APR 11 1989

Docket No. 50-254
Docket No. 50-265

Commonwealth Edison Company
ATTN: Mr. Cordell Reed
Senior Vice President
Post Office Box 767
Chicago, IL 60690

Gentlemen:

We have received the enclosed Federal Emergency Management Agency (FEMA) letter dated March 20, 1989, transmitting the findings for the emergency preparedness performances in Iowa during the Quad Cities Nuclear Generating Station's exercise conducted on August 31, 1988. The FEMA correspondence indicates that all eight deficiencies identified by FEMA Region VII staff have been corrected. FEMA staff had also identified twenty Areas Requiring Corrective Action (ARCAs). Two of these ARCAs have been redesignated and five have been corrected. FEMA Region VII expects that the objectives related to the remaining thirteen ARCAs will be demonstrated during the next full-participation exercise. Based on the remedial actions taken by the State of Iowa, FEMA concluded that offsite radiological emergency preparedness is adequate to provide reasonable assurance that appropriate offsite measures can be taken to protect the health and safety of the public living in the Iowa portion of the Emergency Planning Zone.

We fully recognize that remedial actions to be implemented involve parties and political institutions which are not under your direct control. Nevertheless, we would expect the subject of offsite preparedness for the area around the Quad Cities Station to be addressed by you as well as others.

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

Sincerely,

L. Robert Greger, Chief
Reactor Programs Branch

Enclosures: As stated

See Attached Distribution

RIII	RIII	RIII	RIII
Ploski/cg	Snell	Harrison	Greger
	4/11/89	4/11/89	4/11

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Distribution

cc w/enclosures:
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R. L. Bax, Station Manager
DCD/DCB (RIDS)
Licensing Fee Management Branch
Resident Inspector, RIII
Richard Hubbard
J. W. McCaffrey, Chief, Public
  Utilities Division

Federal Emergency Management Agency

Washington, D.C. 20472

MAR 20 1989

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

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

SUBJECT: Report for the August 31, 1988, Exercise of Offsite Radiological Emergency Response Plans Site-specific to the Quad Cities Nuclear Power Station

Attached is a copy of the exercise report for the August 31, 1988, full-participation exercise of the offsite radiological emergency response plans for Quad Cities Nuclear Power Station. The State of Iowa and the Counties of Clinton and Scott participated fully in the exercise. The report was prepared November 2, 1988, by Region VII of the Federal Emergency Management Agency (FEMA).

One of the eight deficiencies identified during the exercise has been adequately corrected through a plan revision. Another deficiency was corrected during the Duane Arnold Energy Center Exercise conducted on November 9, 1988. A remedial exercise was conducted for the Quad Cities Nuclear Power Station on November 29 - 30, 1988, correcting the remaining six deficiencies. (See attached correspondence.) There were twenty Areas Requiring Corrective Action (ARCA) identified during the August 31, 1988, exercise. Based on discussions with the State of Iowa, FEMA Region VII determined it appropriate to remove the designation for two of the twenty ARCAs. Five ARCAs have been corrected through plan changes. The objectives related to the remaining thirteen ARCAs are to be demonstrated during the next full-participation exercise. Additional verification of corrective action implementation will be provided by FEMA after the next full-participation exercise.

Based on the remedial actions taken by the State of Iowa, FEMA considers that offsite radiological emergency preparedness is adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect

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the health and safety of the public living in the vicinity of the site, in the event of a radiological emergency. Therefore, the approval of the offsite plans for the Quad Cities Nuclear Power Station granted under 44 CFR 350 on March 26, 1986, continues to be in effect.

If you have any questions, please feel free to call me on 646-2871.

Attachment
As Stated

Federal Emergency Management Agency
Region VII
911 Walnut Street, Room 200
Kansas City, MO 64106

DEC - 8 1988

MEMORANDUM FOR: Ellen Gordon, Administrator
Iowa Disaster Services Division

FROM: Frank P. Begley, Division Chief
Natural & Technological Hazards Division

SUBJECT: Quad Cities Nuclear Power Station - Remedial Exercise

The purpose of this memorandum is to notify your office of the results of the remedial exercise conducted November 29 and 30, 1988, to correct the deficiencies identified during the August 31, 1988 exercise of the State and Local Radiological Emergency Response Plans for the Quad Cities Nuclear Power Station.

Seven of the eight deficiencies identified in a memorandum, dated November 3, 1988, to your office have been adequately corrected as follows:

* The two deficiencies identified at the Clinton County Emergency Operations Center, concerning the capability to formulate and distribute instructions to the public in a timely manner and the capability to provide proper instructions to schools within the emergency planning zone, were corrected during the remedial exercise.

* The three deficiencies identified at the Scott County Emergency Operations Center concerning Emergency Broadcast System activation, formulation and distribution of emergency instructions to the public, and notification of emergency personnel to begin mobile route alerting, were corrected during the remedial exercise.

* The deficiency identified with the capability to successfully complete mobile route alerting within 45 minutes of notification of the Site Area Emergency, was also corrected for both counties. In Clinton County, routes P7, A9.5, A9.5r, R9.5, and R9.5r took 35, 21, 24, 33, and 28 minutes, respectively, to complete. This includes demonstrated notification time of 2 minutes. Mobilization time is also included and was demonstrated during the remedial exercise.

* In Scott County, routes L5.5, L5.5r, N7, N7r, and L10 took 27, 37, 24, 31, and 36 minutes, respectively, to complete. This includes demonstrated notification time of 4 minutes. This also includes mobilization time of 5 minutes as stated in the Alert and Notification Design Report.

* The deficiency identified with the Iowa radiological field teams, concerning the proper use of equipment and monitoring procedures, was corrected during the Duane Arnold Energy Center exercise conducted November 9, 1988.

* The one deficiency remaining to be resolved concerned the inability of the Iowa Department of Public Health to obtain plant status data from the utility prior to the activation of the Emergency Operations Center. Per the memorandum, dated November 3, 1988, to your office, remedial action will consist of the identification of a communication link to the Technical Support Center and the modification of the State Plan to assure this link has been established. As stated in the aforementioned memorandum, this plan amendment must be submitted to this office and approved by December 29, 1988.

If you have any questions, please contact Bob Bissell at (816) 283-7002.

cc: Anna Hart, FEMA HQ
Bill Snell, NRC III

Federal Emergency Management Agency
Region VII
911 Walnut Street, Room 200
Kansas City, MO 64106

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MEMORANDUM FOR: Ellen Gordon, Administrator
Iowa Disaster Services Division

FROM: Frank P. Begley, Division Chief
Natural & Technological Hazards Division

SUBJECT: Quad Cities Nuclear Power Station - Remedial Action

The purpose of this memorandum is to notify your office that the remaining deficiency, identified at the State Emergency Operations Centers during the August 31, 1988 Quad Cities Nuclear Power Station exercise, has been closed. The receipt of the actual plan changes correcting this deficiency resolved this issue.

The plan amendment will be distributed to the Regional Assistance Committee (RAC) and other appropriate organizations.

cc: Anna Hart, FEMA HQ
Bill Snell, NRC III

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

CONDUCTED AUGUST 31, 1988

for the

QUAD CITIES NUCLEAR POWER STATION

Near Cordova, Rock Island County, Illinois
Commonwealth Edison, Licensee

PARTICIPANTS:

State of Iowa
Clinton County
Scott County

NOVEMBER 2, 1988

prepared by
Federal Emergency Management Agency
Region VII
911 Walnut, Room 200
Kansas City, Missouri 64106

Jerome D. Overstreet, Regional Director

CONTENTS

ABBREVIATIONS AND ACRONYMS

ALARA	As Low As Reasonably Achievable
ANL	Argonne National Laboratory
ARC	American Red Cross
ARCA	Area Requiring Corrective Action
ARFI	Area Recommended for Improvement
CCEOC	Clinton County Emergency Operations Center
DOC	Department of Commerce
DOE	Department of Energy
DOI	Department of Interior
DOT	Department of Transportation
DSD	Disaster Services Division
EAL	Emergency Action Level
EBS	Emergency Broadcast System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
ESF	Engineered Safety Features
FEMA	Federal Emergency Management Agency
FAA	Federal Aviation Administration
FCP	Forward Command Post
GE	General Electric
HHS/FDA	Health and Human Services/Food and Drug Administration
HHS/PHS	Health and Human Services/Public Health Service

HRSS	High Range Sampling System
INEL	Idaho National Engineering Laboratory
JPIC	Joint Public Information Center
KI	Potassium Iodide
mCi	Millicurie
MWe	Megawatt, electrical
NARS	Nuclear Accident Reporting System
NRC	Nuclear Regulatory Commission
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)
OSC	Operational Support Center
PAG	Protective Action Guide
PAR	Protective Action Recommendation
PASS	Post Accident Sampling System
PIO	Public Information Officer
QCNPS	Quad Cities Nuclear Power Station
RAC	Regional Assistance Committee
RACES	Radiological Amateur Communications Emergency Services
RCS	Reactor Coolant System
R/hr	Rem Per Hour
SCEOC	Scott County Emergency Operations Center
SEOC	State Emergency Operations Center
SOP	Standard Operating Procedure
SPING	Air Sampler for Particulates, Iodines & Noble Gases
TLD	Thermoluminescent Dosimeter

TSC	Technical Support Center
uCi	Microcurie
UHL	University Hygienic Laboratory
USCG	United States Coast Guard
USDA	United States Department of Agriculture

EXERCISE SUMMARY

The purpose of an exercise is to determine the ability of appropriate off-site agencies to respond to an emergency covered by State and local Radiological Emergency Response Plans. The evaluation of such an effort will, of necessity, tend to focus on the negative aspects of the exercise, on inadequacies in planning, preparedness and performance.

This focus of attention on the negative should not be taken to mean that there were not a great many positive accomplishments, as well. Indeed, there were; however, in the interest of brevity, only inadequacies will herein be summarized.

FEMA classifies exercise inadequacies as deficiencies or areas requiring corrective action. Definitions of these categories follow.

Deficiencies are demonstrated and observed inadequacies that would cause a finding that off-site emergency preparedness was not adequate to provide reasonable assurance that appropriate protective measures can be taken to protect the health and safety of the public living in the vicinity of a nuclear power facility in the event of a radiological emergency.

Areas requiring corrective action are demonstrated and observed inadequacies of State and local government performance, and although their correction is required, they are not considered, by themselves, to adversely impact public health and safety.

In addition, FEMA identifies areas recommended for improvement, which are problem areas observed during an exercise that are not considered to adversely impact public health and safety. While not required, correction of these would enhance an organization's level of emergency preparedness.

It should be noted that there is a distinction between failure to fully demonstrate an objective and the declaration of an inadequacy. Limitations imposed by an exercise scenario, or the choice of one response option over another could preclude a full demonstration, yet, not constitute an inadequacy.

During this exercise, eight deficiencies, twenty areas requiring corrective action, and six areas recommended for improvement were identified. Deficiencies, the most serious of the inadequacies, are summarized as follows:

Iowa State Emergency Operations Center

1. The Iowa Department of Public Health did not obtain plant status data from the utility prior to the activation of the Emergency Operations Facility (EOF) except through the State of Illinois and Commonwealth Edison representatives. As these representatives were prepositioned and arrived at the State EOC hours before they would have during a real event, the Iowa Department of Public Health would not have had information to make protective action recommendations to the local governments.

Field Monitoring Teams

2. Both Iowa radiological field teams did not demonstrate proper procedures for use of equipment. Specifically, beta and gamma readings were not properly performed, the teams were unable to arrive at monitoring locations promptly, standard operating procedures were not available, and the instruments utilized were not calibrated within one year, pursuant to the plans.

Clinton County Emergency Operations Center

3. The protective action decision provided to the public to shelter from two to ten miles in Clinton County was initially incomplete, and, consequently, was untimely. The initial Emergency Broadcast System (EBS) message omitted the cities of Clinton and Camanche. Consequently, thirty-nine minutes elapsed before the proper protective action decision was provided to the public.

