DMB

NOV 2 1984

Docket No. 50-331

Iowa Electric Light and Power
Company
ATTN: Mr. Lee Liu
President and Chief
Executive Officer
IE Towers
Post Office Box 351
Cedar Rapids, IA 52406

Gentlemen:

We have received the attached Federal Emergency Management Agency (FEMA) letter dated October 15, 1984, and associated final exercise evaluations on the offsite emergency preparedness exercise conducted on August 1, 1984, for the State of Iowa and the Counties of Linn and Benton. The final exercise evaluation lists some recommendations (which are referred to in the FEMA exercise report as deficiencies and recommendations that would not lead to a negative finding, i.e., those not affecting public health and safety) regarding the offsite emergency response plans for the area around the Duane Arnold Energy Center.

The final FEMA findings with respect to the status of plans and preparedness in the vicinity of your facility have not been received; however, based on the performance of the offsite agencies during the exercise, no deficiencies affecting public health and safety were identified. As stated in the report, these is reasonable assurance that, in the event of an actual emergency, appropriate measures can and will be taken to protect the health and safety of the public.

IE:35

1/1

OFFICE ▶							
SURNAME ▶							
DATE ▶							

We fully recognize that the recommendations to be implemented may involve actions by other parties and political institutions which are not under your direct control. Nonetheless, we would expect the subject of offsite preparedness for the area around the Duane Arnold Energy Center 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 enclosures will be placed in the NRC's Public Document Room.

Sincerely,

L. R. Greger, Chief
Emergency Preparedness and
Radiological Protection Branch

Attachments: As stated

cc w/attach.:
D. Mineck, Plant Superintendent
Nuclear
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Thomas Houvenagle, Iowa
Commerce Commission
D. Matthews,EPB, OIE

OFFICE	RIII/DRSS	RIII	RIII	RIII			
SURNAME	Ploski/mf	Phillips	Boyd	Greger			
DATE	11/2/84	11/2/84	11/2/84				

Federal Emergency Management Agency

Washington, D.C. 20472

OCT 15 1984

PRINCIPAL STAFF			
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SGA		OL	
EIC		OI	
DRMA		FILE	Lo

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

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

SUBJECT: Region VII Exercise Report of the August 1, 1984, Exercise of the Offsite Radiological Emergency Preparedness Plans for the Duane Arnold Energy Center

Attached are two copies of the Region VII Exercise Report of the August 1, 1984, joint exercise of the offsite radiological emergency preparedness plans for the Duane Arnold Energy Center. Iowa State and Benton and Linn Counties participated in the exercise. The report, dated September 19, 1984, was prepared by Region VII of the Federal Emergency Management Agency (FEMA).

FEMA Region VII staff will furnish a copy of this report to the State of Iowa and will request a schedule of actions for corrections of deficiencies. As soon as we receive and analyze the State's response, we will send you the results.

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

Attachment
As Stated

OCT 26 1984

Federal Emergency Management Agency

Region VII 911 Walnut Street Kansas City, Missouri 64106

SEP 20 1984

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

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

SUBJECT: Submission of the Exercise Report for the Evaluation of the Implementation of State and Local Radiological Emergency Response Plans for the Duane Arnold Energy Center

In compliance with 44 CFR Part 350 and your memo of August 5, 1983, I hereby submit three copies of the Exercise Report, dated September 19, 1984, for the evaluation of the implementation of State and Local Radiological Emergency Response plans for the Duane Arnold Energy Center exercise, August 1, 1984, for your review and approval.

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

There are no Class A deficiencies cited in this report. In my opinion, there is reasonable assurance that, in the event of an actual emergency, appropriate measures can and will be taken to protect the health and safety of the public.

