective 1, the radio operator and an administrative support person were present and performed their duties during the exercise.

The capability to alert and fully mobilize, activate, and staff the Mannington and Pennsville EOCs for emergency operations was successfully demonstrated. The EMC at the Mannington EOC received notification via telephone from the SCEOC at 1708 that an Alert ECL had been declared by the Utility. He notified the Deputy EMC, who arrived at the EOC at 1721. They both notified remaining EOC staff using an up-to-date call-out list. One staff member was paged. Staff signed-in on a current personnel roster. Staff at the Pennsville EOC

was notified of the Alert by staff at the SCEOC at 1714. The EOC staff members were notified to report using an up-to-date call-out list. The list included sufficient personnel to double-shift the EOC. The staff mobilized promptly, and sufficient staff arrived by 1714 to activate the EOC. A full staffing complement was in place approximately 30 minutes after notification began. All essential emergency functions were performed at the EOC, and the mobilization of staff at both EOCs proceeded in accordance with the RERP and SOPs.

Two previous ARCAs (SCM 1 and SCM 2) from the October 28, 1992, exercise were corrected.

**SCM Objective 2 - MET - NJOEM** received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70. Only The Mannington EOC demonstrated Objective 2.

Staff at the Mannington EOC successfully demonstrated the adequacy of facilities, equipment, displays, and other materials to support emergency operations. The EOC had adequate space, furnishings, lighting, restrooms, ventilation, and back-up power provided by a generator. The generator was successfully tested during the exercise. Adequate telephones, typewriters, computers, and facsimile machines were available at the EOC to support emergency operations. Maps and displays of the 10-mile EPZ, 50-mile EPZ, evacuation routes, reception and congregate care centers, special facilities, and traffic and access control points were also posted. ECLs were posted as they were received, and weather information was displayed and kept current. A copy of the RERP and SOPs were available and used by staff. Security was provided by fire/police personnel.

**SCM Objective 3 - MET -** The capability to direct and control emergency operations was successfully demonstrated at the Salem County Municipal EOCs. The Mayor of the LAC Township was in charge of the emergency response in LAC. He was assisted by a proficient staff, especially the EMC and the Chief of Police. The Mayor was adept in allowing the experts to function within their areas of expertise and maximized use of the EMC to coordinate the activities of the EOC staff. Timely instructions and situational updates were issued. The Mannington EMC displayed leadership throughout the exercise, conducted numerous staff meetings, and provided for retention of messages. He also involved staff in decision-making and directed coordination with staff at the SCEOC. The Pennsville EOC EMC, and after the shift change the Deputy EMC, were effectively in charge of the emergency response. They each provided instructions to staff, conducted staff meetings and briefings, involved the staff in decision-making, and provided for the retention of message logs. The EMC made available a copy of the RERP and SOPs and instructed staff to adhere to them. EOC staff functioned smoothly and without conflicts in carrying out their essential function. The Salem City EMC effectively controlled emergency operations. He issued instructions to the staff, conducted briefings, and provided leadership. The EMC demonstrated considerable command capability.

Two previous ARCAs (SCM 3 and SCM 4) from the October 28, 1992, exercise were corrected.

**SCM Objective 4 - MET** - The primary communication system was commercial and dedicated telephone, with radio as back-up. Both primary and back-up systems were used throughout the exercise, without any undue delay or breakdown. Lower Alloways Creek EOC staff had dedicated telephone lines to the SCEOC and to the Utility. Mannington EOC staff used commercial telephone as the primary system and dedicated telephone and radio as back-up. Also available were EMRAD, EMS portable radio, and facsimile machines. Pennsville EOC staff also had ample communications resources available. There were five commercial telephones, a dedicated line to the SCEOC which provided conferencing capability, a cellular telephone, RACES; police, fire, and EMRAD radio systems, and a facsimile machine. At the Salem City EOC, two commercial telephones, a dedicated line to the SCEOC, RACES, EMRAD, police and fire radio, and a facsimile machine provided dependable communications capability for staff. All primary systems functioned without breakdowns. Municipal EOC staff had telephone communications with staff at the SCEOC and received facsimiles from staff at the SEOC and the Utility.

Staff members at the Municipal EOCs communicated with the staff at the SEOC, the SCEOC, other municipal EOCs, the Utility, police and fire departments, and ambulance services. There were no malfunctions in any communication system.

**SCM Objective 5 - MET** - Per the extent-of-play agreement, documentation on inspection dates including leak test information, was on file at the NJOEM Radiation Laboratory. All staff members received dosimetry kits at the Municipal EOCs. The kits contained one TLD, two DRDs (0-200 mR and 0-20 R), unexpired KI, an exposure record card, and an orange Emergency Worker information card. A record was made of the kits issued. Dosimeters had been calibrated on April 19, 1994. The RADEF Officers' were proficient in the operation of the dosimeter charger and zeroed the dosimeters. The RADEF Officer at the Pennsville EOC displayed an excellent knowledge of emergency worker exposure control. Signs were posted in the EOCs advising the staff of the 1.25 R exposure limit. Per the extent-of-play agreement, non-self reading dosimeters (TLD) were not assigned to each Emergency Worker. If issued, the TLD would be returned to the EOCs for forwarding to the SCEOC when the mission was completed. Lower Alloways Creek EOC staff members were aware of the potential need to take KI, and ample supplies of KI (April 1995) were available.

Three previous ARCAs (SCM 5, SCM 6, and SCM 7) from the October 28, 1992, exercise were corrected.

Dosimetry was also provided to route alerting personnel at the Pennsville and Salem City EOCs who notified the special populations (mobility and hearing impaired) in their areas. Each worker received a TLD and two DRDs (0-200 mR and 0-20 R). The dosimeters were zeroed and their numbers were recorded at issuance. All dosimeters had been calibrated on April 19, 1994. The dosimetry kit included instructions on the use of dosimeters, how often to take readings, the need to record readings, information on use of KI, exposure limits, and who to contact if the limit was exceeded. Each response team had a dosimeter charger that had been checked for proper operation. Emergency workers were aware of the turnback value and what

to do if the limit was exceeded. The dosimeters were read at the prescribed 30-minute intervals. Staff knew that all readings and equipment were to be given to the RADEF Officer at the end of the mission.

**SCM Objective 10 - MET** - Per the extent-of-play agreement, this objective was evaluated at the Quinton EOC only. Staff at the Quinton EOC successfully demonstrated the capability to promptly provide back-up route alerting and notification to the public within their area and disseminate instructional messages to the public on the basis of decisions by the SEOC officials.

Staff at the Quinton EOC received a free-play message at 1908 that siren 105 had failed. The Quinton EMD immediately coordinated with the Assistant Fire Chief to begin route alerting in the area covered by the failed siren. Fire station personnel were dispatched and given appropriate route instructions and an accurate map. The Federal evaluator rode the entire route with the fire station personnel and verified that the route was completed at 1946, thereby completing the alerting and notification within the 45-minute allotted time. Additionally, prior to the shift change, the Deputy EMD was interviewed and he was very knowledgeable of the procedures associated with route alerting and public notification.

**SCM Objective 15 - MET** - The capability and resources necessary to implement appropriate protective actions for special populations was successfully demonstrated by staff at the Pennsville and Salem City Municipal EOCs. Staff at the EOCs were responsible for notifying the special populations (mobility and hearing impaired). Each EOC had an extensive, up-to-date list of the special populations living in their area, and dispatched (simulated) route alerting teams to notify both mobility and hearing impaired individuals. The transportation requirements were based on the current health conditions of the individuals. At the Pennsville EOC, provisions were made to evacuate two hearing impaired individuals in ambulances. At the Salem City EOC, transportation was provided by the Salem City Ambulance Squad and the Salem City Board of Education. Staff at both EOCs followed the RERP and SOPs in notifying the special populations.

**SCM Objective 30 - MET** - At the LAC EOC, a roster of key personnel for each shift was provided. Per the extent-of-play agreement, the shift change involved the Chief of Police. The change began with briefings at 1830, and was completed at 1840. The incoming shift (the EMC) demonstrated a thorough knowledge of his role and function. No interruption of operations was observed during the shift change. The Mannington Deputy EMC demonstrated a shift change with the EMC at 1829. The EMC was thoroughly briefed by the outgoing Deputy EMC on the current status of the radiological emergency. A current roster was provided indicating that the Mannington EOC had enough staff to maintain staffing on a continuous, 24-hour basis. The Deputy EMC at the Salem City EOC replaced the EMC at 1905. A briefing on the current status of the emergency took place, and the incoming shift demonstrated knowledge of his response role and function. The Quinton EOC successfully demonstrated the capability to maintain staffing on a continuous, 24-hour basis through an actual shift change. The Quinton Deputy EMC arrived at the Quinton EOC at 1720, took command, and immediately

began operations. At 1900, the Quinton EMC replaced the Deputy after a briefing, and successfully directed the staff until the termination of the exercise. This key position shift change included a summary of the ongoing activities and outstanding staff issues, and demonstrated that the staff at Quinton EOC could operate in a continuous, uninterrupted manner.