4. The Area Education Agency Administrator failed to provide protective action recommendations to schools within the affected sectors for sheltering. In addition, the protective action decision to evacuate during the General Emergency was not provided to the schools for nearly one hour after the decision was made to implement the protective action.

Scott County Emergency Operations Center

5. Scott County failed to demonstrate access to the EBS station. There was no effort (real or simulated) to contact the EBS station at the Site Area Emergency with an initial instructional message.

6. The ability to initially alert the public within the plume emergency planning zone (EPZ) and begin dissemination of an instructional message was not adequately demonstrated. The procedures for activation of mobile route alerting within the county were not demonstrated.

7. The ability to formulate and distribute appropriate instructions to the public was not demonstrated. Scott County failed to provide instructions to transients on the Mississippi River within two miles of the plant.

Mobile Route Alerting

8. The Scott and Clinton County Emergency Preparedness Office's failed to successfully complete mobile route alerting within 45 minutes of notification of the Site Area Emergency in areas not within siren coverage, pursuant to FEMA-REP-1.

Because of the potential impact of the aforementioned deficiencies on emergency preparedness, they are required to be promptly corrected through appropriate remedial actions including remedial exercises, drills, and other actions. Specific remedial action required to correct these concerns are identified in Section Two of this report under the facility or function where the deficiency was cited.

As stated previously, twenty areas requiring corrective action (ARCA's) were identified during this exercise and are summarized as follows:

An ARCA was identified at the State Emergency Operations Center (SEOC) for providing an incorrect telefacsimile of a protective action recommendation previously provided to the local governments and other State facilities.

An ARCA was identified at the State Forward Command Post (FCP) because the Iowa Disaster Services Division (DSD) representative arrived at the facility prematurely. The DSD individual was prepositioned, which is acceptable; however, the staff member reported to the FCP approximately three hours prior to the time that it would normally require under actual mobilization.

Three ARCA's were identified with the field team coordination function. The field team coordinator was unable to track and define the radiological plume boundary to verify the area affected as projected by the dose assessment staff. Secondly, the field team coordinator failed to post protective action decisions, plant status and weather data on status boards. Lastly, the field team coordinator and field team members from the University Hygienic Laboratory (UHL) entered the plume emergency planning zone without dosimetry. Radiation exposure by these individuals prior to arriving at the Clinton County Emergency Operations Center would not have been recorded.

Two ARCA's were identified with the medical drill. Monitoring procedures were not adequately demonstrated as the ambulance crew was not familiar with the use of the monitoring equipment.

Secondly, the ambulance crew was not aware of the maximum exposure dose allowed without authorization.

Two ARCA's were identified at the Clinton County Emergency Operations Center. As with the concern noted at the State FCP, the State DSD representative reported to the county Emergency Operations Center (EOC) prematurely. Due to prepositioning, the DSD staff member reported to the facility approximately three hours before an actual arrival time. Secondly, protective action decisions and the status of implementation were not posted on status boards for the EOC staff.

The majority of the ARCA's were identified at the Clinton County Reception and Decontamination Center (Goose Lake High School). Nine ARCA's were identified and are summarized as follows:

* An updated copy of the Clinton County Plan was not available.

* Resources utilized for radiological monitoring were not reflected in the plans.

* Resources utilized for access control were not reflected in the plans.

* Monitoring record forms were not utilized per the standard operating procedure.

* Three of the radiological monitors were not familiar with the maximum authorized exposure limits.

* The standard operating procedure does not indicate that priority will be placed on monitoring evacuees pursuant to procedures demonstrated.

* The standard operating procedure does not indicate that monitors will be placed at decontamination areas for remonitoring evacuees after decontamination efforts, pursuant to procedures demonstrated.

* The standard operating procedure does not allow space for unmonitored vehicles, pursuant to the vehicle monitoring procedures demonstrated.

* The monitoring techniques of three of the emergency workers were improper.

Full staffing was not demonstrated at the Scott County EOC, resulting in an ARCA. The Area Education Agency representative did not report to the facility.

Finally, an ARCA was identified with the Nuclear Accident Reporting System (NARS). Messages, at times, could not be verified in a timely manner.

A summary of the deficiencies and the areas requiring corrective action observed during this exercise is located in Section Three of this report. These inadequacies are explained in detail in Section Two of this report under the respective facility or function.

With one exception, all of the inadequacies identified during the previous exercise conducted August 26, 1986, were adequately demonstrated during this exercise. The inadequacy identified with the field monitoring teams, concerning the failure to calibrate instruments within one year, remains to be resolved.

1 INTRODUCTION

1.1 EXERCISE BACKGROUND

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

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

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

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

* Coordinating the activities of the following 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. Food and Drug Administration (FDA)
    - U.S. Public Health Service (PHS)
  - U.S. Department of Transportation (DOT)
  - U.S. Department of Agriculture (USDA)
  - U.S. Department of the Interior (DOI)

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

Formal submission of the radiological emergency response plans for the Quad Cities Nuclear Power Station (QCNPS) to the RAC by the State of Iowa and affected local jurisdictions was followed by a critique and evaluation of these plans.

The joint radiological emergency preparedness exercise was conducted for the QCNPS on August 31, 1988, between the hours of 0730 and 1515, to assess the capability of State and county emergency preparedness organizations to: 1) implement their radiological emergency preparedness plans and procedures; and 2) protect the public during a radiological emergency at the Commonwealth Edison Quad Cities Nuclear Power Station. The plans evaluated included the "Iowa Radiological Emergency Response

Plans", and the Emergency Response Plans for Clinton and Scott Counties. This was the seventh exercise held for the Quad Cities Nuclear Power Station. Per Guidance Memoranda (GM) EX-3 and PR-1, this exercise denotes the beginning of the second six-year period for tracking the demonstration of exercise objectives to be accomplished in this time frame. It was classified as full scale with the State of Iowa and Clinton and Scott Counties participating. The State of Illinois, including Rock Island and Whiteside Counties also participated. However, this report will address the State of Iowa and Clinton and Scott Counties only.

1.2 EXERCISE EVALUATORS

Sixteen Federal agency personnel and five FEMA contract staff evaluated the off-site emergency response functions. These individuals and their exercise assignments are given below:

Observer	Agency	Assignments
Bob Bissell	FEMA	Overview
Frank Begley	FEMA	Regional Office Coordination
Bill Brinck	EPA	Field Team Coordination
Tim Burke	ARC	Clinton Co. EOC/Goose Lake Reception Center
Marlee Carroll	FEMA	Emergency Operations Facility
Nate Chipman	INEL	Goose Lake Reception Center
Carol Coleman	FEMA	North Scott School District
John Coleman	FEMA	Joint Public Info. Center
Bob Franke	FEMA	Forward Command Post
Jon Furst	FEMA	Scott Co. EOC
Don Hulet	ANL	Field Monitoring Team
Dewey Johnson	FEMA	State EOC
Bill Knoerzer	ANL	Field Monitoring Team
Rich Leonard	FEMA	Overview
Diane Money	FEMA	Emergency Operations Facility
Pete Podell	FEMA	Ambulance Drill
Bill Serrano	INEL	State EOC/Dose Assessment
Dee Seymour	ANL	Scott Co. EOC
Ron Shaw	FEMA	Clinton Co. EOC/Goose Lake Reception Center
Richard Sumpter	FEMA	Clinton Co. EOC
Jim Winger	FEMA	Scott Co. EOC

1.3 EVALUATION CRITERIA

The evaluation criteria for this exercise were:

1. 44 Code of Federal Regulations (CFR), Part 350.9.

2. NUREG-0654/FEMA-REP-1, Rev. 1 (All applicable requirements).

2.a. The thirty-six standardized objectives developed as a summary of observable elements contained in NUREG-0654. The objectives will be referenced throughout the report.

3. Iowa Radiological Emergency Response Plan, Section B Plant Accident/Incident.

4. Quad Cities - Site Specific Nuclear Power Plant Emergency Response Plans for Clinton and Scott Counties.

1.4 EXERCISE OBJECTIVES

Exercise objectives included full-scale participation from the State of Iowa and Clinton and Scott Counties. State activities included the activation of the Forward Command Post, radiological field monitoring teams, and participation at the Joint Public Information Center. The Iowa State Emergency Operations Center in Des Moines was activated to support the utility and local counties. Both Scott and Clinton County Emergency Operation Centers were fully activated. The alert and notification system, consisting of sirens, mobile route alerting, and activation of the Emergency Broadcast System (EBS), was simulated during this exercise. The utility activated the Emergency Operations Facility, radiological field monitoring teams and the Joint Public Information Center.

The exercise was intended to demonstrate many, but not necessarily all, of the Quad Cities Nuclear Power Station capabilities to respond to the State and local radiological emergency response plans for the Quad Cities Nuclear Power Station and Commonwealth Edisons radiological emergency response plan through their various levels. The exercise demonstrated a number of primary emergency preparedness functions. At no time was the exercise permitted to interfere with the safe operations of the plant, and the plant management, at its discretion, could have suspended the exercise for any period of time necessary to ensure this goal.

On June 13, 1988, the State of Iowa submitted formal objectives for State and local jurisdictions for this exercise. The format of this submission utilizes the thirty-six standardized objectives referred to under 1.3. (2.a.) above. They will be referred to by number throughout this evaluation report and are as follows:

Iowa State Emergency Operations Center

OBJECTIVE NUMBER	
1	Demonstrate the ability to monitor, understand, and use emergency classification levels (ECL) through the appropriate implementation of emergency functions and activities corresponding to ECL's as required by the scenario.
2	Demonstrate the ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions.
3	Demonstrate the ability to direct, coordinate, and control emergency activities.
4	Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.
5	Demonstrate the adequacy of facilities, equipment, displays, and other materials to support emergency operations.
10	Demonstrate the ability, within the plume exposure pathway, to project dosage to the public via plume exposure, based upon plant and field data.
11	Demonstrate the ability to make appropriate protective action decisions, based on projected or actual dosage, EPA PAG's, availability of adequate shelter, evacuation time estimates, and other relevant factors.
13	Demonstrate the ability to coordinate the formulation and dissemination of accurate information and instructions to the public in a timely fashion after the initial alert and notification has occurred.
15	Demonstrate the ability to establish and operate rumor control in a coordinated and timely fashion.
16	Demonstrate the ability to make the decision to recommend the use of KI to emergency workers and institutionalized persons, based on predetermined criteria, as well as to distribute and administer it once the decision is made, if necessitated by radioiodine releases.

18	Demonstrate the ability and resources necessary to implement appropriate protective actions for the impacted permanent and transient plume EPZ population (including transit-dependent persons, special needs populations, handicapped persons, and institutionalized persons).
20	Demonstrate the organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas.
26	Demonstrate the ability to identify the need for and call upon Federal and other outside support agencies' assistance.

Emergency Operations Facility

OBJECTIVE NUMBER	
1	Demonstrate the ability to monitor, understand, and use emergency classification levels (ECL) through the appropriate implementation of emergency functions and activities corresponding to ECL's as required by the scenario.
2	Demonstrate the ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions.
3	Demonstrate the ability to direct, coordinate, and control emergency activities.
4	Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.
5	Demonstrate the adequacy of facilities, equipment, displays, and other materials to support emergency operations.

Joint Public Information Center

OBJECTIVE NUMBER	
1	Demonstrate the ability to monitor, understand, and use emergency classification levels (ECL) through the appropriate implementation of emer-

gency functions and activities corresponding to ECL's as required by the scenario.

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

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

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

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

14 Demonstrate the ability to brief the media in an accurate, coordinated, and timely manner.

State Forward Command Post

OBJECTIVE NUMBER

1 Demonstrate the ability to monitor, understand, and use emergency classification levels (ECL) through the appropriate implementation of emergency functions and activities corresponding to ECL's as required by the scenario.