Attachments

EXERCISE EVALUATION

August 1, 1984, Exercise of the Radiological Emergency Response Plans of the State of Iowa, Benton and Linn Counties for the Iowa Electric Light and Power Company's DUANE ARNOLD ENERGY CENTER near Palo, Linn County, Iowa

September 19, 1984

Federal Emergency Management Agency

Region VII

PATRICK J. BREHENY
Regional Director

911 Walnut Street
Kansas City, MO 64106

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

FOR THE

DUANE ARNOLD ENERGY CENTER

Palo, Linn County, Iowa
Iowa Electric Light and Power Co., Licensee

EXERCISE CONDUCTED
August 1, 1984

Participants:

State of Iowa

County of Benton

County of Linn

(All affected jurisdictions participated)

Prepared by

Federal Emergency Management Agency
Region VII

September 19, 1984

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ABBREVIATIONS

ANL	Argonne National Laboratory
BCEOC	Benton County Emergency Operations Center
CD	Civil Defense
DAEC	Duane Arnold Energy Center
DOT	U.S. Department of Transportation
EBS	Emergency Broadcast System
ENC	Emergency news center
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOF/ENC	Emergency operations facility/emergency news center
EPA	U.S. Environmental Protection Agency
EPZ	Emergency planning zone
FAA	Federal Aviation Administration
FCP	Forward Command Post
FDA	U.S. Food and Drug Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
HPCI	High pressure coolant injector
IELP	Iowa Electric Light and Power Company
INEL	Idaho National Engineering Laboratory
KI	Potassium iodide
LCEOC	Linn County Emergency Operation Center
LPCI	Low pressure coolant injection
NAWAS	National Warning System
NRC	U.S. 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 (1980).
ODS	Iowa Office of Disaster Services
PHS	Public Health Service
PIO	Public information officer
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Service
RCIC	Reactor core isolation cooling
RHR	Residual heat removal

RHRSW	Residual heat removal service water
SEOC	Iowa State Emergency Operations Center
SGTS	Standby gas treatment system
TLD	Thermoluminescent Dosimeters
UHL	University Health Laboratory
USDA	U.S. Department of Agriculture

EXERCISE SUMMARY

An exercise of the plans and preparedness for off-site radiological response was conducted for the Duane Arnold Energy Center near Polo, Iowa on August 1, 1984. Following the exercise, a preliminary evaluation was made by a 14-member, Federal observation team. A briefing for exercise participants and the general public was held on August 2, 1984, at the Iowa Electric Light and Power Company's Emergency News Center in Cedar Rapids, Iowa. The evaluation, deficiencies, and recommendations related to this exercise are presented in this report.

The consensus of Federal observers was that exercise play permitted the involved response organizations to accomplish most of the exercise objectives presented to the Federal Emergency Management Agency prior to the exercise. No deficiencies were observed at the state or county level that would lead to a negative finding. Other deficiencies observed at the August 1, 1984 exercise require that a schedule of corrective actions be developed. Each deficiency with a corresponding recommendation is described in Section 2 of this report. Section 3 provides a form for developing a schedule for correcting the deficiencies.

Iowa State Operations

Emergency Operations Facility (EOF)

Activation and staffing was performed promptly by the liaison personnel from Linn and Benton counties. The county representatives were well-trained and performed their functions well. The response by Iowa State agencies was somewhat weak. No Iowa Department of Health representatives were present and the Office of Disaster Services was minimal. Space, equipment, and overall facilities of the EOF were adequate, but traffic flow within the EOF created a great deal of congestion. All necessary displays and maps were present, clearly visible, and kept up-to-date. Frequent, concise briefings were conducted by the EOF director and staff. It would be desirable to have the State participate in the briefings also. A comprehensive recovery/reentry session was conducted involving the State and local liaisons. Primary and secondary communication systems were demonstrated by the county liaison officers to their respective counties. The State representatives used the administrative hot line (commercial telephone conferencing capabilities) connecting them with the State and local EOCs. It would be more desirable to have a dedicated conferencing system permanently installed as a primary system. The State had no backup communications system.

Emergency News Center (ENC)

The Iowa Office of Disaster Services dispatched two public information officers to the ENC at the EOF. The PIOs were knowledgeable of their responsibilities, but actual demonstrations were not conducted. The ENC facilities were adequate for the

PIOs. Primary communications were via the administrative hotline; no backup communication system was available. Media briefings were conducted by the IELP's PIO, but the State did not participate. The State PIOs were not involved in drafting instructions for the public nor did they participate in the formulation of the contents of news releases. The combined effects of limited State involvement, vague ENC exercise objectives, and the PIOs also manning the EOF resulted in a generally weak demonstration at the ENC.