## **DEFICIENCIES**

No Deficiencies were observed at the Salem County Municipal EOCs during this exercise.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCAs were observed at the Salem County Municipal EOCs during this exercise.

## **PLAN ISSUES**

No Plan Issues were observed at the Salem County Municipal EOCs during this exercise.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the Salem County Municipal EOCs during this exercise.

### **2.2.3 Salem County Radiological Field Monitoring Teams**

Seven objectives were demonstrated by the Salem County Radiological Field Monitoring Teams during this exercise. All seven objectives were met.

**SC FM Objective 1 - MET** - The Salem County Radiological Field Monitoring Teams were notified via pager of the Alert ECL at approximately 1655, and mobilized promptly to the SCEOC. Per the extent-of-play agreement, they proceeded to the BNE-FCP for instrument check-out. The team members signed-in both at the SCEOC and the BNE-FCP. The County Deputy Coordinator for Emergency Management Services had an up-to-date team roster and call-up list.

**SC FM Objective 4 - MET** - Back-up communication was a commercial telephone and team members were told to call collect. The team communicated effectively throughout the exercise with the staff at the BNE-FCP with no undue delay. The team used proper radio techniques in its communication, always specifying "This is a drill."

The FM Team had a two-way radio system in their van. This was the primary communication system with staff members at the BNE-FCP. A cellular telephone in the van was utilized as the back-up system. Both systems were demonstrated during the exercise, and no malfunctions or breakdowns were experienced.

**SC FM Objective 5 - MET** - Dosimeter chargers were available and used prior to deployment. Appropriate instructions and documentation were provided to each worker. All dosimeters had been calibrated on April 19, 1994.

The team members were familiar with the prescribed dose limit of 1.25 R. Dosimeters were read every 30 minutes. The readings were immediately transmitted to the Field Team Controller, who also received the exposure records when the exercise was terminated.

No special mission procedures were implemented during this exercise, however, the field team was familiar with these procedures and the corresponding controls.

The other county radiological field monitoring team (Vanguard C, second shift) evaluated consisted of three monitoring team members from Cumberland County working from Salem County.

Each member of the team had one TLD and two DRDs (0-200 mR and 0-20 R). Dosimeter chargers were available and used prior to deployment as well as during field monitoring activities. Appropriate dose instructions and exposure records were provided to each worker. The DRDs were read every 30 minutes. The dose information was also provided to the BNE-FCP. The field monitoring team members were familiar with the dose limit of 1.25 R.

**SC FM Objective 6 - MET** - The FM Team had the necessary and required instrumentation and equipment to conduct ambient radiation monitoring. These included a Ludlum 3 for low range and a Ludlum 17-1 for high range. All instrumentation had been calibrated on March 14, 1994. All probes were covered with plastic for contamination control. Replacement equipment was available from the BNE-FCP, but none was needed. The team conducted proper instrument check-outs prior to deployment. Open and closed window readings at waist and ground-level were successfully demonstrated at monitoring location NNE 7 (Intersection of Fort Elfsburg-Hancocks Bridge Road and Money Island Road).

The procedure for performing a response check of instruments using the Ba-133 check source is included in SOP-302. If a FM Team does not have a Barium check source, team members are instructed to contact the FM Team Coordinator or the BNE-FCP support person for assistance. The FM Teams were issued backup instruments for use in the field, and performed a response check per SOP-302 before deployment using a Barium check source at the BNE-FCP.

A previous ARCA (SC 1) from the October 28, 1992, exercise was corrected.

The second shift county radiological field monitoring team (Vanguard C) evaluated consisted of three monitoring team members from Cumberland County working from Salem County. The team had the necessary and required instrumentation and equipment to conduct ambient radiation monitoring. The SOP-302-1, "Plume Phase Equipment Checklist", was used to verify the equipment inventory and operability prior to deployment from the BNE-FCP. The field team Captain was briefed by the BNE-FCP Lead about plant status, meteorological and traffic conditions, monitoring locations, and exposure control procedures. This information was then given to the other team members. All instrumentation had been calibrated within one year of the exercise date. Route maps were used throughout the exercise. Continuous monitoring of the external radiation conditions was performed while enroute. The field monitoring team as directed by the BNE-FCP staff, arrived without delay at the first monitoring location NNE 8 at 2010. Beta and gamma radiation readings were taken at this location using open and closed window probes. Proper field radiological controls were followed. All radiological information was reported to the BNE-FCP via radio.

At 2300, the team arrived at the intersection of Grieves St. and Route 49 to begin a plume traversal to identify the edges and maximum centerline concentrations. The speed of the response vehicle and frequency of the radiation readings were appropriate for the traversal.

**SC FM Objective 8 - MET** - The FM Team had the necessary and required instrumentation and equipment for the exercise. Per the extent-of-play agreement, they demonstrated taking an air sample just prior to the exercise. The sampling equipment was properly calibrated and set up per SOP-302-6, "Airborne Radioactivity Sampling and Counting". An electric power supply from the response vehicle was used for the air sampler. Several silver zeolite adsorbent filters were available in the instrument kits. Both the silver zeolite filter cartridge and the particulate filter were properly labeled and bagged. The silver zeolite cartridge was counted in a low background radiation area and the results of the count was transmitted via radio to staff at the BNE-FCP. The field monitoring team knew to transfer custody of the sample to the BNE-FCP. The air sampler was properly calibrated (November 1993) and operated without any problems. The particulate filter was bagged and labeled, and silver zeolite was counted with the Ludlum 3 counting meter. Both filters were bagged and labeled and would be given to staff at the BNE-FCP at the shift change. All appropriate measurements would be relayed to BNE-FCP staff during actual field activities.

A previous ARCA (SC 2), from the October 28, 1992, exercise was corrected.

The other county radiological FM Team (Vanguard C) evaluated consisted of three monitoring team members from Cumberland County working from Salem County. They were the second shift. Although the field monitoring team was not dispatched to collect an air sample from the plume, they had demonstrated this ability, including proper counting procedures pursuant to their SOP-302-6, satisfactorily prior to the exercise per the extent-of-play agreement. The air sample was properly calibrated, and the instrument operated correctly during the

collection period. Both samples were properly bagged and labeled, and the silver zeolite sample was counted with a properly calibrated survey meter.

**SC FM Objective 14 - MET** - Sufficient quantities of KI (April 1995) were included in the team's equipment kits and was included in the pre-deployment checklist with appropriate instructions and documentation. There was no order issued to take KI during the exercise, but team members were aware that authorization to take KI would come from staff at the BNE-FCP.

**SC FM Objective 30 - MET** - At 1900, the Salem County FM Team was told to return to the BNE-FCP to demonstrate a shift change with the Vanguard C team.

The Vanguard C team second shift consisted of three monitoring team members from Cumberland County working from Salem County. A roster was provided which included the names of all field monitoring team members. This roster was used to call in, via pagers, the second shift field monitoring team. Upon arrival, the second shift signed-in and reported to staff at the BNE-FCP. Appropriate questions were asked regarding instrument and equipment status, traffic conditions, and vehicle condition. A complete equipment/instrument check was performed following SOP-302-1, "Plume Phase Equipment Checklist". The incoming shift Team Captain received a briefing from both the Salem County FM Team and the BNE-FCP Coordinator concerning plant and meteorological conditions and events that had transpired. The Team Captain was also briefed on the field location to report to, and he shared this information with the rest of his team. Following the shift change, the incoming shift was able to fully perform its duties.

## **DEFICIENCIES**

No Deficiencies were observed for Salem County Radiological Field Monitoring activities during this exercise.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCAs were observed for Salem County Radiological Field Monitoring activities during this exercise.

## **PLAN ISSUES**

No Plan Issues were observed for Salem County Radiological Field Monitoring activities during this exercise.



## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed for Salem County Radiological Field Monitoring activities during this exercise.

### **2.2.4 Salem County School Evacuation Bus Run**

The Salem County school evacuation bus run was evaluated out-of-sequence on May 2, 1994. Three objectives were demonstrated and all objectives were met.

**SC SE Objective 4 - MET** - The driver from the B.R. Williams, Inc. Bus Company communicated via radio with the dispatcher at the bus garage and staff at the SCEOC. If the radio had failed, he knew to drive the vehicle to the nearest commercial telephone to call the dispatcher at the garage.