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

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

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

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

6 Demonstrate the ability to continuously monitor and control emergency worker exposure.

16 Demonstrate the ability to make the decision to recommend the use of KI to emergency workers and

institutionalized persons, based on predetermined criteria, as well as to distribute and administer it once the decision is made, if necessitated by radioiodine releases.

20 Demonstrate the organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas.

Dose Assessment/Field Team Coordination

OBJECTIVE NUMBER	
2	Demonstrate the ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions.
3	Demonstrate the ability to direct, coordinate, and control emergency activities.
4	Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.
5	Demonstrate the adequacy of facilities, equipment, displays, and other materials to support emergency operations.
6	Demonstrate the ability to continuously monitor and control emergency worker exposure.
10	Demonstrate the ability within the plume exposure pathway, to project dosage to the public via plume exposure, based upon plant and field data.

Field Monitoring Teams

OBJECTIVE NUMBER	
2	Demonstrate the ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions.
4	Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.
6	Demonstrate the ability to continuously monitor and control emergency worker exposure.

7	Demonstrate the appropriate equipment and procedures for determining field radiation measurements.
8	Demonstrate the appropriate equipment and procedures for the measurement of airborne radioiodine concentrations as low as 10-7 microcurie per cc in the presence of noble gases.
9	Demonstrate the ability to obtain samples of particulate activity in the airborne plume and promptly perform laboratory analyses.
16	Demonstrate the ability to make the decision to recommend the use of KI to emergency workers and institutionalized persons, based on predetermined criteria, as well as to distribute and administer it once the decision is made, if necessitated by radioiodine releases.

Medical Drill

OBJECTIVE NUMBER	
6	Demonstrate the ability to continuously monitor and control emergency worker exposure.
23	Demonstrate the adequacy of vehicles, equipment, procedures, and personnel for transporting contaminated, injured or exposed individuals.

Clinton County Emergency Operations Center

OBJECTIVE NUMBER	
1	Demonstrate the ability to monitor, understand, and use emergency classification levels (ECL) through the appropriate implementation of emergency functions and activities corresponding to ECL's as required by the scenario.
2	Demonstrate the ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions.
3	Demonstrate the ability to direct, coordinate, and control emergency activities.

4	Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.
5	Demonstrate the adequacy of facilities, equipment, displays, and other materials to support emergency operations.
6	Demonstrate the ability to continuously monitor and control emergency worker exposure.
12	Demonstrate the ability to initially alert the public within the 10-mile EPZ and begin dissemination of an instructional message within 15 minutes of notification to off-site authorities.
13	Demonstrate the ability to coordinate the formulation and dissemination of accurate information and instructions to the public in a timely fashion after the initial alert and notification has occurred.
16	Demonstrate the ability to make the decision to recommend the use of KI to emergency workers and institutionalized persons, based on predetermined criteria, as well as to distribute and administer it once the decision is made, if necessitated by radioiodine releases.
18	Demonstrate the ability and resources necessary to implement appropriate protective actions for the impacted permanent and transient plume EPZ population (including transit-dependent persons, special needs populations, handicapped persons and institutionalized persons).
20	Demonstrate the organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas.

Clinton County Reception and Decontamination - Goose Lake High School

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

3	Demonstrate the ability to direct, coordinate, and control emergency activities.
4	Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.
6	Demonstrate the ability to continuously monitor and control emergency worker exposure.
21	Demonstrate the adequacy of procedures, facilities, equipment, and personnel for the registration, radiological monitoring and decontamination of evacuees.
22	Demonstrate the adequacy of facilities, equipment, and personnel for congregate care of evacuees.
25	Demonstrate the adequacy of facilities, equipment, supplies, procedures, and personnel for decontamination of emergency workers, equipment, and vehicles and for waste disposal.
34	Demonstrate the ability to maintain staffing on a continuous 24-hour basis by an actual shift change.

Scott County Emergency Operations Center

OBJECTIVE NUMBER	
1	Demonstrate the ability to monitor, understand, and use emergency classification levels (ECL) through the appropriate implementation of emergency functions and activities corresponding to ECL's as required by the scenario.
2	Demonstrate the ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions.
3	Demonstrate the ability to direct, coordinate, and control emergency activities.
4	Demonstrate the ability to communicate with all appropriate locations, organizations, and field personnel.

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

6 Demonstrate the ability to continuously monitor and control emergency worker exposure.

12 Demonstrate the ability to initially alert the public within the 10-mile EPZ and begin dissemination of an instructional message within 15 minutes of notification to off-site authorities.

13 Demonstrate the ability to coordinate the formulation and dissemination of accurate information and instructions to the public in a timely fashion after the initial alert and notification has occurred.

16 Demonstrate the ability to make the decision to recommend the use of KI to emergency workers and institutionalized persons, based on predetermined criteria, as well as to distribute and administer it once the decision is made, if necessitated by radioiodine releases.

18 Demonstrate the ability and resources necessary to implement appropriate protective actions for the impacted permanent and transient plume EPZ population (including transit-dependent persons, special needs populations, handicapped persons and institutionalized persons).

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

20 Demonstrate the organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas.

North Scott School District - Virgil Grissom Elementary School

OBJECTIVE
NUMBER

6 Demonstrate the ability to continuously monitor and control emergency worker exposure.

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

1.5 EXERCISE SCENARIO

The scenario for the exercise consisted of a sequence of events resulting in a release of radioactivity of sufficient magnitude to warrant the declaration of a General Emergency. This release of radioactivity, or plume, traveled along the Mississippi River in a northeast direction from the plant into the States of Iowa and Illinois. Protective Action Recommendations resulted in the evacuation of the entire city limits of Camanche and Clinton, Iowa and portions of Illinois (Sectors B, C, and D).

The following narrative summary is an excerpt from the scenario submitted to this office by Commonwealth Edison on July 19, 1988.

Narrative Summary

Initial Conditions (0730 - 0745)

Prior to the start of the exercise, the following conditions exist. Both units are operating at close to full power, 800 Mwe. Unit One (U-1) is operating normally with no apparent problems. Unit Two (U-2) has been operating with some known fuel damage. I-131 Levels on the RCS samples for the past four days have shown elevated values up to 2.5 uCi/cc I-131. Due to ALARA considerations because of elevated contact dose and volume of normal RCS samples, dilute samples from the HRSS are being pulled. The station has received a letter from GE suggesting ramp down rates not to exceed 75 Mwe/hr so as not to increase the already identified core damage. The station has been monitoring the U-2 RCS by use of 4 hour surveillances, the last having been pulled at 0500. Analysis of this sample is not yet available. The U-2B core spray pump being out of service and 30 minutes into the 90 minute clock for the break in secondary containment to remove the old roter.

Alert (0745 - 0915)

While raising the old core spray pump rotor, the chain on the lifting rig snaps. The loose chain strikes a nearby worker, injuring him to the point that an ambulance will be necessary. The man's injuries will prevent a thorough contamination survey to be done so he will be considered to be contaminated until arrival at the hospital (transportation from the station will be simulated). The falling pump rotor strikes the core spray suction line cracking it at the isolation valve. The room rapidly fills with water drained from the U-2 torus until an equilibrium

is reached and the draining slows to indicate leakage from the room. About two feet will have been lost from the U-2 torus. Anticipated station actions at this time should include activation of the TSC/OSC, response to the injured man, replacement of the hatch to restore secondary containment and an accelerated shutdown of U-2 following the GE recommended ramp down rate.

Site Area Emergency (0915 - 1015)

Containment rad levels will rapidly increase due to the accelerated shutdown being performed. A level of 400 R/hr will be achieved at 0915 causing the Site-Area Emergency to be declared based on EAL 16. At 1000 a rapidly moving storm front moves in causing high winds to be generated. Damage from this includes loss of transformer 22 and all off-site power to the unit. Debris is blown onto the 1/2 diesel generator exhaust and it cannot auto-start. At this point, the EOF should begin activating and assembly/accountability should be initiated. A PASS sample should be requested. The environment in the HRSS building will be adverse due to some line leakage causing airborne problems. Protective clothing and respirators and/or supplied air will need to be used.

General Emergency (1015 - 1345)

Containment rad levels exceed 2000 R/hr shortly after the unit scram which occurs with the loss of off-site power. This causes the declaration of General Emergency based on EAL 16. The scram causes enough pipe movement in the plant to burst the penetration seal in the core spray room and rapidly drain both the core spray room and the U-2 torus. Approximately 60 minutes later, levels climb to 12000 R/hr. The computer use of ED-24 will be unavailable due to the infiltration of the program by an unauthorized person who has changed access codes. This will cause the use of Table 6.3-1 to make protective action recommendations. Due to the loss of off-site power, the plant will also lose HRSS and SPING because these systems are not on ESF busses and will have to be picked up to be operational. The SPING and computer can be returned anytime after our evacuation recommendation is made. Standby gas treatment system filters will degrade which will result in a release of Iodine to the environment. Field samples will indicate projected doses of 5R at 5 miles. The State of Illinois monitor will detect Iodine effluent release from the stack.

An additional maintenance problem will occur after the unit 2 diesel has been running for 90 minutes. A low level will come up on the diesel's day tank because the transfer pump is burned out.

Recovery (1345 - 1515)

A 48 hour time jump will occur to enable various facilities to utilize their recovery planning.

1.6 STATE AND LOCAL RESOURCES

Listed below are organizations that planned to participate:

State of Iowa

1. Iowa Disaster Services Division
2. Iowa State Department of Public Health
3. Iowa National Guard
4. Iowa Department of Public Safety (Iowa Highway Patrol)
5. Iowa Department of Natural Resources
6. Iowa Department of Transportation
7. University of Iowa Hygienic Laboratory
8. Office of the Governor
9. Office of the Attorney General
10. Iowa Department of Human Services
11. Iowa Department of Agriculture
12. Iowa Office on Aging
13. Iowa Conservation Commission
14. Iowa Commerce Commission
15. Office of the Adjutant General
16. American Red Cross

Clinton County

Emergency Management
Sheriff's Department
Highway Department
County Supervisor
Social Services
Public Information Office
American Red Cross
Area Education Agency
Amateur Radio Club
Municipal Fire and Police:
- Clinton
- Camanche
- Low Moor
- Gooselake
- Charlotte
- DeWitt

Scott County

Emergency Management
Sheriff's Department
Highway Department
Health Department
Public Information Office
American Red Cross
Human Services
Environmental Health
Area Education Agency
Municipal Fire and Police:
- Princeton
- LeClaire
- McCausland

EXERCISE EVALUATION

2.1 IOWA OPERATIONS

2.1.1 State Emergency Operations Center (SEOC)

The following objectives were to be demonstrated at this facility: 1, 2, 3, 4, 5, 10, 11, 13, 15, 16, 18, 20, and 26.

Objective Number 1, the ability to monitor, understand, and use emergency classification levels through the appropriate implementation of emergency functions and activities, was fully demonstrated.

The ability to fully alert, mobilize, and activate personnel for both facility and field based emergency functions, Objective Number 2, was fully demonstrated. Full staffing was completed by 0837. Organizations represented at the Emergency Operating Center (EOC) were the Disaster Services Division, State Departments of Natural Resources, Public Health, Transportation, Agriculture, Public Safety, Human Services, Commerce and Aging. Also represented were the Attorney General, National Guard, Adjutant General, and the American Red Cross.

The ability to direct, coordinate, and control emergency activities, Objective Number 3, was fully demonstrated. The State Emergency Operations Center (SEOC) properly notified all appropriate organizations of the emergency classification levels. This corrected two inadequacies from the previous exercise concerning the failure to notify the State Forward Command Post and FEMA of the Alert and General Emergency, respectively.