State Emergency Operations Center (SEOC)

Most activation and staffing activities at the SEOC were simulated. The Iowa Department of Health dose assessment team was the only State agency participating at full scale. The Iowa ODS played a communications function. The Governor's office was kept up-to-date on exercise developments by an IELP representative. Command and control were demonstrated on a limited basis at the SEOC. Participants were knowledgeable of their responsibilities, however, the initial message was not verified and difficulty was experienced when letter designations of plant status were used. Although a copy of the plan was available, no written procedures or checklists were available for the staff.

The SEOC facilities were adequate and could support extended operations. All necessary maps and displays were posted, but the status board was not kept up-to-date nor was the emergency classification level posted. Primary communications had been improved over previous exercises with the use of the RAD DATA hotline's earphones.

Dose calculations and projections were performed promptly, accurately, and checked. Values were plotted to correctly define the plume and its path. Protective action decisions were made for both plume and ingestion pathway hazards. These decisions were coordinated with the EOF and county EOCs. The exercise was terminated abruptly by the utility prior to any recovery/reentry activities.

Dose Assessment and Field Team Coordination

The State dose assessment and field team coordination functions were performed at the Linn County EOC. Representatives from the University Hygienic Laboratory and the University of Iowa performed this function. They were alerted and mobilized promptly in real time from Iowa City. The field team coordinator and his assistant were both well-qualified. Command and control was effectively demonstrated.

Space was limited at the LCEOC for the dose assessment/field coordination team. Communication with the SEOC and EOF was via the administrative hotline equipped with a speaker box and mute. Contact with the field teams was effectively performed using the County Health Department radio. It was observed on occasion that radio operators did not always identify radio transmissions as exercise messages. This is particularly important since radio transmissions could be misinterpreted if intercepted by the public.

Dose assessments were performed quickly and correctly. Data from the utility and State were shared. The field teams were well-managed and their activities were coordinated with the utility's teams. Protective action recommendations for plume and ingestion pathway hazards were properly coordinated and formulated with the SEOC. Procedures for recovery/reentry were discussed.

Radiological Field Monitoring Teams

The field teams were mobilized from Iowa City in real time and arrived at the Linn County EOC promptly. The teams were ready for deployment upon arrival and were thoroughly briefed. All members of the two teams carried out their assignments very effectively. The field teams were well-trained and knowledgeable in the areas of instrument operation, sample collection, and counting procedures.

The field teams were well-equipped with new air sampling and radiological instruments, correcting a deficiency recognized in previous exercises. However, procedures for use and calibration of the new instruments should be documented as soon as possible. The team vehicles were adequate under normal conditions but under heavy rain or snow conditions, alternate routes would have to be taken to some sampling locations. Collection of soil, water, and vegetation samples were demonstrated, but the collection of milk samples was simulated.

The radio communications between the field teams and the team coordinator were very good; proper radio procedures were used. Each team had adequate supplies of protective clothing, respirators, dosimeters, and KI. The team members were well-trained in the procedures of radiation exposure control.

Benton County Operations

The county adequately demonstrated mobilization and activation of the Benton County EOC. The staff were adequately trained and knowledgeable. All agencies with emergency responsibility participated, however, none were able to demonstrate a continuous 24-hour operation. The County CD Director was effectively in charge and involved his staff in decision making. The county plan was available for reference and was consulted throughout the exercise. Message handling was effectively performed.

Overall, the BCEOC facilities were excellent. A status board and most necessary maps and displays were posted. However, no map indicating the location of relocation centers was available. No facilities to support extended operations were available. The primary and backup communication systems to all necessary organizations were excellent and generally demonstrated.

The BCEOC has the primary responsibility for public alerting in Benton County. However, there was no coordinated effort to activate either the EBS or siren system as required by exercise events. Public instructions were drafted at the BCEOC using prescripted messages. The messages were generally clear, appropriate to the situation, and protective action areas were described in terms of familiar landmarks and

boundaries. However, the messages were prepared without apparent coordination with the SEOC, IELP, or Linn County.