**SC SE Objective 5 - MET** - The driver had a dosimetry kit which contained two DRDs (0-200 mR and 0-20 R), one TLD, one radiation exposure record card, and an instruction card. All dosimeters had been calibrated on April 19, 1994. He also had a dosimeter charger, and his dosimeters had been zeroed at the garage. The driver also had a separate package containing one decontamination suit, gloves, and a respirator. Although no demonstration was required, he was knowledgeable of the proper donning of the equipment.

**SC SE Objective 16 - MET** - The driver from the B.R. Williams, Inc. Bus Company arrived at the Elsinboro Elementary School at 1550. He left the Elementary School at 1600 and proceeded to the Mary S. Shoemaker Elementary School. The driver had an accurate evacuation route map with him and was able to communicate with the staff at the SCEOC and the dispatcher at the bus garage via radio.

The driver arrived at the Mary S. Shoemaker Elementary School at 1633, taking 33 minutes to drive the route. He displayed good knowledge of the area, taking alternate routes to the school due to road construction.

## **DEFICIENCIES**

No Deficiencies were observed for the Salem County school evacuation bus run.

## **AREAS REQUIRING CORRECTIVE ACTIONS**

No ARCA's were observed for the Salem County school evacuation bus run.

## **PLAN ISSUES**

No Plan Issues were observed for the Salem County school evacuation bus run.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed for the Salem County school evacuation bus run.

### **2.2.5 Salem County Reception Center**

The Salem County Reception Center (located at the Woodstown High School) was evaluated out-of-sequence on May 16, 1994. A free-play message was inserted by the Salem County EMC to begin set-up and operations of the reception center. Five objectives were demonstrated, and all five objectives were met.

**SC RC Objective 2 - MET** - The Woodstown High School was an excellent facility and was well equipped for its use as a reception center. Access to this facility was controlled by the Woodstown Police Department and Volunteer Fire Police from the Reliance and Alloway Fire Departments. Copies of the RERPs and SOPs were available for reference.

**SC RC Objective 4 - MET** - The primary communication system at the reception center was via radio between the Center Manager and with other areas within the reception center. There were four commercial telephones available to communicate with staff at the SCEOC. Also, there was a back-up radio system to contact the Fire Dispatcher at the SCEOC.

**SC RC Objective 5 - MET** - All emergency workers at the reception center had two DRDs (0-200 mR and 0-20 R) and one TLD. The DRDs had been calibrated on April 19, 1994. All dosimeters were properly zeroed with the available dosimeter charger. Signs were posted throughout the reception center to remind emergency workers to read their dosimeters every 30 minutes and to report any reading above 1.25 R to their immediate supervisor.

**SC RC Objective 18 - MET** - The reception center was staffed by members from the Reliance and Alloway Fire Departments, Alloway Ambulance Squad, Carneys Point Emergency Management, Pennsville Emergency Management, and the Woodstown Police Department.

Vehicle monitoring and decontamination were demonstrated in an excellent manner. A vehicle driven to the entrance of the reception center was directed to the monitoring point. A reception center worker accidentally touched a vehicle with his gloved hand. When asked by the Federal evaluator what he would do, he stated he would have his glove monitored to see if it was contaminated. If so, he would have removed his glove and replaced it with a new one. Prior to entering the reception center, booties were issued to drivers and passengers to prevent the spread of contamination. Passengers were discharged to the reception center before the

vehicle was monitored. Two workers then monitored the vehicle's exterior, interior, and air intake, while another worker recorded the information.

If clean, vehicles were sent to a designated clean parking area, and the driver was sent to the reception center. If the vehicle was considered contaminated (greater than 1,000 counts per minute), the vehicle would be driven to the decontamination section of the reception center. Decontamination workers used water and Liquid Decontamination wash. They would thoroughly clean the contaminated areas, then re-monitor. If the vehicle was still contaminated, an "unclean" sticker would be affixed to it, and it would be parked in a designated parking area for contaminated vehicles until workers had time to re-wash the vehicle.

It was mentioned to the Federal evaluator that if the interior of the vehicle was contaminated, the driver would don Tyvek anti-contamination clothing and drive the vehicle to the "dirty" parking lot without becoming contaminated.

Evacuees were given booties as they left their vehicles and were directed to the entrance of the reception center. Two monitors with Ludlum Model 3 survey meters (calibrated November 1993) scanned evacuees as they entered the facility. Probes used for monitoring were wrapped in plastic for contamination control. The two monitors (one dressed in anti-contamination outfit, as per the extent-of-play agreement) took an average of 137 seconds. Based on the number of trained monitors and instruments available, this monitoring time is more than sufficient to monitor 20% of the 10-mile EPZ evacuated population within 12 hours.

Clean individuals were given a yellow copy of the reception center registration form and directed toward the registration desk. Individuals were provided with instructions to the congregate care center, along with instructions to bathe and wash their clothes. Those who did not have transportation were directed to the bus which would transport them to the congregate care center.

Evacuees who were contaminated were directed toward the men's or women's shower area. Within the shower area, evacuees were directed to wash with soap and water or Radiac decontamination wash and scrub brushes as per the SOPs. Tyvek suits and booties, along with towels, were available for evacuees. After each attempt at decontamination, individuals were remonitored. After three unsuccessful attempts at decontamination, evacuees were told to dry themselves, dress in Tyvek suits, and were escorted to an ambulance to take them to the Salem Memorial Hospital for further decontamination. Evacuees placed their clothes into the plastic bags issued to them. Evacuees were also given forms to complete and place with their clothes. It should be noted that the men's and women's shower area was marked off to separate "clean" and "dirty" evacuees. Drums marked for radioactive waste and for non-contaminated waste were provided. All contaminated items were placed in the appropriate drum.

For demonstration purposes only, one SAIC portal monitor was demonstrated for the Federal evaluator. It took approximately 5 seconds for an evacuee to be scanned by the portal monitor.

**SC RC Objective 30 - MET** - As per the extent-of-play agreement, the Reception Center Manager performed a shift change at 2020. He briefed the incoming shift Manager in a manner that facilitated continuous, uninterrupted operations.

At 2035, a shift change occurred with a personnel monitor. He was briefed by the outgoing monitor regarding the proper procedures of monitoring evacuees. He continued monitoring evacuees without any difficulty.

### **DEFICIENCIES**

No Deficiencies were observed at the Salem County Reception Center.

### **AREAS REQUIRING CORRECTIVE ACTIONS**

No ARCA's were observed at the Salem County Reception Center.

### **PLAN ISSUES**

No Plan Issues were observed at the Salem County Reception Center.

### **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the Salem County Reception Center.

#### **2.2.6 Salem County Congregate Care Center**

The Salem County Congregate Care Center (located at the Mary S. Shoemaker Elementary School) was evaluated out-of-sequence on May 2, 1994. Two objectives were demonstrated and both objectives were met.

**SC CCC Objective 4 - MET** - The Mary S. Shoemaker Elementary School had an excellent communications system to support the congregate care facility. Ten telephones were the primary means of communication. Also, a NJSP radio in the Principal's office would be used to communicate with staff at the SEOC, and served as a back-up system.

This evaluation was performed out-of-sequence, and no actual communication was performed per the extent-of-play agreement. Communication would be with the staff at the reception center and the SCEOC.

**SC CCC Objective 19 - MET** - Salem County staff members demonstrated adequate facilities, equipment, and personnel to provide congregate care to evacuees. Designated areas for food services and temporary living accommodations were located throughout the facility. The school had adequate facilities and square footage to meet the requirements for the designated shelter capacity of 150 people. Security for the center would be provided by the Woodstown Police.

The American Red Cross had the school's USDA food stock and agreements with various fast-food establishments available for back-up food supplies. The ARC also has an agreement with the Salem County Board of Education for additional help in the cafeteria and for maintenance of the building. Vouchers for clothing would be provided to registered evacuees through local stores and the Salvation Army. The school was also handicapped-accessible.

The Mary S. Shoemaker Elementary School is an excellent facility for a congregate care center.

## **DEFICIENCIES**

No Deficiencies were observed at the Salem County Congregate Care Center during this exercise.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCA's were observed at the Salem County Congregate Care Center during this exercise.

## **PLAN ISSUES**

No Plan Issues were observed at the Salem County Congregate Care Center during this exercise.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the Salem County Congregate Care Center during this exercise.

### **2.2.7 Salem County Emergency Worker Decontamination Center**

The Salem County Emergency Worker Decontamination Center (located at the Pennsville Fire Department) was evaluated out-of-sequence on May 17, 1994. A free-play message initiated the set-up and operations of the center. Five objectives were demonstrated and all five objectives were met.

**SC Decomnatination Objective 2 - MET** - The Pennsville Fire and Rescue Department is an excellent facility and was well equipped for its use as a Emergency Worker Decontamination Center. Access to this facility was controlled by the Pennsville Police Department. Copies of the RERPs and SOPs were available for reference.

**SC Decontamination Objective 4 - MET** - The facility was equipped with three telephone lines as the primary communication system along with hand-held radios to communicate among different stations at the center. Multi-channel radios served as the back-up system.