Objective Number 4, ability to communicate with all appropriate locations, organizations, and field personnel, was not adequately demonstrated, resulting in a deficiency. Specifically, the Iowa Department of Public Health did not obtain plant status data from the utility prior to the activation of the Emergency Operations Facility (EOF) except through the State of Illinois and Commonwealth Edison representatives. As these representatives were prepositioned and arrived at the SEOC hours before they would have during a real event, the Iowa Department of Public Health would not have had information to make protective action recommendations to the local governments. Based on the above, a deficiency resulted due to the inability of the SEOC, (Department of Public Health) to establish a communication link to the Technical Support Center (TSC) prior to the activation of the EOF.

Because of the potential impact of deficiencies on emergency preparedness, they are required to be promptly corrected through appropriate remedial actions, per Guidance Memorandum (GM) EX-1.

Remedial action will consist of the identification of a communication link to the TSC and the modification of the State Plan which will assure this link has been established. This link must also be demonstrated at the next exercise.

Adequacy of facilities, equipment, and other materials to support emergency operations, Objective Number 5, was fully demonstrated. Status boards were clearly visible and kept up-to-date on significant events. All appropriate maps and displays were posted or available.

Objective Number 10, ability within the plume exposure pathway to project dosage to the public via plume exposure, based on plant data was adequately demonstrated. Dose projections were updated as plant status changed. Projected wind shifts were considered in the determination of the area of concern. However, a concern was identified with the capability of the field monitoring teams to define the plume boundary. This concern will be addressed under Section 2.1.5 (Dose Assessment and Field Team Coordination) of this report.

Objective Number 11, ability to make appropriate protective action decisions, based on projected or actual dosage, EPA Protective Action Guides (PAG's), availability of adequate shelter, evacuation time estimates, and other relevant factors, was fully demonstrated. Protective action decisions were made without delay and promptly reviewed and updated as conditions changed.

Objective Number 13, ability to coordinate the formulation and dissemination of accurate information and instructions to the public in a timely fashion, was not adequately demonstrated. The SEOC staff provided an incorrect protective action decision to Clinton and Scott Counties, Iowa State Forward Command Post, and the Joint Public Information Center. An inadequacy was identified as the SEOC sent by telefacsimile a copy of the protective action decision previously provided to the local government over the conference line. However, the telefacsimile copy omitted Scott County by stating that all persons within two miles of the plant in sectors Q, R, A, and B must evacuate. The message should have stated that all persons within two miles of the plant in all sectors must evacuate.

Objective Number 15, ability to establish and operate rumor control in a coordinated and timely fashion, was fully demonstrated. Approximately twenty lines were available for this function. The rumor control staff provided accurate and responsive information in a prompt manner.

Objective Number 16, ability to make the decision to recommend the use of potassium iodide (KI) to emergency workers and institutionalized persons based on predetermined criteria, as well as to distribute and administer it once the decision is

made, was fully demonstrated. The Iowa Department of Public Health appropriately made the decision (based on projected dose) at 1150 to provide KI to emergency workers. The decision was subsequently provided to the responsible individuals at 1152.

The ability and resources necessary to implement appropriate protective actions for the impacted permanent and transient plume Emergency Planning Zone (EPZ) population (including transportation-dependent, special needs, handicapped, and institutionalized persons), Objective Number 18, was fully demonstrated to the extent possible at this facility. The SEOC staff contacted the Area Agency on Aging, responsible for the affected area, and notified them of the accident. Further contact would be handled by the Scott and Clinton County EOC's.

Objective Number 20, the organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas, was fully demonstrated to the extent possible at the SEOC. This function is limited to providing resources to the local governments for access control. The Iowa State Patrol requested assistance from the National Guard which was quickly and efficiently implemented.

The ability to identify the need for and call upon Federal and other outside support agencies assistance, Objective Number 26, was fully demonstrated. The United State Coast Guard (USCG) and the Federal Aviation Administration (FAA) assistance was requested. The Corp of Engineers assistance was also requested to close pools 13 and 14 on the Mississippi River.

Summary: The two inadequacies identified during the previous exercise conducted August 26, 1986, concerning the failure to notify the appropriate organizations of the emergency classification levels, were corrected during this exercise.

Objectives Number 4 and 13 were not adequately demonstrated during this exercise. Objective Number 4 was cited as a deficiency.

Deficiency

1. The Iowa Department of Public Health did not obtain plant status data from the utility prior to the activation of the EOF except through the State of Illinois and Commonwealth Edison representatives. As these representatives were prepositioned and arrived at the SEOC hours before they would have during a real event, the Iowa Department of Public Health would not have had information to make protective action recommendations to the local governments. (NUREG-0654, E.1)

Area Requiring Corrective Action

1. The Iowa State Emergency Operations Center provided an incorrect protective action recommendation (PAR) to Clinton and Scott Counties, Iowa State Forward Command Post, and the Joint Public Information Center. The SEOC sent, by telefacsimile, a copy of the PAR previously provided to the local governments over the conference line. However, the telefacsimile copy omitted Scott County by stating that all persons within two miles of the plant in sectors Q, R, A, and B must evacuate. The message should have stated that all persons within two miles of the plant in all sectors must evacuate. (NUREG-0654, E.5.)

2.1.2 Emergency Operations Facility (EOF)

The following objectives were to be demonstrated at this facility: 1, 2, 3, 4, and 5.

Objective Number 1, ability to monitor, understand and use emergency classification levels through the implementation of emergency functions and activities, was fully demonstrated.

The ability to fully alert, mobilize, and activate personnel for both facilities and field-based emergency functions, Objective Number 2, was not fully demonstrated. Representatives from the Iowa Department of Public Health and the Disaster Services Division reported to the EOF. The representatives from the Disaster Services Division subsequently reported to the Joint Public Information Center. However, as these individuals were prepositioned in the area, and mobilization procedures were not actually demonstrated, this objective remains to be fully demonstrated.

Objective Number 3, ability to direct, coordinate and control emergency activities, was fully demonstrated. The function of the Iowa staff at this facility was a liaison and to simply provide information, when requested, to other emergency response organizations.

The ability to communicate with all appropriate locations, organizations, and field personnel, Objective Number 4, was fully demonstrated. Communication links were established with the SEOC, Scott and Clinton County EOC's, Forward Command Post and the Joint Public Information Center. Both primary and secondary communication links were demonstrated.

Objective Number 5, adequacy of facilities, displays, and other materials to support emergency operations, was fully demonstrated. All the appropriate maps were posted and updated.

Summary: There were no inadequacies identified during the previous exercise, conducted August 26, 1986, that required corrective action or subsequent demonstration for reevaluation during this exercise.

There were no inadequacies observed that would require corrective action at the EOF. Objective Number 2 was not fully demonstrated during this exercise.

2.1.3 Joint Public Information Center (JPIC)

The following objectives were to be demonstrated at this facility: 1, 2, 3, 4, 5, and 14.

Objective Number 1, ability to monitor, understand, and use emergency classification levels through the appropriate implementation of emergency functions and activities, was fully demonstrated. The proper emergency classification levels were utilized and the staff properly notified.

The ability to fully alert, mobilize, and activate personnel for both facility and field based emergency functions, Objective Number 2, was not fully demonstrated. Three individuals from the Iowa Disaster Services Division were present at the Joint Public Information Center (JPIC). However, as these individuals were prepositioned in the area, and mobilization procedures were not actually demonstrated, this objective remains to be fully demonstrated.

The ability to direct, coordinate, and control emergency activities, Objective Number 3, was fully demonstrated. The Iowa staff was actively involved in decision making. Message logs were kept for all incoming and outgoing messages.

Objective Number 4, ability to communicate with all appropriate locations, organizations, and field personnel, was fully demonstrated. Both primary and secondary communication links were demonstrated. Communication links were established with the SEOC and Scott and Clinton County EOC's.

Objective Number 5, adequacy of facilities, equipment, displays, and other material to support emergency operations, was fully demonstrated. The new facilities for media briefing were admirably suited for this function. All the appropriate maps and displays were available for use in media briefing. However, three areas recommended for improvement were identified and are as follows:

* The displays and maps were covered with plastic which may reflect lights from cameras and make them unusable. The maps should be covered with a dull non-reflecting surface or left uncovered. In addition, illustrative overlays utilized

would not adhere to the covered maps, and were, therefore, awkward and confusing for viewers.

* An aerial photo was utilized to explain the extent of the problem to the media which provided a poor description of the plant site. An artist's rendering of the plant and local area would be an improvement.

* Overhead projection displays were cluttered with excessive ground clutter and information which was somewhat technical in nature. The maps should be simplified with less technical jargon.

The ability to brief the media in an accurate, coordinated, and timely manner, Objective Number 14, was fully demonstrated. The Iowa staff maintained sufficient contact with decision makers to keep abreast of current events and information. Utility and State information kits were provided to the media.

Summary: There were no inadequacies identified during the previous exercise, conducted August 26, 1986, that required corrective action or subsequent demonstration for reevaluation during this exercise.

There were no inadequacies observed that would require corrective action at the JPIC. Objective Number 2 was not fully demonstrated during this exercise.

Areas Recommended For Improvement

1. The maps and displays utilized for media briefings should be covered with a dull non-reflecting plastic to avoid glare from camera lights or left uncovered.

2. An artist's rendering of the plant site, simply depicted, should be used for media briefing in lieu of an aerial photo.

3. Overhead projection displays should be less cluttered with information and be simplified with less technical jargon.

2.1.4 State Forward Command Post (FCP)

The following objectives were to be demonstrated at this facility: 1, 2, 3, 4, 5, 6, 16, and 20.

Objective Number 1, ability to monitor, understand, and use emergency classification levels through the appropriate implementation of emergency functions and activities, was fully demonstrated. Staff at the Forward Command Post (FCP) were aware of the current emergency classification levels which were prominently displayed.

The ability to fully alert, mobilize, and activate personnel for both facility and field based emergency functions, Objective Number 2, was not adequately demonstrated. The Iowa Disaster Services Division (DSD) representative arrived at the FCP prematurely. The State DSD representative was prepositioned the evening prior to the exercise which is acceptable. However, the representative reported to the FCP prior to the simulated time that it would normally require under actual mobilization. Specifically, the State was notified of the Alert emergency classification level at 0831 which initiates activation of the DSD staff. The State DSD representative subsequently reported to the FCP at 0847. Based on the above, less than twenty minutes was allowed for simulation of mobilization time from Des Moines which is approximately 170 miles. Premature arrival and participation of exercise players is unrealistic as the DSD is providing input which would not be possible during an actual event and, therefore, is unacceptable.

Representatives from the following agencies reported to this facility: Iowa Department of Public Safety (State Patrol), Department of Transportation, Iowa National Guard, Department of Natural Resources, and Disaster Services Division. However, as the DSD staff members were prepositioned, and actual mobilization procedures were not demonstrated, this objective remains to be fully demonstrated.

Objective Number 3, ability to direct, coordinate, and control emergency activities, was fully demonstrated. The ability of the Iowa DSD representative to provide accurate and periodic briefings to all staff at this facility was noteworthy.

Objective Number 4, ability to communicate with all appropriate locations, organizations, and field personnel, was fully demonstrated. Both primary and secondary communication links were demonstrated.

Adequacy of facilities, equipment, displays, and other materials to support emergency operations, Objective Number 5, was fully demonstrated. Status boards were posted and updated promptly. The only item that was not posted was the protective action decisions and is an area recommended for improvement. The protective action decisions are significant as they drive access control and, therefore, should be posted for the players at the FCP.

Objective Number 6, ability to continuously monitor and control emergency worker exposure, was fully demonstrated. The appropriate dosimetry was available. The FCP staff were aware of the procedures for reading and recording dosimeters and were aware of maximum authorized limits.

The ability to distribute and administer potassium iodide (KI) to emergency workers once the decision is made, Objective Number 16, was fully demonstrated. KI was distributed to emergency workers at the FCP before they were directed into the field.