Activation of traffic control points was demonstrated effectively by the county. Radio communication between the emergency workers and the BCEOC were very good. The emergency workers were well-trained in their functions. However, there were no permanent-record devices available for them; this has been a recurring deficiency in Benton County. Other field activities within the county were simulated.

Linn County Operations

The Linn County EOC was activated promptly and involved staff mobilization in real time. All agencies with county emergency responsibility participated in the exercise and demonstrated the ability to provide 24-hour support by double-staffing. The LCEOC was well-managed by the County CD Director. Periodic briefings were conducted, messages were distributed efficiently, and an impressive level of play was displayed at the LCEOC. A copy of the plan and written procedures were available for reference.

Overall, the LCEOC facilities were adequate and could support extended operations. The status board, although difficult to read from the operations area, and all necessary maps and displays were posted and kept current. All primary and secondary communications equipment were operational and demonstrated, except the backup system to the SEOC.

The LCEOC played the primary role in public alert and notification. The LCEOC established off-site concurrence for the utility's protective action recommendations through consultation with the SEOC, EOF, and BCEOC. The 15-minute requirement for public instruction was not demonstrated due to the complexity of protective action instructions included in the initial public notification. The LCEOC also demonstrated the effectiveness of its new indoor warning system. The organizational ability and resources necessary to provide an orderly evacuation of schools within the plume EPZ requires further refinement.

Decision making and implementation of access control was well-demonstrated by the County Sheriff and the State Highway Patrol. The sheriff's deputies had permanent record devices and low-range dosimeters. Potassium Iodide was available for distribution from the LCEOC when authorized.

The LCEOC provided media briefings over the telephone using the earlier coordinated EBS messages as text. The county has not implemented a separate rumor control number and anticipates the public to use the LCEOC number publicized in the public information brochure.

1 INTRODUCTION

1.1 EXERCISE BACKGROUND

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

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

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

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

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

  - U.S. Department of Commerce (DOC)

  - U.S. Nuclear Regulatory Commission (NRC)

  - U.S. Environmental Protection Agency (EPA)

  - U.S. Department of Energy (DOE)

  - U.S. Department of Health and Human Services (HHS)
    Food and Drug Administration (FDA)
    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 Duane Arnold Energy Center (DAEC) to the RAC by the State of Iowa and affected local jurisdictions was followed by a critique and evaluation of these plans.

A joint radiological emergency preparedness exercise was conducted for DAEC on August 1,1984. The results of that exercise are presented in this report. The exercise was conducted between the hours of 0430 until 1230 on August 1 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 Iowa Electric Light and Power Company's (IELP) DAEC. The plans evaluated included the Iowa Emergency Plan and Benton and Linn County's Radiological Emergency Response Plans. Previous exercises for this facility were held on October 28, 1981, July 28, 1982, and October 26, 1983.

An observer team consisting of personnel from FEMA Region VII, the RAC, FEMA's contractors, and Federal and State agencies evaluated the August 1, 1984 exercise. FEMA, Region VII assigned 14 Federal observers to evaluate the activities in the State of Iowa and affected local jurisdictions. Team leaders coordinated team operations.

Following the exercise, these Federal observers met to compile their evaluations. Team leaders consolidated the evaluations of individual team members and furnished them to the RAC chairman. A public critique of the exercise for exercise participants and the general public was held by the RAC chairman at 2:00 p.m. on Thursday, August 2, 1984, at the IELP Emergency News Center, Cedar Rapids, Iowa.