**SC Decontamination Objective 5 - MET** - All emergency workers at the Decontamination Center had two DRDs (0-200 mR and 0-20 R) and one TLD. All DRDs had been calibrated on April 19, 1994. Dosimeters were read every 30 minutes. One staff person was assigned to record all workers' readings. Another staff person was responsible for distributing the radiological packets (DRDs, TLD, KI, and exposure record card), and collecting them at the end of the demonstration.

**SC Decontamination Objective 22 - MET** - Members from the Pennsville Volunter Fire Department were responsible for the set-up and operations of the Decontamination Center. Prior to setting up the center, the Center Manager briefed his staff and assigned various tasks.

Vehicle monitoring and decontamination was performed by staff with the Ludlum Model 3 survey instrument (calibrated November 1993), and contamination was determined at 1,000 counts per minute over background. Contaminated vehicles were washed with liquid soap and water. Separate parking areas were provided for clean and contaminated vehicles. Monitoring techniques were excellent, and the team members worked very well together.

Emergency workers were monitored for contamination at the entrance of the facility. A Ludlum Model 3 survey instrument with a pancake probe (calibrated November 1993) was used by staff to screen all potentially contaminated emergency workers. Probes used for monitoring were wrapped in plastic for contamination control. A reading of just over 1,000 counts per minute was considered contaminated. In the shower facility, shampoo, mild soap and scrub-brushes were available for decontamination. After three unsuccessful attempts at decontamination, evacuees were told to dry themselves, dress in Tyvek suits, and were escorted to a waiting ambulance which would take them to the Salem Memorial Hospital for further decontamination. Large garbage cans were conveniently located for deposit of contaminated clothing.

All monitors wore rubber gloves. One monitor was dressed in an anti-contamination outfit, as per the extent-of-play agreement, and disrobed properly. The facility was set up in an excellent manner to prevent the spread of contamination, e.g., black plastic on the floors, and separation of "clean" from "contaminated" individuals.

**SC Decontamination Objective 30 - MET** - As per the extent-of-play agreement, the Decontamination Center Manager performed a shift change. He thoroughly briefed the incoming shift manager on the operations in the facility.

A shift change also took place with a personnel monitor. He was briefed by the outgoing monitor regarding the proper procedures of monitoring evacuees. He continued monitoring evacuees without difficulty.

#### **DEFICIENCIES**

No Deficiencies were observed at the Salem County Decontamination Center.

#### **AREAS REQUIRING CORRECTIVE ACTION**

No ARCAs were observed at the Salem County Decontamination Center.

#### **PLAN ISSUES**

No Plan Issues were observed at the Salem County Decontamination Center.

#### **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the Salem County Decontamination Center.

### **2.2.8 Salem County School Interviews**

One objective was demonstrated out-of-sequence on May 2, 1994, during the School Interviews. That objective was met.

**Salem County School Objective 16 - MET** - Interviews were conducted at four schools in Salem County to evaluate the degree of emergency preparedness for each school. Listed below are the names of the schools, school districts, and towns where staff members were interviewed:

Quinton Elementary School  
Quinton School District  
Quinton, New Jersey

Salem Middle School  
Salem City School District  
Salem City, New Jersey

John Fernwick School  
Salem City School District  
Salem City, New Jersey

Elsinboro Elementary School  
Elsinboro School District  
Elsinboro, New Jersey

At each school, the Principal or School Superintendent was interviewed by the Federal evaluator via a questionnaire.

The parents of school children would be notified of Salem County's PADs regarding the closing of schools via the broadcast of EBS messages. The authorities, interviewed at each of the schools in Salem County, were knowledgeable of the established school emergency procedures. Early dismissal of each school would be implemented upon a recommendation from the District Superintendent.

All schools had written procedures, and the parents are kept informed through school publications (e.g., student handbooks, news letters, pamphlets) which contained the addresses of the designated school congregate care centers.

Officials at all the schools were familiar with the chain-of-command that would be followed during an evacuation. Estimates of evacuation times and school evacuation procedures were known by the school officials interviewed.



**DEFICIENCIES**

No Deficiencies were observed during the Salem County school interviews.

**AREAS REQUIRING CORRECTIVE ACTION**

No ARCAs were observed during the Salem County school interviews.

**PLAN ISSUES**

No Plan Issues were observed during the Salem County school interviews.

**AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed during the Salem County school interviews.

### **2.2.9 Salem County Medical Drill**

A real medical incident occurred on Saturday, March 16, 1994. Credit was given to New Jersey State OEM and Salem County.

**SC Medical Drill Objective 20 - MET - NJOEM** received credit from FEMA Headquarters for the real medical incident on March 16, 1994. See memorandum from O. Megs Hepler, III, on page 73.

**SC Medical Drill Objective 21 - MET - NJOEM** received credit from FEMA Headquarters for the real medical incident on March 16, 1994. See memorandum from O. Megs Hepler, III, on page 73.

### **DEFICIENCIES**

NJOEM received credit from FEMA for the real medical incident on March 16, 1994.

### **AREAS REQUIRING CORRECTIVE ACTIONS**

NJOEM received credit from FEMA for the real medical incident on March 16, 1994.

### **PLAN ISSUES**

NJOEM received credit from FEMA for the real medical incident on March 16, 1994.

### **AREAS RECOMMENDED FOR IMPROVEMENT**

NJOEM received credit from FEMA for the real medical incident on March 16, 1994.

## **2.3 Cumberland County**

### **2.3.1 Cumberland County Emergency Operations Center**

Eight objectives were demonstrated at the Cumberland County EOC during this exercise. All eight objectives were met.

**CCEOC Objective 1 - MET** - NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**CCEOC Objective 2 - MET** - The CCEOC is located in a modern, 2-story building and became operational in July 1993. It was used during the actual Alert in April 1994. The CCEOC is a state-of-the-art facility, with the latest communication equipment available. The building also serves as the Cumberland County 911 Fire-Police-Emergency Services Communications Center. There is more than adequate space for emergency operations on the ground floor with a large main operations room for State, County, Emergency Services personnel, and volunteer organizations. Power, lighting, ventilation, sanitary facilities as well as feeding capabilities were adequate. Separate rooms were available for the Emergency Management Director, Operations Officer and Radiation Officer. All relevant maps, charts, EPZ displays, event boards, and ECLs were posted. Adequate telephones, copiers, facsimile machines, and related administrative equipment were also available during the exercise. The CCEOC does not yet have a computerized EIS system, but the manual logging system worked well. Briefings were held frequently, and information flow was excellent. The CCEOC is also being used as a training center for various county agencies and volunteer groups.

Access was controlled and security was monitored by the Cumberland County Sheriff's Deputy during the exercise. The current RERP and SOPs were also available to all staff.

**CCEOC Objective 3 - MET** - The CCEOC Director was clearly in charge and effectively directed the county emergency response during the exercise, with the assistance of a well-trained key executive staff. While not required during this exercise, many staff representatives demonstrated a shift change which was completed in a very professional manner over a 45-minute period mid-way through the exercise. The Director consulted with staff and held discussions regarding emergency actions, plant status, ECLs, and radiological conditions. All up-dated information was disseminated at staff briefings on the developing radiological emergency. Assisted by the Operations Chief and the Radiological Officer, the Director maintained excellent direction and control of all emergency operations.

**CCEOC Objective 4 - MET** - The CCEOC communications equipment, systems, and procedures were sufficient to support the emergency response. Communication systems were available, operated properly, and communication links were established with all appropriate locations.

Communication systems included more than twenty-five commercial telephone lines, four dedicated telephone lines, packet radios, two facsimile machines, cellular telephones, and multiple radio systems (State, county, fire, police). There were no delays caused by malfunctions or breakdowns in equipment. All incoming and outgoing communications were appropriately logged, duplicated, and passed to the CCEOC staff for action or information. Frequent reviews of action status were held to insure that no required actions or responses were overlooked.

Communications equipment demonstrated included the primary system of commercial telephones and the numerous back-up systems. During the exercise staff at the CCEOC communicated with staff at the SEOC, SCEOC, Cumberland County agencies and organizations, and the Stow Creek and Greenwich Municipal EOCs.

**CCEOC Objective 5 - MET** - The capability to continuously monitor and control radiation exposure to emergency workers was successfully demonstrated through discussion at the CCEOC with the Radiological Officer. The TLD assignment process was described, and Emergency Worker Self-Protection kits were available at the CCEOC. Each kit contained one TLD, two DRDs (0-200 mR and 0-20 R), unexpired KI (April 1995), an exposure record card, and Emergency Worker information. All dosimeters had been calibrated on April 19, 1994.