Objective Number 20, organizational ability and resources necessary to control evacuation flow and to control access to evacuated and sheltered areas, was fully demonstrated to the extent possible at this facility. The FCP simply provided resources for access control as requested by the local governments. Emergency workers were quickly deployed as the counties requested assistance.

Summary: There were no inadequacies identified during the previous exercise, conducted August 26, 1986, that required corrective action or subsequent demonstration for reevaluation during this exercise.

Objective Number 2, was not adequately demonstrated during this exercise.

Area Requiring Corrective Action

2. The representative from the Iowa Disaster Services Division, due to prepositioning, reported to the FCP prior to the Alert emergency classification level. Considering notification and travel time, this is approximately three one-half hours before an actual response time. (NUREG-0654, E.2.)

Area Recommended For Improvement

4. Protective action decisions and subsequent implications were not posted at the FCP. This is an integral portion of the emergency function and should be posted for all exercise players at this facility.

2.1.5 Dose Assessment and Field Team Coordination

The following objectives were to be demonstrated for the Dose Assessment and Field Team Coordination function: 2, 3, 4, 5, 6, and 10.

Dose assessment was performed at the State Emergency Operating Center (EOC) in Des Moines by the Iowa Department of Public Health and is shown in section 2.1.1 (State Emergency Operations Center) of this report. Field team coordination was performed at the Clinton County EOC by the University of Iowa's Hygienic Laboratory (UHL) staff.

Objective Number 2, ability to mobilize and activate personnel for both facility and field based emergency functions, was

fully demonstrated. Representatives from the University Hygienic Laboratory reported to the Clinton County EOC. The UHL provided staff for the field team coordinator function and for the radiological field teams.

The ability to direct, coordinate, and control emergency activities, Objective Number 3, was adequately demonstrated. Periodic briefings were held to update the staff concerning plant conditions. All staff, as appropriate, were involved in decision making. The dose assessment staff at the SEOC provided updates of plant status in a timely manner which corrected an inadequacy from the previous exercise.

Objective Number 4, ability to communicate with all appropriate locations, organizations, and field personnel, was fully demonstrated. A delay in establishing communications with the field teams occurred initially during the exercise. However, within one hour, field communications were established and maintained throughout the exercise. A backup radio was utilized by the field team coordinator when the primary system failed.

The primary communications link to the SEOC was by commercial telephone; secondary link was the Nuclear Accident Reporting System (NARS).

Objective Number 5, adequacy of facilities, equipment, displays, and other materials to support emergency operations, was not adequately demonstrated. Protective action decisions, plant status, and weather data were not posted by the field team coordinator. Information concerning protective actions was available at the Clinton County EOC; however, it was not readily available to the coordinator who was located in a small room distant from the EOC operations.

The ability to monitor and control emergency worker exposure, Objective Number 6, was not adequately demonstrated. The field team coordinator and staff were not provided dosimetry until they arrived at the Clinton County EOC. As the county EOC is located in the plume emergency planning zone (EPZ), the UHL staff should have been issued dosimetry prior to reporting to the EOC pursuant to NUREG-0654, K.3.a. Based on the above, the staff could have secured an exposure beyond the administrative limits as any radiation received prior to reporting to the EOC would not have been recorded. Procedures must be amended to allow for distribution of the appropriate dosimetry prior to entering the EPZ.

Objective Number 10, ability within the plume exposure pathway to project dosage to the public via plume exposure, based on plant and field data, was not adequately demonstrated. The field team coordinator failed to define the radiological plume boundary. This occurred for two reasons. First, the field teams were unable to arrive at monitoring locations promptly. This occurred

because the maps utilized by the coordinator were different from the maps utilized by the field teams. Secondly, the plume traveled northeast following the river, affecting the State of Illinois. However, the Iowa coordinator was not provided information obtained from the State of Illinois and utility field teams who were also tracking the plume. This information would have been beneficial to assist the field team coordinator in efforts to define the plume boundary. Based on the above, the coordinator was able to verify some dose projections within the plume by the field teams, but was unable to define the plume boundary.

Summary: The one inadequacy identified during the previous exercise conducted August 26, 1986, concerning the failure of the Dose Assessment staff to provide information to the field team coordination staff in a timely manner, was corrected during this exercise.

Objectives Number 5, 6, and 10 were not adequately demonstrated.

Areas Requiring Corrective Action

3. The Field Team Coordinator failed to post protective action decisions, plant status, and weather data. (NUREG-0654, H.3.)

4. The University Hygienic Laboratory staff entered the plume emergency planning zone without permanent or direct reading dosimetry. (NUREG-0654, K.3.a.)

5. The Field Team Coordinator failed to track and define the radiological plume boundary. (NUREG-0654, I.11.)

2.1.6 Field Monitoring Teams

The following objectives were to be demonstrated by the field monitoring teams: 2, 4, 6, 7, 8, 9, and 16.

Objective Number 2, ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions, was fully demonstrated. Representatives from the University Hygienic Laboratory were dispatched from the Ames and Iowa City facilities for staffing the radiological field monitoring teams. The teams were subsequently deployed from the Clinton County EOC.

The ability to communicate with all appropriate locations, organizations, and field personnel, Objective Number 4, was fully demonstrated. A delay in establishing communications with the field team coordinator occurred initially during the exercise.

Within one hour, full communications were demonstrated and maintained throughout the exercise.

Objective Number 6, ability to continuously monitor and control emergency worker exposure, was fully demonstrated. The appropriate dosimetry was available for the field teams. The staff was aware of the procedures for reading and recording dosimeter values and knew the maximum exposure dose authorized which corrected an inadequacy from the previous exercise.

Objectives Number 7, 8, and 9 concerning ambient radiation monitoring, airborne iodine monitoring, and sampling particulate activity, respectively, were not adequately demonstrated and, collectively, resulted in a deficiency for field team monitoring. Both Iowa field teams did not demonstrate the proper procedures for use of equipment. Specifically, the following concerns were identified:

* Beta and Gamma readings were not made at the proper height. Readings at sample locations were improperly taken out of the vehicle window as it passed by the sample point.

* The teams were unable to arrive at the monitoring locations promptly. This occurred because the maps utilized by the field team coordinator were different from the maps utilized by the field teams. Although this was subsequently corrected, much confusion resulted which delayed field team readings.

* Standard operating procedures for the use of the equipment and for sampling techniques were not available.

* The instruments were not calibrated within one year per the plans. This was identified as a concern during the previous exercise conducted August 26, 1988.

Per Guidance Memorandum (GM) EX-1, the concerns noted above collectively raise doubts as to whether adequate protective measures can be taken in the event of an emergency and, therefore, will require remedial action. Proper use of equipment and monitoring procedures must be demonstrated by both field teams in a remedial exercise.

Objective Number 16, ability to administer potassium iodide (KI) once the decision is made, was fully demonstrated. The Iowa State Department of Health in Des Moines appropriately made the decision to administer KI. This decision was provided to the field teams in a timely manner. KI was available for the field team members.

Summary: The inadequacy concerning awareness of maximum exposure dose identified during the previous exercise, conducted

August 26, 1988, was corrected during this exercise. The second inadequacy identified during the previous exercise, concerning the failure to calibrate instruments within a year, remains to be resolved.

Objectives Number 7, 8, and 9 were not adequately demonstrated and, collectively, resulted in a deficiency.

Deficiency

2. Both Iowa radiological field monitoring teams did not demonstrate proper procedures for use of equipment. Specifically, the following concerns were identified:

   * Beta and Gamma readings were not made at the proper height. Readings at sample locations were improperly taken out of the vehicle window as it passed by the sample point.

   * The teams were unable to arrive at the monitoring locations promptly.

   * Standard operating procedures for the use of the equipment and for sampling techniques were not available.

   * The instruments were not calibrated within one year per the plans.

   Per GM EX-1, the concerns noted above collectively raise doubts as to whether adequate protective measures can be taken in the event of an emergency. (NUREG-0654, H.10, I.7, I.8, and I.9.)

2.1.7 Medical Drill

The following objectives were to be demonstrated by the Davenport Emergency Medical Services: 6 and 23.

Objective Number 6, ability to continuously monitor and control emergency worker exposure, was not adequately demonstrated. The appropriate dosimetry was available including permanent record dosimeter (TLD's) and the ambulance crew displayed adequate knowledge of procedures concerning the use of both self-reading dosimetry and TLD's. However, the crew was not aware of the maximum authorized exposure limits.

Objective Number 23, adequacy of vehicles, equipment, procedures and personnel for transporting contaminated, injured or exposed individuals, was not adequately demonstrated. The ambulance crew was not aware of the proper setting on the survey meter. In addition, the crew touched the victim and then touched the probe which may have contaminated the instrument.

The crew demonstrated adequate contamination control procedures to prevent the spread of contamination. The injured victim was transported to the proper receiving area of the hospital which corrected an inadequacy identified during the previous exercise. Excellent charts/exposure tracking forms were available and utilized by the ambulance crew.

An area recommended for improvement was noted during this exercise. The equipment utilized for transporting a contaminated injured victim is stored at the ambulance base. If the ambulance was dispatched while returning from a previous call, the equipment would not be readily available. It is recommended that the equipment utilized for transporting a contaminated injured victim be kept in the ambulance.

Summary: The one inadequacy identified during the previous exercise conducted August 26, 1986, when the ambulance crew transported the victim to the emergency receiving area of the hospital, was corrected during this exercise.

Objectives Number 6 and 23 were not adequately demonstrated during this exercise.

The adequacy of medical facilities equipment, procedures and personnel for handling contaminated, injured or exposed individuals was demonstrated by the Moline Public Hospital. However, as this hospital is located in Illinois, this evaluation will be accounted for in the FEMA Region V exercise evaluation.

Area Requiring Corrective Action

6. Monitoring procedures were not adequately demonstrated. The ambulance crew was not aware of the proper setting on the survey meters. In addition, the crew touched the victim then touched the probe which may have contaminated the instruments. (NUREG-0654, L.3.)

7. The ambulance crew was not aware of the maximum exposure dose allowed without authorization. (NUREG-0654, K.5.a.)

Area Recommended For Improvement

5. The equipment utilized for transporting a contaminated injured victim is stored at the ambulance base. If the ambulance was dispatched while returning from a previous call, the equipment would not be readily available. Therefore, the equipment should be kept in the ambulance.

2.2 COUNTY OPERATIONS

2.2.1 Clinton County Emergency Operations Center (CCEOC)

The following objectives were to be demonstrated at this facility: 1, 2, 3, 4, 5, 6, 12, 13, 16, 18, 19, and 20.

Objective Number 1, ability to monitor, understand, and use emergency classification levels through the appropriate implementation of emergency functions and activities, was fully demonstrated. Emergency classification levels were promptly posted and the staff appropriately notified.

The ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions, Objective Number 2, was not adequately demonstrated. The Iowa Disaster Services Division (DSD) representative arrived at the Clinton County Emergency Operations Center (CCEOC) prematurely. The State DSD representative was prepositioned the evening prior to the exercise which is acceptable. However, the representative reported to the CCEOC prior to the time that it would normally require under actual mobilization. Specifically, the State was notified of the Alert emergency classification level at 0831, which initiates activation of the DSD staff. The State DSD representative arrived at 0855. Based on the above, less than thirty minutes was allowed for simulation of mobilization time from Des Moines which is approximately 170 miles. Premature arrival and participation of exercise players is unrealistic as the DSD is providing input which would not be possible during an actual event and, therefore, is unacceptable.

The ability to direct, coordinate, and control emergency activities, Objective Number 3, was adequately demonstrated. All staff, when appropriate, were involved in decision making.