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

1.2 EXERCISE EVALUATORS

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

Observer	Agency[a]	Assignment
W. Brinck	EPA	Iowa State dose assessment team
M. Carroll	FEMA	Exercise Overview
M. Clapper	FDA	Emergency Operations Facility
A. Foltman	ANL	Benton County EOC
T. Hogan	FEMA	Emergency News Center
R. Honkus	INEL	Green Field Monitoring Team
S. Huff	DOI	Emergency Operations Facility
G. Jacobson	FDA	Iowa State EOC
R. Leonard	FEMA	Linn County EOC

J. Levenson	ANL	Emergency Operations Facility
W. Robertson	FEMA	Exercise Overview
B. Salmonson	INEL	Blue Field Monitoring Team
R. Sumpter	FEMA	Benton County EOC
J. Thompson	DOT-FHWA	Linn County Access Control

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[a]ANL = Argonne National Laboratory
DOI = U.S. Department of the Interior
DOT-FHWA = U.S. Department of Transportation - Federal Highway Administration
EPA = U.S. Environmental Protection Agency
FDA = U.S. Food and Drug Administration
FEMA = Federal Emergency Management Agency
INEL = Idaho National Engineering Laboratory

1.3 EVALUATION CRITERIA

The exercise evaluations presented in Sec. 2 are based on applicable planning standards and evaluation criteria set forth in Sec. II of NUREG-0654/FEMA-REP-1, Rev. 1 (November 1980). Following the overview narrative for each jurisdiction, deficiencies are presented with accompanying recommendations. Deficiencies can be presented in two categories. The first category includes those deficiencies that would cause a finding that off-site emergency preparedness was not adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public living near the site in a radiological emergency. These are "Class A" deficiencies that lead to a negative finding. A negative finding must be based on at least one deficiency of this type. There were no deficiencies in this category observed at the exercise of the Duane Arnold Energy Center.

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

1.4 EXERCISE OBJECTIVES

The licensee, Iowa Electric Light and Power Company (IELP), the State of Iowa, and Benton and Linn counties planned a coordinated exercise of their respective emergency plans for both the on-site and off-site support agencies on August 1, 1984. The exercise involved activation and participation of the staff and response facilities of DAEC as well as emergency organizations and emergency facilities of the State of Iowa and Linn and Benton counties.

The exercise was intended to demonstrate many, but not necessarily all, of the DAEC capabilities to respond to a wide range of emergency conditions. This scenario

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

Federal agencies were to be notified during the exercise according to existing emergency response procedures. Federal agencies with radiological emergency preparedness responsibility did not actively participate in the play of this exercise. Federal representatives, however, did act as exercise evaluators.

Exercise objectives included full-scale participation from both Linn and Benton counties, but only small-scale participation by the State of Iowa. State activities included the activation of the State Radiological Field Monitoring Teams, participation at the Emergency News Center (ENC), and communication and information with the county and IELP organizations. The Iowa State EOC in Des Moines was not activated, per se, but was opened to accommodate only those few personnel necessary at the state level to support IELP and county play. In addition, the State Forward Command Post was not be activated. The warning system sirens and Emergency Broadcast System (EBS) notifications for the emergency planning zone (EPZ) were not activated during the exercise. The State of Iowa in a communication to FEMA Region VII dated April 24, 1984, identified the following formal exercise objectives to be accomplished at the August 1, 1984, emergency response exercise for the DAEC.

Iowa State Objectives

1. Demonstrate the capability to alert the appropriate emergency response agencies at the state level.

2. Demonstrate adequate communications between appropriate emergency response facilities and field teams.

3. Provide sufficient information to allow the counties full-scale play as it relates to provision of timely and accurate information to the news media and the general public, in coordination with the utility.

4. Demonstrate ability to establish and operate rumor control in coordinated fashion. (This was done in 1983, but went unobserved.)

5. Provision of sufficient information amongst the appropriate emergency response agencies allowing local implementation of protective action recommendations.

6. Iowa Hygienic Lab (both teams) to demonstrate the ability to supply and administer KI, once decision has been made to do so; provided, of course, that the field teams are in the plume for length of time necessary to get an exposure that would be precluded by taking KI.

7. Iowa Hygienic Lab to demonstrate ability to continuously monitor and control emergency worker exposure, including dosimetry reading and recording and contamination monitoring by both teams, as appropriate, depending upon the scenario.

8. Iowa Lab to demonstrate adequate equipment and procedure for decontamination of team emergency workers, equipment, and vehicles, as appropriate, depending upon scenario and plume release.