**CCEOC Objective 10 - MET** - Alerting and notification of the public in Cumberland County within the 10-mile EPZ is the responsibility of staff at the SEOC and at the SCEOC. The SEOC develops and disseminates PADs; formulates and transmits EBS messages; and instructs staff at the SCEOC to activate the fixed siren system. During the exercise, the alert and notification system was activated four times. The first sequence instructed the population to tune to and monitor EBS Radio Station WBSS, was initiated by the decision at the SEOC at 1852; received by CCEOC at 1855; sirens were activated at 1900 and EBS message 1 was broadcast at 1905. The second sequence occurred following the decision to Shelter ERPA 1 at 2045, was received at the CCEOC at 2047; siren activation at 2053 and EBS message 2 was broadcast at 2058. The third sequence announced evacuation of ERPA 1 and was initiated at 2150, received by the CCEOC at 2152; sirens were activated at 2158 and EBS message 3 was broadcast at 2203. The fourth, and final, sequence placed animals on stored feed and was initiated at the SEOC at 2312, received by the CCEOC at 2315; siren activation at 2320 and EBS message 4 was broadcast at 2325. Immediately following the receipt of PADs, changes in ECLs, or other important emergency information, the CCEOC Director contacted the two municipal EOCs via telephone to transmit the information.

In the event of a siren failure in Cumberland County, the municipalities are responsible for providing equipment and personnel to conduct route alerting in the effected areas. If the municipalities are unable to provide sufficient resources to support the route alerting, CCEOC staff would assist. The CCEOC has adequate supplies and staff to conduct route alerting as required. A free-play message was injected at the CCEOC by the Federal evaluator to initiate the implementation of route alerting in Greenwich Township. At 1930, the Greenwich EOC staff was contacted and informed that a siren had failed within their jurisdiction and that back-up

route alerting should be initiated (see CCM Objective 10).

**CCEOC Objective 14 - MET** - The capability and resources to implement KI protective actions for Emergency Workers was successfully demonstrated at the CCEOC through discussion with the County Radiological Officer.

KI inventory sheets were available to confirm that sufficient supplies of unexpired KI (April 1995) were available if needed. No protective actions requiring KI were issued during the exercise.

**CCEOC Objective 30 - MET** - NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 74.

## **DEFICIENCIES**

No Deficiencies were observed at the CCEOC during this exercise.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCA's were observed at the CCEOC during this exercise.

## **PLAN ISSUES**

No Plan Issues were observed at the CCEOC during this exercise.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the CCEOC during this exercise.

### **2.3.2 Cumberland County Municipal Response Activities**

Municipal response activities were evaluated at the Greenwich and Stow Creek Municipal EOCs. Municipal EOC staff members demonstrated eight objectives during this exercise. Seven objectives were met, and one was partially met.

**CCM Objective 1 - MET** - NJOEM received credit from FEMA Headquarters for the real ALERT on April 7, 1994. See memorandum from O. Megs Hepler, III, on page 70.

**CCM Objective 2 - MET** - The adequacy of facilities, equipment, displays, and other materials to support emergency operations was successfully demonstrated by staff at the Cumberland County Municipal EOCs.

The Stow Creek EOC, in the Hopewell-Stow Creek Fire House, consists of an Operations Room and adjacent rooms for the EMC and communications. All areas of the EOC were well furnished, and had adequate lighting, ventilation, and restroom facilities. Back-up electrical power was available and was tested. A dedicated telephone line linked staff at the Stow Creek EOC with staff at the CCEOC. Commercial telephones, a computer, a copier, and a facsimile machine were also available to support emergency operations. Adequate maps and displays were available depicting ECLs, evacuation routes, reception centers, congregate care centers, traffic and access control points, population by evacuation areas, schools, and special facilities. The status board displayed was up-dated promptly noting changes to ECLs, PADs, and meteorological data. Current copies of the RERP, SOPs, and checklists were available in the EOC and were followed by each agency representative. Access to the EOC was well-controlled, and logs were maintained listing the personnel entering and leaving the facility.

The Greenwich EOC, in the Greenwich Fire House, had adequate lighting, ventilation, and restroom facilities. Back-up electrical power was available and was tested on a regular basis. A dedicated telephone line linked staff at the Greenwich EOC with staff at the CCEOC. Commercial telephones were also available to support emergency operations. Adequate maps and displays were available depicting the 10-mile EPZ, evacuation routes, reception centers, congregate care centers, traffic and access control points, population by ERPAs, schools, and special facilities. The status board displayed was up-dated promptly noting changes to ECLs, PADs, and meteorological data. Current copies of the RERP, SOPs, and checklists were available in the EOC and were followed by each agency representative. Access to the EOC was well-controlled, and logs were maintained listing the personnel entering and leaving the facility. The new EOC located in a One-Room School House, with ample space and facilities, will be operational within a few months.

**CCM Objective 3 - MET** - The capability to direct, coordinate, and control emergency activities was adequately demonstrated by staff at both the Stow Creek and Greenwich EOCs. The EMCs, and their replacements after the shift change, effectively coordinated and directed emergency response activities. Both individuals provided leadership in decision-making and implementation of PADs issued by the decision-maker at the SEOC. Staff briefings were held to up-date emergency information after each ECL and PAD. Staff members' comments and suggestions were considered during the exercise. All incoming and outgoing message logs were well maintained.

**CCM Objective 4 - MET** - The capability to communicate with all appropriate emergency personnel at facilities and in the field was successfully demonstrated. The primary communication system between staff at the CCEOC and staff at both the Stow Creek and Greenwich EOCs was commercial telephone. Back-up communication was provided by a dedicated telephone line, the State Police Emergency Radio (EMRAD), RACES, fire radio band

and a facsimile machine. Municipal EOC staff communicated with staff at the CCEOC without delay. Both the primary and the back-up systems were demonstrated and functioned properly.

**CCM Objective 5 - MET** - The capability to continuously monitor and control radiation exposure to Emergency Workers was successfully demonstrated. The EMCs, who acted as the Radiological Officers, were knowledgeable about dosimetry and control of emergency worker exposure. Per the extent-of-play agreement, one emergency worker exposure kit was displayed in each Municipal EOC which contained a TLD, two DRDs (0-200 mR and 0-20 R), instructions, and record forms. All dosimeters had been calibrated on April 19, 1994. Prior to simulated issuance of dosimetry kits to Emergency Workers, the EMC's gave verbal briefings on exposure control procedures and indicated that the maximum authorized mission exposure limit was 1.25 R. DRDs at the EOCs were zeroed and read at 30 minute intervals by the EMCs or the Fire Chiefs. Per the extent-of-play agreement, documentation on inspection dates including leak test information, was on file at the NJOEM Radiation Laboratory. EOC staff was also briefed regarding the potential need to take KI for thyroid blocking.

Two previous ARCAs (CCM 1 and CCM 2) from the October 28, 1992, exercise were corrected.

**CCM Objective 10 - PARTIALLY MET** - A free-play message indicating a siren failure (simulated) was injected at the CCEOC by the Federal evaluator and transmitted to staff at the Greenwich EOC by the CCEOC Director. The Greenwich EMC directed the Fire Chief to initiate route alerting procedures. The Fire Chief adequately described the procedures for dispatching the volunteer fire personnel responsible for route alerting. He indicated that he would provide the team with an appropriate map and would brief them on the status of emergency routes to be run.

The Fire Chief indicated to the Federal evaluator that it would take the route alerting team approximately 45 minutes to cover the area. However, no written messages (pre-scripted) were available to the route alerting team to be read over the PA system (See ARCA 1 for the CCM).

**CCM Objective 15 - MET** - The ability to demonstrate the capability and resources necessary to implement appropriate protective actions for special populations was adequately demonstrated. The Stow Creek EOC maintains a current list of persons who are mobility impaired (e.g., aged, seriously ill) who need assistance for evacuation. The list is up-dated through an annual mail survey, as well as through telephone calls from the public. The EMC adequately explained the notification and evacuation procedures for this special population group. He stated that in an actual emergency, in addition to public notification via an EBS message, telephone calls would be made to those individuals and the fire department route alerting teams would conduct door-to-door notification. Those individuals requiring ambulances would be transported by the Shiloh Ambulance Service. Simulated calls to the Shiloh Ambulance Service and individuals with special needs were made by the Fire Chief. There are no institutional residents within the Township of Stow Creek.

**CCM Objective 30 - MET** - Per the extent-of-play agreement, only the EMCs were required to demonstrate a shift change at both the Stow Creek and Greenwich EOCs. The EMCs took command of the Stow Creek EOC at 1930, and of the Greenwich EOC at 1920. The incoming EMCs were thoroughly briefed by the outgoing EMCs on the current status of the radiological emergency including plant status, ECLs, weather data, and actions taken by the EOC staff. They both demonstrated a thorough knowledge of the RERP and SOPs, and of their responsibilities.