The CCEOC received notification of the Alert at 0835 from the licensee; full staffing was completed at 0958. Mobilization procedures were demonstrated per the local plans. Organizations represented at the Emergency Operations Center (EOC) were the Clinton County Emergency Management Office, Clinton County Sheriff's Office, County Engineer, County Human Services Director, Area Education Agency, Iowa State Patrol, Iowa Division of Natural Resources, Mayors of Clinton, Camanche, Low Moor, and DeWitt, Clinton Police and Fire Departments, Camanche and Low Moor Fire Departments, DeWitt Police Department, American Red Cross, and the Radio Amateur Communication Emergency Services (RACES).

Objective Number 4, ability to communicate with all appropriate locations, organizations, and field personnel, was fully demonstrated. The presence of two identical operational communi-

cation consoles for secondary communication was impressive and noteworthy.

The adequacy of facilities, equipment, displays, and other materials to support emergency operations, Objective Number 5, was not adequately demonstrated. Protective action decisions and the status of implementation were not posted on status boards for the EOC staff. All directions and updates provided by the county director were verbal. Consequently, in some instances, tracking and verification of implementation of emergency action or decisions were not performed. If an EOC staff member was absent for verbal direction, updated status boards were not available for subsequent review.

Objective Number 6, ability to continuously monitor and control emergency worker exposure, was fully demonstrated. Direct and self-reading dosimetry was provided to the EOC staff along with instructions.

Objective Number 12, ability to initially alert the public within the 10-mile EPZ and began dissemination of an instructional message within 15 minutes, was adequately demonstrated for portions of the plume emergency planning zone (EPZ) under siren coverage. At 0924, a call was received over the Nuclear Accident Reporting System (NARS), notifying the county of the Site Area Emergency. Siren activation was simulated at 0931. A simulated call was subsequently made to the Emergency Broadcast Station with an initial instructional message at 0937. This objective was completed in thirteen minutes which is within the guidelines established pursuant to NUREG-0654.

However, the county failed to successfully complete route alerting within 45 minutes of notification of the Site Area Emergency in areas of Clinton County within 5 to 10 miles of the site, but outside siren coverage pursuant to NUREG-0654. This action was cited as a deficiency as is further detailed in Section 2.2.5, Mobile Route Alerting, of this report.

Objective Number 13, ability to coordinate the formulation and dissemination of accurate information and instructions to the public in a timely fashion after the initial alert, was not adequately demonstrated, resulting in a deficiency. The protective action instructions provided to the public to evacuate 0 to 2 miles, all sectors, and to shelter from 2 to 10 miles in sectors Q, R, A, and B were initially incomplete and, consequently, were untimely. Specifically, the decision to implement these protective actions was made by the county at 1038. The subsequent calls to the Emergency Broadcast System (EBS) stations were completed at 1050. However, sector B, which includes the cities of Clinton and Camanche, was omitted. This error was discovered and the amended instructions were disseminated to the EBS stations and completed at 1117. Based on the above, thirty-nine minutes

elapsed before the information was completely broadcast to the public over the EBS station. Obviously, the initial omission of sector B was the reason for the excessive amount of time for this protective action decision to be provided to the public.

Because of the potential impact of deficiencies on emergency preparedness, they are required to be promptly corrected through appropriate remedial actions, per Guidance Memorandum (GM) EX-1. Based on the above, the capability to formulate and distribute instructions to the public in a timely manner must be demonstrated in a remedial exercise.

The final protective action recommendations implemented by Clinton County were to evacuate all sectors from 0 to 2 miles, shelter 2 to 10 miles in sectors Q, R, and A, and evacuate from 2 to 10 miles in sector B. As the plume traveled in a northeast direction into both Iowa and Illinois, the protective action recommendations were appropriate.

Objective Number 16, ability to distribute and administer potassium iodide (KI) once the decision is made, was fully demonstrated. The decision to recommend the use of KI was made by the State Department of Health at 1150 and was quickly communicated to the local governments. The instructions to use KI was transmitted at 1153 by the county to all emergency workers. At 1218, the hospitals were also instructed to provide KI to patients who could not be moved. Sufficient quantities of KI were available at the county EOC.

The ability and resources to implement appropriate protective actions for the impacted permanent and transient plume EPZ population, Objective Number 18, was fully demonstrated. A current list of special needs and institutionalized persons was available. Telephones and route alerting were simulated as methods to contact these individuals to provide instructions for sheltering, evacuation, and in some cases the use of KI. The organizations at the EOC responsible for contacting these individuals performed in a timely and proper manner.

Objective Number 19, ability and resources necessary to implement appropriate protective actions for school children within the plume EPZ, was not adequately demonstrated resulting in a deficiency. The protective action decision to shelter 2 to 10 miles in sectors Q, R, A, and B was not provided to the public and private schools and day care centers by the Area Education Agency Administrator pursuant to Clinton County Standard Operating Procedure Number Six.

The Area Education Agency Administrator, subsequently failed to contact the schools in the affected sectors to provide evacuation instructions in a timely manner. At 1130 the decision was made to evacuate sector B (Clinton and Camanche). However, the

Area Education Agency Administrator did not notify the schools until 1225, nearly one hour after the protective action recommendation to evacuate the general public was implemented.

Because of the potential impact of deficiencies on emergency preparedness, they are required to be promptly corrected through appropriate remedial actions per Guidance Memorandum (GM) EX-1. Based on the above, the capability to provide proper instructions to schools within the plume EPZ must be demonstrated in a remedial exercise.

The organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas, Objective Number 20, was fully demonstrated. Access control points were quickly determined and established by the county staff. This corrected an inadequacy during the previous exercise concerning the untimely activation of access control points.

When requested, the county staff provided resources to assist the emergency workers at the access control points in a timely and efficient manner.

Summary: The one inadequacy identified during the previous exercise conducted August 26, 1986, concerning the untimely activation of access control, was corrected during this exercise.

Objectives Number 2, 5, 12, 13, and 19 were not adequately demonstrated. The concerns identified with Objective Number 12, 13, and 19 resulted in 3 deficiencies. The deficiency cited for Objective Number 12 is further detailed in Section 2.2.5, Mobile Route Alerting, of this report.

Deficiencies

3. The protective action decision provided to the public to shelter from 2 to 10 miles in sectors Q, R, A, and B was initially incomplete and consequently, was untimely. The initial EBS message omitted sector B (Cities of Clinton and Camanche). Based on the above, thirty-nine minutes elapsed before the proper protective action decision was provided to the public. (NUREG-0654, E.5.)

4. The Area Education Agency Administrator failed to provide protective action recommendations to schools within the affected sectors for sheltering. In addition, the protective action decision to evacuate during the General Emergency was not provided to the schools for nearly one hour after the decision was made to implement the protective action recommendation. (NUREG-0654, J.10.g.)

Areas Requiring Corrective Action

8. The representative from the Iowa Disaster Services Division (DSD) reported to the Clinton County EOC prematurely. Less than thirty minutes was allowed for simulation of mobilization time from Des Moines which is approximately 170 miles. (NUREG-0654, E.2.)

9. Protective action decisions and the status of implementation were not posted on status boards for the EOC staff. (NUREG-0654, M.3.)

2.2.2 Clinton County Reception and Decontamination - Goose Lake High School

The following objectives were to be demonstrated at this facility: 2, 3, 4, 6, 21, 22, 25, and 34.

Objective Number 2, ability to fully alert, mobilize, and activate personnel for both facility and field based emergency functions, was limited to demonstration of full staffing at this facility. This objective was adequately demonstrated with one exception. During the exercise, the Clinton County Radio Squad was utilized for access control. However, this resource is not reflected in Standard Operating Procedure (SOP) Number 10, page 2 of 4. If this resource is to be utilized, the plans must be appropriately modified to reflect their participation and responsibility pursuant to NUREG-0654, A.2.a.

Representatives from the Low Moor, DeWitt, Goose Lake, and Charlotte Fire Departments, Clinton County Civil Defense Office, Clinton County Sheriff's Office, Clinton County Radio Squad, Clinton County Nurses, American Red Cross, Department of Human Services, Iowa State University, and Amateur Radio Group, participated in this exercise.

The ability to direct, coordinate, and control emergency activities, Objective Number 3, was not adequately demonstrated. The most recent copy of the Clinton County Radiological Emergency Response Plan was not available for the first shift. The copy utilized was dated March 1983. A current plan and standard operating procedures must be provided pursuant to NUREG-0654, A.2.

Objective Number 4, ability to communicate with all appropriate locations, organizations, and field personnel, was fully demonstrated. Commercial telephone was the primary communication link; the amateur radio group provided a radio backup. Communication links with the Clinton County Emergency Operations Center would be established subsequent to activation of this center. Both primary and secondary communication links were demonstrated.

The ability to continuously monitor and control emergency worker exposure, Objective Number 6, was not adequately demonstrated. Three of the radiological monitors were not familiar with the maximum authorized exposure limit, nor who they would contact for authorization to exceed this limit, nor what to do if they exceeded this limit. This occurred in part because the emergency workers were not provided this information during their initial briefing. Additional training is required to correct this concern.

All emergency workers were provided both self-reading and permanent record dosimetry, and potassium iodide (KI). The staff was briefed on procedures to read and record the dosimetry.

The adequacy of procedures, facilities, equipment, and personnel for the registration, radiological monitoring, and decontamination of evacuees, Objective Number 21, was not adequately demonstrated. The following are the concerns noted during this evaluation:

* The staff of the Low Moor and Goose Lake Fire Departments were utilized as resources for radiological monitoring during this exercise. However, these resources are not reflected in Standard Operating Procedure (SOP) Number 10, attachment H, page 2 of 3. As radiological monitoring is an integral portion of this facility, these resources must be reflected in the plans and SOP's pursuant to NUREG-0654, A.2.a.

* The Clinton County sheltering plan, as currently written, does not indicate that priority will be placed on monitoring evacuees and that vehicles will be monitored later. The plan states that initially all evacuees and vehicles will be monitored, which is contrary to the procedures demonstrated by the emergency workers during the exercise. The appropriate plan amendment must be made to indicate priority for evacuees to assure that the population assigned to this reception center can be monitored within a twelve hour period, pursuant to NUREG-0654, J.12.

* The Clinton County sheltering plan does not indicate that monitors will be placed at decontamination areas for remonitoring evacuees after decontamination efforts. The resources necessary for this function must not be included in the basis for calculating the number of emergency workers required for initial monitoring. The appropriate plan amendment must be made, pursuant to NUREG-0654, J.12.

* The Clinton County sheltering plan parking diagram does not indicate space for unmonitored vehicles, pursuant to the vehicle monitoring procedures demonstrated. A plan amendment is required to indicate space where unmonitored vehicles

will be parked to support the monitoring procedures demonstrated during the exercise. The space designated must be an area that will minimize cross contamination to clean vehicles and/or evacuees.

* The radiological monitoring techniques of three of the emergency workers were improper. The monitor touched the victims with the probe in some instances, which may have contaminated the instrument. Additional training is required to correct this concern.

* The "Contaminated Evacuee Monitoring Record" form was not utilized by the monitors, pursuant to SOP Number 10, Attachment C, page 2 of 2. This document indicates location of contamination and is required to assure that the appropriate decontamination efforts are implemented.

Twelve emergency workers and the appropriate equipment were available during this exercise to demonstrate, to the extent of current FEMA guidance, the ability to monitor, within a 12 hour period, the evacuees who, per the plans, would be assigned to this facility. Approximately 90 seconds were required to monitor each evacuee and approximately seven minutes for vehicles.

Decontamination equipment and written procedures were available during this exercise. Emergency workers were familiar with decontamination procedures. Contaminated clothing would be placed in large plastic bags for decontamination and/or disposal by the utility. Personal belongings would be placed in smaller plastic bags. Paper was available to place on the floor to assist in the prevention of cross contamination. If required, clothing would be made available for evacuees by the Salvation Army, pursuant to the plans.