## **DEFICIENCIES**

No Deficiencies were observed at the Cumberland County Municipal EOCs during this exercise.

## **AREAS REQUIRING CORRECTIVE ACTION**

1. **Description:** No written messages (pre-scripted) were available to the route alerting team to be read over the PA system. (NUREG-0654, E.5)

**Recommendation:** Ensure that the route alerting teams are provided with written messages to be read over the PA system.

## **PLAN ISSUES**

No Plan Issues were observed at the Cumberland County Municipal EOCs during this exercise.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the Cumberland County Municipal EOCs during this exercise.

### **2.3.3 Cumberland County Radiological Field Monitoring Team**

Emergency Management Officials at Salem and Cumberland Counties announced the merging of the Radiological Field Monitoring Teams during the RERP Planning meeting on January 3, 1994, at the Salem County Office of Emergency Management. This policy change was approved by the Deputy Director of NJOEM. The reason for the merger was to enhance county nuclear emergency response by increasing the pool of volunteers. In the past, there were occasions when the number of trained volunteers to staff two separate county FMTs was



inadequate. In the event of a radiological emergency requiring a shift change, there was no assurance that both Salem and Cumberland Counties could staff two separate teams effectively.

As a result of merging both counties' nuclear responders into one county FMT, county volunteers are now able to train and practice together, providing a single nuclear response team. Combining all responders into a single unit has assured the Emergency Management Directors in Salem and Cumberland Counties that a county FMT will be effectively staffed, and that an adequate number of trained staff will be available for a complete shift change.

#### **2.3.4 Cumberland County School Evacuation Bus Run**

The Cumberland County school evacuation bus run was evaluated out-of-sequence on May 17, 1994. Two objectives were demonstrated during the Cumberland County school evacuation bus run, and both objectives were met.

**CC SE Objective 5 - MET** - The driver for the Coast Cities Bus Company had a radiological kit which contained two DRDs (0-200 mR and 0-20 R), one TLD, one exposure record card, and an instruction card. All dosimeters had been calibrated on April 19, 1994. She also had a dosimeter charger, and her dosimeters had been zeroed at the garage. The driver stated that she knew to read her dosimeter every 30 minutes. The driver also had a separate package containing one decontamination suit, gloves, and a respirator. Although no demonstration was required, she was knowledgeable of the proper donning of the equipment.

The driver was very well trained and should be commended on her knowledge of emergency worker exposure control.

**CC SE Objective 16 - MET** - The driver arrived at the Stow Creek Elementary School at 1130. She departed the school at 1135 and proceeded to the Cumberland Regional High School. The driver had an accurate evacuation route map, and she was able to communicate with the staff at the CCEOC and the dispatcher at the bus garage via radio to report her dosimeter readings and receive instructions in the event of a road impediment. If the radio had failed, she knew that she should drive the vehicle to the nearest commercial telephone to call the dispatcher at the garage. The driver arrived at the Cumberland Regional High School at 1200, taking 25 minutes to drive the route in a timely manner.

The driver displayed an excellent knowledge of the area, stating that she would take alternative routes if a traffic impediment blocked her assigned route.

#### **DEFICIENCIES**

No Deficiencies were observed for the Cumberland County school evacuation bus run.

## **AREAS REQUIRING CORRECTIVE ACTIONS**

No ARCA's were observed for the Cumberland County school evacuation bus run.

## **PLAN ISSUES**

No Plan Issues were observed for the Cumberland County school evacuation bus run.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFI's were observed for the Cumberland County school evacuation bus run.

### **2.3.5 Cumberland County Congregate Care Center**

The Cumberland County Congregate Care Center (located at the Bridgeton Middle School) was evaluated out-of-sequence on May 17, 1994. Two objectives were demonstrated and both objectives were met.

**CC CCC Objective 4 - MET** - The Bridgeton Middle School had an excellent communication system to support the congregate care facility. Three telephones were the primary system for communication. Also, a NJSP radio located in the Physical Education office and RACES operators would be used to communicate with staff at the SEOC and the CCEOC. Since this evaluation was performed out-of-sequence, no actual communication was carried out per the extent-of-play agreement. The staff at the congregate care center would communicate with the staff at the various reception centers and the CCEOC.

**CC CCC Objective 19 - MET** - Staff members from the Vineland-Bridgeton Chapter of the American Red Cross successfully demonstrated adequate facilities, equipment, and personnel necessary to provide for congregate care to evacuees. The Disaster Service Chairperson arrived at 1515. Designated areas for food services, a nurses' station, and temporary living accommodations were located on the first floor of the school. In the school library, a large screen TV/VCR, would provide entertainment for children and adults. The school had adequate facilities and square footage to meet the requirements for the designated shelter capacity of 150 people. The "Kids Corner" (a medical facility provided by the local hospital) would be the ARC's first-aid station. Security to and from the congregate care center would be provided by the Cumberland County Sheriff's Department.

The ARC had the school's USDA food stock and agreements with various fast-food establishments available for back-up food supplies. Vouchers for clothing would be provided to evacuees, after registration, through local stores and the Salvation Army. The school had an elevator, and was handicapped-accessible.

## **DEFICIENCIES**

No Deficiencies were observed at the Cumberland County Congregate Care Center.

## **AREAS REQUIRING CORRECTIVE ACTION**

No ARCAs were observed at the Cumberland County Congregate Care Center.

## **PLAN ISSUES**

No Plan Issues were observed at the Cumberland County Congregate Care Center.

## **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed at the Cumberland County Congregate Care Center.

### **2.3.6 Cumberland County School Interviews**

One objective was demonstrated out-of-sequence on May 17, 1994. This objective was evaluated during the school interview demonstration. The objective was met.

**Cumberland County School Objective 16 - MET** - Interviews were conducted at four schools in Cumberland County to evaluate the degree of emergency preparedness for each school. Listed below are the names of the schools, school districts, and towns where staff members were interviewed:

Lower Alloways Creek Township School  
Lower Alloways School District  
Canton, New Jersey

Morris Goodwin Elementary School  
Greenwich School District  
Greenwich, New Jersey

Woodland County Day School  
Private School  
Bridgeton,, New Jersey

Stow Creek Township Elementary School  
Stow Creek School District  
Stow Creek, New Jersey

At each school, the Principal was interviewed by the Federal evaluator via a questionnaire.

The parents of school children would be notified of Cumberland County's PADs regarding the closing of schools via the broadcast of EBS messages. The authorities, interviewed at each of the schools in Cumberland County, were knowledgeable of the established school emergency procedures.

All schools had written procedures, and parents are kept informed of these procedures through school publications (e.g., student handbooks, news letters, pamphlets) which contain the addresses of the designated congregate care centers.

Officials at all the schools interviewed were familiar with the chain-of-command that would be followed during an evacuation. Estimates of evacuation times and school evacuation procedures were known by all school officials.

#### **DEFICIENCIES**

No Deficiencies were observed during the Cumberland County school interviews.

#### **AREAS REQUIRING CORRECTIVE ACTION**

No ARCAs were observed during the Cumberland County school interviews.

#### **PLAN ISSUES**

No Plan Issues were observed during the Cumberland County school interviews.

#### **AREAS RECOMMENDED FOR IMPROVEMENT**

No ARFIs were observed during the Cumberland County school interviews.



# Federal Emergency Management Agency

Washington, D.C. 20472

MAY 18 1994

MEMORANDUM FOR: Philip McIntire  
Director  
Preparedness, Training, and Exercises Division

FROM: *O. Megs Hepler III*  
O. Megs Hepler III  
Director  
Exercises Division  
Preparedness, Training, and  
Exercises Directorate

SUBJECT: New Jersey's Request for Credit for  
Radiological Emergency Preparedness (REP)  
Objectives Met During the April 7, 1994, Alert  
at the Artificial Island Nuclear Generating  
Station

The Federal Emergency Management Agency's (FEMA); Preparedness, Training, and Exercises Directorate; Exercises Division; State and Local Regulatory Evaluation and Assessment Branch; has reviewed the State of New Jersey's request for exercise credit for the following offsite response organizations and REP objectives.

- o New Jersey State Emergency Operations Center (EOC)  
REP Objectives 1, 2-4, 13, and 30
- o New Jersey Emergency News Center (ENC)  
REP Objectives 1-2, 4-5, 11-12, and 30
- o New Jersey State Field Activities  
REP Objective 17
- o Salem County EOC  
REP Objectives 1-5 and 30
- o Cumberland County EOC  
REP Objectives 1-4 and 30
- o Salem County Municipal EOCs  
REP Objectives 1-5
- o Cumberland County Municipal EOCs  
REP Objectives 1-5

New Jersey's request for credit for the foregoing objectives was forwarded to Headquarters by FEMA Region II on May 6, 1994. Specifically, Region II requested that credit be granted to the following offsite response organizations for the indicated REP objectives.

- o New Jersey State EOC  
REP Objectives 1, 2, 13, and 30 (partial)
- o New Jersey ENC  
REP Objectives 1, 4, and 30
- o Salem County EOC  
REP Objectives 1-2, 4, and 30
- o Cumberland County EOC  
REP Objective 1
- o Salem County Municipal EOCs  
REP Objective 1 for the Elsinboro and Quinton EOCs  
  
REP Objective 2 for the Elsinboro, Lower Alloways Creek, Pennsville, Quinton, and Salem City EOCs
- o Cumberland County Municipal EOCs  
REP Objective 1 for the Stow Creek EOC

This request for credit was based on the foregoing organizations response to an Alert, which was declared at 1316, at the Artificial Island Nuclear Generating Station on April 7, 1994. The Alert lasted approximately seven hours and was caused by the presence of river grass in the plant's intake systems and a subsequent reduction in power.

With the exception of REP Objective 30, FEMA-REP-14, REP Exercise Manual, September 1991, does not provide for the granting of credit for the foregoing REP objectives for State and local governments' response to real-life emergencies. However, FEMA is now considering such requests as a part of its goal to create a true emergency management partnership with State and local governments. Headquarters' review of the State of New Jersey's request and the supporting documentation clearly indicates the capability of the offsite response organizations to carry out their responsibilities under the REP objectives for which credit was recommended by FEMA Region II. Therefore, credit is granted to those organizations for the indicated objectives for calendar year 1994.

Should you or your staff have any questions regarding this response, please call Ms. Margaret Lawless, Chief, State and Local Regulatory Evaluation and Assessment Branch at (202) 646-3027.



# Federal Emergency Management Agency

Washington, D.C. 20472

APR 21 1994

MEMORANDUM FOR: Philip McIntire  
Director  
Preparedness, Training, and Exercises Division

FROM: *O. Megs Hepler III*  
O. Megs Hepler III  
Director  
Exercises Division  
Preparedness, Training, and  
Exercises Directorate

SUBJECT: New Jersey's Request for Credit for Objectives  
20 (Medical Services - Transportation) and 21  
(Medical Services - Facilities)

The Federal Emergency Management Agency's (FEMA); Preparedness, Training, and Exercises Directorate; Exercises Division; State and Local Regulatory Evaluation and Assessment Branch; has reviewed the State of New Jersey's request for exercise credit for Radiological Emergency Preparedness (REP) Objectives 20 and 21. This request was forwarded to Headquarters by FEMA Region II on April 18, 1994. Specifically, Region II requested that credit be granted for REP Objectives 20 and 21 for the State of New Jersey, Office of Emergency Management, and Salem County. This request was based on activities carried out by these entities in response to a real-life incident which occurred on March 16, 1994, at the Artificial Island Nuclear Generating Station (AINGS). More specifically, the incident involved the use of emergency medical services transportation equipment and emergency room facilities in the treatment of an injured and potentially contaminated AINGS employee.

Although FEMA-REP-14, REP Exercise Manual, September 1991, does not provide for the granting of credit for REP Objectives 20 and 21 for State and local governments' response to real-life emergencies, FEMA is now considering such requests as a part of its goal to create a true emergency management partnership with State and local governments. FEMA's review of the State's request and supporting documentation clearly indicates the State of New Jersey and Salem County's ability to provide the basic medical services (transportation and medical facilities) required under Objectives 20 and 21 for contaminated, injured, or exposed individuals. Therefore, credit for Objectives 20 and 21 is granted to the State of New Jersey and Salem County for calendar year 1994.

Should you or your staff have any questions regarding this response, please call Ms. Margaret Lawless, Chief, State and Local Regulatory Evaluation and Assessment Branch, at (202) 646-3027.





# Federal Emergency Management Agency

Washington, D.C. 20472

MAY 23 1994

MEMORANDUM FOR: Philip McIntire  
Director  
Preparedness, Training, and Exercises Division

FROM: *O. Megs Hepler III*  
O. Megs Hepler III  
Director  
Exercises Division  
Preparedness, Training, and  
Exercises Directorate

SUBJECT: New Jersey's Request for Credit for Objective  
30 (Continuous, 24-Hour Staffing)

The Federal Emergency Management Agency's (FEMA); Preparedness, Training, and Exercises Directorate; Exercises Division; State and Local Regulatory Evaluation and Assessment Branch; has reviewed the State of New Jersey's request that exercise credit be granted to Cumberland County, <sup>for</sup> Objective 30 (Continuous, 24-Hour Staffing). This request, along with supporting documentation, was forwarded to Headquarters by FEMA Region II on May 19, 1994. The basis for this request was the county's response to an Alert, which was declared at 1316 and lasted for approximately seven hours, at the Artificial Island Nuclear Generating Station on April 7, 1994.

FEMA's review of the State's request and the supporting documentation clearly indicates Cumberland County's capability to maintain continuous, 24-hour staffing. Therefore, in view of the county's response to a real-life emergency at the Artificial Island Nuclear Generating Station, credit for Objective 30 is granted to Cumberland County for calendar year 1994.

Should you or you staff have any questions regarding this response, please call Ms. Margaret Lawless, Chief, State and Local Regulatory Evaluation and Assessment Branch at (202) 646-3027.

### **3. Removal Of Corrected ARCAs Identified in Previous Exercises**

The following list summarizes those ARCAs identified in previous exercises which have been since corrected and verified and are shown in this Post Exercise Assessment as being corrected.

State of New Jersey (None)

Bureau of Nuclear Engineering-Forward Command Post (None)

Emergency Operations Facility (None)

Emergency News Center (None)

Salem County (SC 1 and 2)

Salem County Municipalities (SCM 1, 2, 3, 4, 5, 6, and 7)

Cumberland County (None)

Cumberland County Municipalities (CCM 1 and 2)

Salem County Medical Service Drill (None)

#### **4. Summary Of Areas Requiring Corrective Action (ARCAs)**

Tables 4.1 - 4.9 and Table 5 summarize uncorrected previous ARCAs which were addressed at the May 24, 1994, exercise and new Deficiencies, ARCAs, and Plan Issues identified at the May 24, 1994, exercise.

Below are the footnotes used in Tables 4.1 - 4.9 and Table 5:

- <sup>a</sup> NUREG-0654, FEMA-REP-1, Rev.1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, November 1980.
- <sup>b</sup> Objective numbers were taken from FEMA-REP-15.
- <sup>c</sup> C = Remedial action complete.  
I = Remedial action incomplete.

Table 4.1  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Deficiencies and Areas Requiring Corrective Action

State of New Jersey\*

No.	Issue Description	NUREG-0654 FEMA-REP-1 Rev.1 Reference <sup>a</sup>	FEMA Objective <sup>b</sup>	Exercise Date 05/24/94	Date of Previous Exercise	Present Status <sup>c</sup>
<u>Deficiency (Remediated March 23, 1995)</u>						
1.	After the SEOC was notified of a release at 2050, and the PAR from the plant was to Evacuate all Sectors 0-5 miles (ERPA 1) and Sectors N, NNE, and NE 5-10 miles, the decision to Evacuate ERPA 1 (PAD 2) was not made until 2150. The untimely State decision to evacuate is the basis for FEMA's finding of a Deficiency. The problem is in the process that led to an untimely decision to evacuate and the responsibility to correct that process lies with the New Jersey Office of Emergency Management in conjunction with the New Jersey Bureau of Nuclear Engineering. The untimeliness of the decision making process with respect to evacuation resulted in the potential for endangerment of the public health and safety due to unnecessary radiation exposure.	J.9	9	X		C
<u>Areas Requiring Corrective Action</u>						
1.	Even though the agricultural agent notified five dairy farms to put animals on stored feed and covered water, FEMA has no assurance that these are the only dairy farms in the 10-mile EPZ.	J.11	26		11/29/88 12/01/88	C
2.	An inappropriate directive that restricted the harvesting or movement of agricultural products within 50 miles of the site was contained in a news release/EBS message because data that should have been logged on the EIS was not logged.	J.11	26		11/29/88 12/01/88	C
3.	During the technical recommendation development by the Technical Assistance Center (TAC) personnel, little use was made of the population data contained in the State plan.	J.11	28		11/29/88 12/01/88	C

\* ARCAs 1, 2, and 3 were corrected at the Oyster Creek Ingestion Pathway Exercise on October 18-22, 1993.

Table 4.2  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Areas Requiring Corrective Action

Bureau of Nuclear Engineering - Forward Command Post

No.	Areas Requiring Corrective Action	NUREG-0654 FEMA-REP-1 Rev.1	FEMA Objective <sup>b</sup>	<u>Exercise</u> <u>Date</u>	<u>Date of</u> <u>Previous</u> <u>Exercise</u>	Present Status <sup>c</sup>
		Reference <sup>a</sup>		05/24/94		

No ARCAs were observed at the Bureau of Nuclear Engineering - Forward Command Post.