Concerning decontamination, an area recommended for improvement was identified. Mild soap for the first level of decontamination was not available per SOP Number 10, Attachment D, Table 1. Lava soap and Tide were available; however, this is an unnecessarily harsh decontamination method for the first level of decontamination where a less severe method (mild soap) could be used.

Objective Number 22, adequacy of facilities, equipment, and personnel for congregate care of evacuees, was fully demonstrated. During this exercise, the Goose Lake High School was activated for demonstration of this objective. This facility can accommodate 1,273 evacuees, pursuant to the local plans. Additional facilities are available for shelter; however, during this exercise, only this one facility was evaluated.

The American Red Cross fully demonstrated the ability to appropriately manage this facility. The shelter had sufficient

sleeping accommodations, toilets, drinking water, and parking spaces. Capabilities to provide crisis counseling and a nursing station were demonstrated. All evacuees were checked at the time of registration to determine if they had been monitored and, if necessary, decontaminated before being allowed into the center.

The local organizations showed noteworthy enthusiasm.

Objective Number 25, adequacy of facilities, equipment, supplies, procedures and personnel for decontamination of emergency workers, equipment and vehicles, and for waste disposal, was fully demonstrated. Per the plans, this facility would also be utilized for decontamination of emergency workers and resources. Therefore, the procedures demonstrated for evacuees and vehicles would be acceptable for emergency workers and resources.

The ability to maintain staffing on a continuous 24-hour basis by an actual shift change, Objective Number 34, was fully demonstrated. A shift change was adequately demonstrated by the shelter manager and alternate. The alternate was appropriately briefed and demonstrated adequate knowledge of the emergency response roles and functions.

Summary: There were no inadequacies identified during the previous exercise, conducted August 26, 1986, that required corrective action or subsequent demonstration for reevaluation during this exercise.

Objective Number 2, 3, 6, and 21 were not adequately demonstrated during this exercise.

Areas Requiring Corrective Action

10. The Clinton County Radio Squad was utilized for access control. However, this resource is not reflected in the plans. (NUREG-0654, A.16.)

11. The most recent copy of the Clinton County Radiological Emergency Response Plan was not available for the first shift. The copy utilized was dated March 1983. (NUREG-0654, A.16.)

12. Three of the radiological monitors were not familiar with the maximum authorized exposure limit, nor who they would contact for authorization to exceed this limit, nor what to do if they exceeded this limit. (NUREG-0654, K.3.6.)

13. The staff of the Low Moor and Goose Lake Fire Departments were utilized as resources for radiological monitoring. However, these resources are not reflected in the plans. (NUREG-0654, A.16.)

14. The Clinton County Sheltering Plan, as currently written, does not indicate that priority will be placed on monitoring evacuees and that vehicles will be monitored later. The plan states that initially all evacuees and vehicles will be monitored, which is contrary to the procedures demonstrated by the emergency workers during the exercise. (NUREG-0654, J.12.)

15. The Clinton County Sheltering Plan does not indicate that monitors will be placed at decontamination areas for remonitoring evacuees after decontamination efforts. The plan must be appropriately modified. (NUREG-0654, J.12.)

16. The Clinton County Sheltering Plan parking diagram does not indicate space for unmonitored vehicles pursuant to the vehicle monitoring procedures demonstrated. The plan must be appropriately modified. (NUREG-0654, J.12.)

17. The monitoring techniques of three of the emergency workers were improper. The monitors touched the victims with the probe in some instances, which may have contaminated the instrument. (NUREG-0654, J.12.)

18. The "Contaminated Evacuee Monitoring Record" form was not utilized by the monitors, pursuant to Standard Operating Procedure Number 10. (NUREG-0654, J.12.)

Area Recommended For Improvement

6. Mild soap for the first level of decontamination was not available per SOP Number 10, attachment D, Table 1. Lava soap and Tide were available; however, a less severe mild soap should be used for first level decontamination.

2.2.3 Scott County Emergency Operations Center (SCEOC)

The following objectives were to be demonstrated at this facility: 1, 2, 3, 4, 5, 6, 12, 13, 16, 18, 19, and 20.

Objective Number 1, ability to monitor, understand, and use emergency classification levels through the implementation of emergency functions and activities, was fully demonstrated.

The ability to fully alert, mobilize, and activate personnel for both facility and field-based emergency functions, Objective Number 2, was not adequately demonstrated. The Area Education Agency representative failed to report to the Scott County Emergency Operations Center (SCEOC); full staffing was not accomplished pursuant to the local plans. Based on the above, the representative responsible for providing protective action decisions to schools was not available for this function. However,

as the plume traveled into Clinton County, schools in Scott County were not affected during this exercise.

Objective Number 3, ability to direct, coordinate, and control emergency activities, was fully demonstrated. Periodic briefings were conducted to update the Emergency Operations Center (EOC) staff on plant conditions and status of protective actions implemented. To the extent possible with the scenario, all staff was involved in decision making.

Objective Number 4, ability to communicate with all appropriate locations, organizations, and field personnel, was fully demonstrated. Both primary and secondary communications systems were demonstrated. Communication links were established with the Emergency Operations Facility, State of Iowa, State of Illinois, and Clinton County.

The adequacy of facilities, equipment, displays, and other materials to support emergency operations, Objective Number 5, was fully demonstrated. Maps of plume emergency planning zone (EPZ), evacuation routes, EPZ population and relocation centers were posted. Status boards were available, posted, and updated as appropriate.

Objective Number 6, ability to continuously monitor and control emergency worker exposure, was fully demonstrated to the extent possible at this EOC. As this facility is located in Davenport, it is outside the plume emergency planning zone and, therefore, emergency workers were not required to wear dosimetry. However, emergency workers who entered the EPZ were provided both permanent record and self-reading dosimetry.

The ability to initially alert the public within the 10-mile EPZ and begin dissemination of an instructional message within 15 minutes, Objective Number 12, was not adequately demonstrated resulting in three deficiencies. The first deficiency was cited because Scott County failed to demonstrate access to the Emergency Broadcast System (EBS) station. There was no effort (real or simulated) to contact the EBS station at the Site Area Emergency with an initial instructional message. Specifically, at 0924, a call was received over the Nuclear Accident Reporting System (NARS) notifying the county of the Site Area Emergency. Siren activation was simulated at 0934. However, as stated above, the Public Information Officer's (PIO) failure to contact the EBS station for dissemination of the initial message for the public resulted in a deficiency.

The second deficiency was cited as the procedures for activation of mobile route alerting within the county were not demonstrated. At 1031, a call was received over the conference line notifying the county of the General Emergency which initiates the mobile route alerting function. Mobile route alerting was dis-

cussed by the EOC staff; however, the county director failed to activate this function. Calls to the County Sheriff's Department to begin mobile route alerting were not made, which resulted in a deficiency.

Because of the potential impact of deficiencies on emergency preparedness, they are required to be promptly corrected through appropriate remedial actions, per Guidance Memorandum (GM) EX-1. Based on the above, the following remedial action is required:

* EBS activation procedures must be demonstrated in a remedial exercise.

* Notification activation of emergency personnel to begin mobile route alerting must be demonstrated in a remedial exercise.

A third deficiency was cited as the county failed to successfully complete route alerting within 45 minutes of notification of the Site Area Emergency in areas of Scott County within 5 to 10 miles of the site, but outside of siren coverage, pursuant to NUREG-0654. This action, as previously stated, was cited as a deficiency as is further detailed in Section 2.2.5, Mobile Route Alerting, of this report.

Objective Number 13, ability to coordinate the formulation and dissemination of accurate information and instruction to the public in a timely fashion after the initial alert, was not adequately demonstrated resulting in a deficiency. Scott County failed to provide instructions to transients within two miles of the plant. The protective action recommendation provided to the county EOC was to evacuate to 2 miles all sectors and shelter from 2 to 10 miles in sectors Q, R, A, and B. However, the EOC Director made the decision not to provide instructions over the EBS as the portion of the affected sector in Scott County, that was within the 0 to 2 miles radius, contained no permanent population. However, transients on the Mississippi River were not considered and were the basis for the deficiency.

Because of the potential impact of deficiencies on emergency preparedness, they are required to be promptly corrected through appropriate remedial actions, per Guidance Memorandum GM EX-1. Based on the above, the ability to provide PAR's to the public must be demonstrated in a remedial exercise.

Objective Number 16, ability to distribute and administer KI once the decision is made, was not demonstrated. As the radiological plume affected Clinton County, the ability to distribute and administer potassium iodide (KI) was not demonstrated during this exercise.

The ability and resources necessary to implement appropriate protective action for the impacted permanent and transient plume EPZ population and the ability and resources necessary to implement protective actions for school children within the plume EPZ, Objectives Number 18 and 19, respectively, were not demonstrated. The area affected by the plume in Scott County contains no permanent population and, therefore, could not be demonstrated.

Objective Number 20, organizational ability and resources necessary to control evacuation traffic flow and to control access to evacuated and/or sheltered areas, was not demonstrated. As the radiological plume affected Clinton County, Scott County had little or no responsibility for this objective. One access control point was established (simulated) but did not provide a sufficient demonstration of the organizational ability and resources to fully demonstrate this objective.

Summary: There were no inadequacies identified during the previous exercise conducted August 26, 1986, that required corrective action or subsequent demonstration for reevaluation during this exercise.

Objectives Number 16, 18, 19, and 20 were not demonstrated due to limitations of the scenario. Objectives Number 2, 12, and 13 were not adequately demonstrated. Objectives Number 12 and 13 were cited with deficiencies.

Deficiencies

5. Scott County failed to demonstrate access to the EBS station. There was no effort (real or simulated) to contact the EBS station at the Site Area Emergency with an initial instructional message. (NUREG-0654, E.5.)

6. The ability to initially alert the public within the ten mile EPZ and begin dissemination of an instructional message was not adequately demonstrated. The procedures for activation of mobile route alerting within the county were not demonstrated. (NUREG-0654, E.5.)

7. The ability to formulate and distribute appropriate instructions to the public was not demonstrated. Scott County failed to provide instructions to transients within two miles of the plant. The decision not to provide instructions over the EBS was made based on the fact that no permanent population resided in the affected areas. However, transients on the Mississippi River were not considered. (NUREG-0654, E.5., E.6.)

Area Requiring Corrective Action

19. The Area Education Agency (AEA) representative did not report to the County EOC per the plans. Full staffing was not accomplished. (NUREG-0654, E.2.)

2.2.4 North Scott School District - Virgil Grissom Elementary School

The following objectives were to be demonstrated at this facility: 6 and 19.

The North Scott School District, Virgil Grissom Elementary School, located in Princeton, Iowa, participated in this exercise. The population of this facility is 275 students and 18 faculty and other staff members.

The ability and resources necessary to implement appropriate protective actions for school children within the plume emergency planning zone (EPZ), Objective Number 19, was not fully demonstrated. The Principal of this facility was knowledgeable of the protective actions required during an accident at the Quad Cities Nuclear Power Station. Written procedures were available for use by the faculty. The Principal was aware of the resources and activation procedures to be utilized for transportation of students during an evacuation. Commercial telephone would be the primary and only link to the school for protective action instructions. The North Scott School District Superintendent's Office would be the primary contact for the school or the school would be contacted directly by the Area Education Agency at the county Emergency Operations Center (EOC). However, contrary to a pre-exercise agreement, the North Scott Superintendent's Office representative failed to participate during this exercise. Therefore, as the Superintendent has an integral part of the notification process, the objective remains to be fully demonstrated due to this absence of participation.

Objective Number 6, ability to continuously monitor and control emergency worker exposure, was fully demonstrated. Per the local school plans, school bus drivers would be the only emergency workers required to demonstrate this objective. The bus driver interviewed was familiar with the procedures to read and record the dosimeters. The dosimetry kits provided contained permanent and self-reading dosimetry, potassium iodide (KI), record keeping cards, and instructions. The driver was aware of the maximum authorized dose limits.

Concerning evacuation, the driver was knowledgeable of the evacuation routes and location of reception centers. In addition, the Principal at the school would provide drivers with maps indicating evacuation routes and locations of facilities. The

driver was aware of the agreement, between the bus service and the local authorities, which requires services in the event of a radiological emergency.

All buses are equipped with radios establishing a communication link between the drivers and the school district bus dispatcher.

Summary: There were no inadequacies identified during the previous exercise conducted August 26, 1986, that required corrective action or subsequent demonstration for reevaluation during this exercise.

There were no inadequacies identified during this exercise that required corrective action. Objective Number 19 was not fully demonstrated.

2.2.5 Mobile Route Alerting

The Scott and Clinton County Emergency Preparedness Offices failed to successfully complete mobile route alerting within 45 minutes of notification of the Site Area Emergency in areas not within siren coverage, pursuant to FEMA REP-1.

In Clinton County, activation of the mobile route alerting occurred at the Site Area Emergency. The county was notified of the Site Area Emergency at 0928. Subsequent calls by the Sheriff's Office to begin route alerting were completed in thirteen minutes at 0941. Routes P7, A9.5, and R9.5 (evaluated by FEMA during this exercise) took 35, 43, and 35 minutes, respectively, to complete, not including the activation time of thirteen minutes.

Therefore, by adding the thirteen minutes activation time, Routes P7, A9.5, and R9.5 took 48, 56, and 48 minutes, respectively, to complete.

In Scott County, activation of the mobile route alerting occurred at the General Emergency. The county was notified of the General Emergency at 1031. The Sheriff's dispatcher was notified at 1035 to begin making calls to the responsible organizations to initiate route alerting. However, the actual calls to these responsible organizations to initiate route alerting was not demonstrated. Therefore, the actual activation time cannot be determined at this time.

Routes K6, L5.5, and N7 (evaluated by FEMA during this exercise) took 48, 44, and 35 minutes, respectively, to complete, not including activation time at the Scott County Emergency Operations Center (EOC). However, these times do include the five minute mobilization time for the fire departments, as stated in the Alert and Notification System design report.

Therefore, even with a partially verified activation time of four minutes, two of the three routes (K6 and L5.5) took 52 and 48 minutes, respectively, to complete.

Based on the above, Scott County must demonstrate (as previously stated in Section 2.2.3 of this report), during a remedial exercise, the ability to notify and activate the emergency response organizations to begin route alerting. This actual notification and activation time, along with the notification time of thirteen minutes for Clinton County, must be included as part of the 45 minute requirement to complete mobile route alerting. The mobile alert and notification network as stated in the Alert and Notification System Report in both Clinton and Scott County must be reviewed and amended to allow for activation times and the appropriate amendments made to the routes. This entire function must be demonstrated during a remedial exercise.

Summary: Objective Number 12, concerning initial alert and notification of the public, was not adequately demonstrated by both Clinton and Scott Counties resulting in a deficiency.

Deficiency

8. The Clinton and Scott County Emergency Preparedness Offices failed to successfully complete mobile route alerting within 45 minutes of notification of the Site Area Emergency and General Emergency in areas not within siren coverage, pursuant to FEMA REP-1.

2.2.6 Nuclear Accident Reporting System

The Nuclear Accident Reporting System (NARS) did not provide, in some cases, emergency information to the responsible individuals in a timely manner. Specifically, per the Clinton and Scott County plans, NARS messages received by the Sheriff's dispatcher must be verified before the information is provided to the decision makers at each facility. Verification consists of contacting the Technical Support Center or, later in the exercise, the Emergency Operations Facility to confirm the message. However, verification could not be easily accomplished, apparently due to overloaded communications lines. In one instance occurring in Scott County, thirty-two minutes elapsed before the message could be verified and subsequently provided to the decision maker. Fortunately, the county director utilized the conference line established between the county Emergency Operations Centers (EOC's) and the State EOC for obtaining this information. This was the case throughout the exercise as NARS messages were not timely. However, per the plans, NARS is intended to provide quick and simultaneous notification to the off-site authorities to aid in timely alert and notification to the public. Therefore, an analysis must be performed to determine the cause for

the failure of the Sheriff's dispatcher, in both counties, to quickly verify NARS messages, and the appropriate corrective action must be implemented.

Summary: Objective Number 4 was not adequately demonstrated during this exercise.

Area Requiring Corrective Action

20. Messages received over the Nuclear Accident Reporting System (NARS), at times, could not be verified in a timely manner. In one instance, thirty-two minutes elapsed before the message could be verified. (NUREG-0654, F.1.d.)

3 SUMMARY OF DEFICIENCIES AND AREAS REQUIRING CORRECTIVE ACTION

DEFICIENCIES

IOWA OPERATIONS

State Emergency Operations Center (SEOC)

1. The Iowa Department of Public Health did not obtain plant status data from the utility prior to the activation of the EOF except through the State of Illinois and Commonwealth Edison representatives. As these representatives were prepositioned and arrived at the SEOC hours before they would have during a real event, the Iowa Department of Public Health would not have had information to make protective action recommendations to the local governments. (NUREG-0654, E.1)

Field Monitoring Teams

2. Both Iowa radiological field monitoring teams did not demonstrate proper procedures for use of equipment. Specifically, the following concerns were identified:

   * Beta and Gamma readings were not made at the proper height. Readings at sample locations were improperly taken out of the vehicle window as it passed by the sample point.

   * The teams were unable to arrive at the monitoring locations promptly.

   * Standard operating procedures for the use of the equipment and for sampling techniques were not available.

   * The instruments were not calibrated within one year per the plans.

   Per GM EX-1, the concerns noted above collectively raise doubts as to whether adequate protective measures can be taken in the event of an emergency. (NUREG-0654, H.10, I.7, I.8, and I.9.)

COUNTY OPERATIONS

Clinton County Emergency Operations Center (CCEOC)

3. The protective action decision provided to the public to shelter from 2 to 10 miles in sectors Q, R, A, and B was initially incomplete and consequently, was untimely. The initial EBS message omitted sector B (Cities of Clinton and Camanche). Based on the above, thirty-nine minutes elapsed before the proper protective action decision was provided to the public. (NUREG-0654, E.5.)

4. The Area Education Agency Administrator failed to provide protective action recommendations to schools within the affected sectors for sheltering. In addition, the protective action decision to evacuate during the General Emergency was not provided to the schools for nearly one hour after the decision was made to implement the protective action recommendation. (NUREG-0654, J.10.g.)

Scott County Emergency Operations Center (SCEOC)

5. Scott County failed to demonstrate access to the EBS station. There was no effort (real or simulated) to contact the EBS station at the Site Area Emergency with an initial instructional message. (NUREG-0654, E.5.)

6. The ability to initially alert the public within the ten mile EPZ and begin dissemination of an instructional message was not adequately demonstrated. The procedures for activation of mobile route alerting within the county were not demonstrated. (NUREG-0654, E.5.)

7. The ability to formulate and distribute appropriate instructions to the public was not demonstrated. Scott County failed to provide instructions to transients within two miles of the plant. The decision not to provide instructions over the EBS was made based on the fact that no permanent population resided in the affected areas. However, transients on the Mississippi River were not considered. (NUREG-0654, E.5., E.6.)

Mobile Route Alerting

8. The Clinton and Scott County Emergency Preparedness Offices failed to successfully complete mobile route alerting within 45 minutes of notification of the Site Area Emergency and General Emergency in areas not within siren coverage, pursuant to FEMA REP-1.

AREAS REQUIRING CORRECTIVE ACTIONS

IOWA OPERATIONS

State Emergency Operations Center (SEOC)

1. The Iowa State Emergency Operations Center provided an incorrect protective action recommendation (PAR) to Clinton and Scott Counties, Iowa State Forward Command Post, and the Joint Public Information Center. The SEOC sent, by telefacsimile, a copy of the PAR previously provided to the local governments over the conference line. However, the telefacsimile copy omitted Scott County by stating that all persons within two miles of the plant in sectors Q, R, A, and B must evacuate. The message should have stated that all persons within two miles of the plant in all sectors must evacuate. (NUREG-0654, E.5.)

State Forward Command Post (FCP)

2. The representative from the Iowa Disaster Services Division, due to prepositioning, reported to the FCP prior to the Alert emergency classification level. Considering notification and travel time, this is approximately three one-half hours before an actual response time. (NUREG-0654, E.2.)

Dose Assessment and Field Team Coordination

3. The Field Team Coordinator failed to post protective action decisions, plant status, and weather data. (NUREG-0654, H.3.)

4. The University Hygienic Laboratory staff entered the plume emergency planning zone without permanent or direct reading dosimetry. (NUREG-0654, K.3.a.)

5. The Field Team Coordinator failed to track and define the radiological plume boundary. (NUREG-0654, I.11.)

Medical Drill

6. Monitoring procedures were not adequately demonstrated. The ambulance crew was not aware of the proper setting on the survey meters. In addition, the crew touched the victim then touched the probe which may have contaminated the instruments. (NUREG-0654, L.3.)

7. The ambulance crew was not aware of the maximum exposure dose allowed without authorization. (NUREG-0654, K.5.a.)

COUNTY OPERATIONS

Clinton County Emergency Operations Center (CCEOC)

8. The representative from the Iowa Disaster Services Division (DSD) reported to the Clinton County EOC prematurely. Less than thirty minutes was allowed for simulation of mobilization time from Des Moines which is approximately 170 miles. (NUREG-0654, E.2.)

9. Protective action decisions and the status of implementation were not posted on status boards for the EOC staff. (NUREG-0654, M.3.)

Clinton County Reception and Decontamination - Goose Lake High School

10. The Clinton County Radio Squad was utilized for access control. However, this resource is not reflected in the plans. (NUREG-0654, A.16.)

11. The most recent copy of the Clinton County Radiological Emergency Response Plan was not available for the first shift. The copy utilized was dated March 1983. (NUREG-0654, A.16.)

12. Three of the radiological monitors were not familiar with the maximum authorized exposure limit, nor who they would contact for authorization to exceed this limit, nor what to do if they exceeded this limit. (NUREG-0654, K.3.6.)

13. The staff of the Low Moor and Goose Lake Fire Departments were utilized as resources for radiological monitoring. However, these resources are not reflected in the plans. (NUREG-0654, A.16.)

14. The Clinton County Sheltering Plan, as currently written, does not indicate that priority will be placed on monitoring evacuees and that vehicles will be monitored later. The plan states that initially all evacuees and vehicles will be monitored, which is contrary to the procedures demonstrated by the emergency workers during the exercise. (NUREG-0654, J.12.)

15. The Clinton County Sheltering Plan does not indicate that monitors will be placed at decontamination areas for remonitoring evacuees after decontamination efforts. The plan must be appropriately modified. (NUREG-0654, J.12.)

16. The Clinton County Sheltering Plan parking diagram does not indicate space for unmonitored vehicles pursuant to the ve-

hicle monitoring procedures demonstrated. The plan must be appropriately modified. (NUREG-0654, J.12.)

17. The monitoring techniques of three of the emergency workers were improper. The monitors touched the victims with the probe in some instances, which may have contaminated the instrument. (NUREG-0654, J.12.)

18. The "Contaminated Evacuee Monitoring Record" form was not utilized by the monitors, pursuant to Standard Operating Procedure Number 10. (NUREG-0654, J.12.)

Scott County Emergency Operations Center (SCEOC)

19. The Area Education Agency (AEA) representative did not report to the County EOC per the plans. Full staffing was not accomplished. (NUREG-0654, E.2.)

Nuclear Accident Reporting System

20. Messages received over the Nuclear Accident Reporting System (NARS), at times, could not be verified in a timely manner. In one instance, thirty-two minutes elapsed before the message could be verified. (NUREG-0654, F.1.d.)