Table 4.3  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Areas Requiring Corrective Action

Emergency Operations Facility

No.	Areas Requiring Corrective Action	NUREG-0654 FEMA-REP-1 Rev.1 Reference <sup>a</sup>	FEMA Objective <sup>b</sup>	<u>Exercise</u> <u>Date</u> 05/24/94	<u>Date of</u> <u>Previous</u> <u>Exercise</u>	Present Status <sup>c</sup>
1.	The PAR and the PAR upgrade were not issued expeditiously. With respect to protecting the public health and safety, the Lead SRAO should have reminded the NJBNE staff of promptly upgrading PARs as additional release data became available.	I.8	3	X		I
2.	Protective Action Recommendations (PAR) from the Utility were issued at 2007 and again at 2045 calling for evacuation. NJBNE staff at the EOF did not explain the difference between the NJBNE and Utility PARs in a manner that was helpful to the decision makers.	J.10.m	7	X		I

Table 4.4  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Areas Requiring Corrective Action

Emergency News Center

No.	Areas Requiring Corrective Action	NUREG-0654 FEMA-REP-1 Rev.1 Reference <sup>a</sup>	FEMA Objective <sup>b</sup>	<u>Exercise</u>	<u>Date of</u>	Present Status <sup>c</sup>
				<u>Date</u>	<u>Previous</u> <u>Exercise</u>	
				05/24/94		

No ARCAs were observed at the Emergency News Center.

Table 4.5  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Areas Requiring Corrective Action

Salem County

No.	Areas Requiring Corrective Action	NUREG-0654 FEMA-REP-1 Rev.1 Reference <sup>a</sup>	FEMA Objective <sup>b</sup>	<u>Exercise</u> <u>Date</u> 05/24/94	<u>Date of</u> <u>Previous</u> <u>Exercise</u>	Present Status <sup>c</sup>
1.	The field monitoring team did not have a Ba-133 check source in its instrument kit, but had access to one from the SCEOC.	H.10	6		10/28/92	C
2.	Silver zeolite and/or charcoal filters were not available in the team's kit, but may have been available at the BNE-FCP or from the SCEOC. No attempt was made to get these filters after it was known that they were not available at the BNE-FCP.	H.10	8		10/28/92	C



Table 4.6  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Areas Requiring Corrective Action

Salem County Municipalities

No.	Areas Requiring Corrective Action	NUREG-0654 FEMA-REP-1 Rev.1 Reference <sup>a</sup>	FEMA Objective <sup>b</sup>	Exercise Date 05/24/94	Date of Previous Exercise	Present Status <sup>c</sup>
1.	The absence of a radio operator and an administrative support person at the Elsinboro EOC required key staff members to share those duties.	E.2	1		10/28/92	C
2.	At the Mannington EOC, the majority of the staff members who signed in were not on the call-up list. The list was not up-to-date, nor accurate. Also, the list did not have the titles of the emergency workers.	E.2	1		10/28/92	C
3.	The EMC at the Mannington EOC did not assume a leadership role at the facility nor was he very knowledgeable of the ECLs. The Deputy Coordinator was more knowledgeable of the functions of the Mannington EOC.	A.1.d A.2.a	3		10/28/92	C
4.	No briefings were conducted at the Mannington EOC during the entire exercise.	A.1.d A.2.a	3		10/28/92	C
5.	At the Lower Alloways Creek EOC, the EMC, RADEF Officer, and the exercise controller stated that, per NJOEM staff, dosimetry kits would be issued only to emergency workers who had to leave the Lower Alloways Creek EOC for emergency duty. No emergency worker left the EOC during the exercise; therefore, no dosimetry kits were issued.	K.3.a	5		10/28/92	C
6.	At the Salem City EOC, there was a limited demonstration of emergency worker exposure control due to the absence of the RADEF Officer at the EOC for most of the exercise. Messages from the SCEOC authorizing the use of KI and the distribution of TLDs were not acted upon at all.	K.3.a J.10.e	5		10/28/92	C
7.	Except for a June 1990 inspection sticker on each of two storage boxes, information as to the most recent date of the inspection of dosimeters for electrical leakage was not available at the Elsinboro EOC.	K.3.a	5		10/28/94	C

Table 4.7  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Areas Requiring Corrective Action

Cumberland County\*

No.	Areas Requiring Corrective Action	NUREG-0654 FEMA-REP-1 Rev.1 Reference <sup>a</sup>	FEMA Objective <sup>b</sup>	<u>Exercise</u> <u>Date</u> 05/24/94	<u>Date of</u> <u>Previous</u> <u>Exercise</u>	Present Status <sup>c</sup>
1.	DRDs at the reception center did not show the date they were calibrated.	K.3.a	5		10/28/92	I
2.	Most individuals at the reception center were not aware of their dose limit of 1.25 R.	K.4	5		10/28/92	I
3.	Most individuals at the decontamination center were not aware of their mission dose limit of 1.25 R. Also, some individuals did not record their exposures on their exposure record cards at the start of the demonstration, at 30 minute intervals, and at the end of the demonstration.	K.4	5		10/28/92	I

\* - These ARCA's will be corrected during the next biennial exercise in March 1996.

Table 4.8  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Areas Requiring Corrective Action

Cumberland County Municipalities

No.	Areas Requiring Corrective Action	NUREG-0654 FEMA-REP-1 Rev.1 Reference <sup>a</sup>	FEMA Objective <sup>b</sup>	<u>Exercise Date</u> 05/24/94	<u>Date of Previous Exercise</u>	Present Status <sup>c</sup>
1.	No written messages (pre-scripted) were available to the route alerting team to be read over the PA system.	E.5	10	X		I
2.	The dosimetry kits at the Greenwich EOC contained the same items as the kits at Stow Creek, but had 0-200 mR and 0-200 R dosimeters. This would make it difficult for staff members to record their dose limit of 1.25 R.	K.3.a	5		10/28/92	C
3.	The EMC at the Greenwich EOC acted as the Radiological Officer. The EMC's answers to the questions from the evaluator were not in accordance with the plan or SOPs since he would have emergency workers in the field report to the decontamination center for readings as low as 5 mR/hr. Also, the EMC at the Greenwich EOC indicated that 200 mR/hr was the same as 2 R or 20 R.	K.3.b	5		10/28/92	C

Table 4.9  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Areas Requiring Corrective Action

Salem County Medical Drill

No.	Areas Requiring Corrective Action	NUREG-0654	FEMA	<u>Exercise</u>	<u>Date of</u> <u>Previous</u> <u>Exercise</u>	Present Status <sup>c</sup>
		FEMA-REP-1 Rev.1 Reference <sup>a</sup>		<u>Date</u>		
			Objective <sup>b</sup>	05/24/94		

NJOEM received credit from FEMA for the real medical incident on March 16, 1994.

## 5. Summary Of Plan Issues

Table 5 summarizes plan issues identified in the May 24, 1994, exercise.

Table 5  
Artificial Island Nuclear Generating Station - May 24, 1994  
Summary of Plan Issues

### New Jersey Bureau of Nuclear Engineering - EOF

1. **Description:** FEMA's review of NJBNE's Standard Operating Procedure (SOP) 305 (the Logic Diagram for the development of PARs dated March 1994) clearly indicated that the process delineated there does not foster the timely development of PARs in advance of the release of radionuclides into the environment. Based on this process, an evacuation recommendation will not occur for some serious plant conditions until a release is evident. Even then, the decision to evacuate or shelter would be based on the release time compared to the evacuation time; a time relationship that becomes more critical due to the delayed decision. In addition, SOP-305, including the Logic Diagram, particularly those portions of the plan that relate to protective action decision making, has inconsistencies which are not in accordance with the Environmental Protection Agency's "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" (EPA-400-R-92-001, October 1991).

**Recommendation:** The action necessary to resolve the Plan Issue requires modification to SOP-305, including attachment 305-5.

Cumberland County Reception Center (From the October 28, 1992, exercise)

1. **Description:** One monitor monitored an evacuee's thyroid but was not aware of the contamination level for the thyroid. The monitoring of evacuees' thyroids (a) is not required by FEMA guidance or by the reception center's SOPs and (b) cannot be effectively accomplished using the instrumentation (Ludlum Model 3 with an HP-210 probe) available at the reception center. (NUREG-0654, J.10.h)

**Recommendation:** If thyroid monitoring is to be part of the Cumberland County Reception Center's procedures, then the appropriate instrumentation and trigger levels should be ascertained, the plan and SOPs should be amended, and monitors should be trained accordingly. If thyroid monitoring is not to be performed at the reception center, then monitors should be trained to follow the SOPs and not monitor evacuees' thyroids.