9. Demonstrate air sampling capability by both Radiological Field Teams, depending upon status of newly-purchased equipment.

10. Demonstrate appropriate equipment and procedures for collections, transit, and analysis of soil, vegetation, snow, water, and milk samples. This will depend upon status of newly-purchased equipment.

Benton County Exercise Objectives

1. Demonstrate the ability to ~~evacuate~~ ACTIVATE the Benton County EOC in a timely fashion.

2. Demonstrate the ability to alert and mobilize emergency response personnel at the appropriate time.

3. Demonstrate the ability to fully staff facilities and maintain staffing around the clock, as appropriate to the exercise scenario.

4. Demonstrate ability to communicate with all appropriate locations, organizations, and field personnel involved in emergency response.

5. Demonstrate the ability to provide timely and accurate information to the news media and general public (appropriate instructions), in coordination with the utility and the government agencies as appropriate.

6. Demonstrate initial notification and warning to the public within the 10-mile EPZ, in a timely manner.

7. Demonstrate the ability to monitor and control emergency worker exposure.

8. Demonstrate the ability to distribute KI, once the decision has been made to do so.

9. Demonstrate participation in the decision-making process relative to implementation of PAGs.

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

11. Demonstrate capability of activating Benton County Indoor Warning System.

12. Demonstrate capability of local jurisdictions to control access to areas potentially affected by off-site radioactive releases, with simulations at state level.

13. Demonstrate adequate backup communications between emergency response personnel and facilities, to include the utility EOF.

Linn County Exercise Objectives

1. Demonstrate the capability to alert and mobilize emergency response personnel at the appropriate time.

2. Demonstrate ability to fully staff facilities and maintain staffing around the clock, as appropriate to the exercise scenario.

3. Demonstrate the capability to activate the Linn County EOC.

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

5. Demonstrate the capability to provide timely and accurate information to the news media and general public (appropriate instructions), in coordination with the utility and those government agencies as appropriate.

6. Demonstrate initial notification and warning to the public within the 10-mile EPZ, in a timely manner.

7. Demonstrate ability by Linn County Health Department personnel to assist in performing radiological field assessment.

8. Demonstrate the organizational ability and resources necessary to effect an orderly evacuation of schools within the plume EPZ.

9. Demonstrate the ability to monitor and control emergency worker exposure.

10. Demonstrate the ability to distribute KI, once the decision has been made to do so.

11. Demonstrate participation in the decision-making process relative to implementation of PAGs.

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

13. Demonstrate the capability of local jurisdictions to control access to areas potentially affected by off-site radioactive releases, with simulation at the state level.

14. Demonstrate capability of activating newly-installed Linn County indoor warning system.

15. Demonstrate the local capability to alert participants in the Food Injection Pathway System. This is strictly a secondary backup to normal state plan procedures for same and represents a new Linn County effort for exercise purposes.

1.5 EXERCISE SCENARIO

Narrative Summary

The exercise scenario initiated with a radiological liquid release which required initial classification as an UNUSUAL EVENT with subsequent escalation to an ALERT. A steam line break outside containment caused a loss of containment integrity and resulted in a SITE AREA EMERGENCY. A subsequent loss of safety system caused a loss of reactor vessel water level and a damaged core and resulted in a GENERAL EMERGENCY. A significant radiological release escaped from the ruptured steam line through the standby gas treatment system (SGTS) to the environment.

Initial conditions established that the reactor was operating at 98% power and supplying electrical power to the grid. The core was 3/4 through end of cycle. The unit had experienced several inadvertent reactor scrams from high power during the last two weeks due to a ground fault in the electrical system. The scrams had caused the torus water temperature and activity levels to increase above normal due to relief valve operation. The residual heat removal (RHR) system was operating in torus cooling mode using RHR heat exchanger IE201B, which had a preexisting, identified tube leak. Heat exchanger IE201A was temporarily out of service for valve maintenance and was expected to be returned to service within several hours. Reactor coolant sample analyses indicated a minor fuel leakage problem but sample results were within technical specifications.

An RHR to residual heat removal service water (RHRSW) system leak through RHR heat exchanger 1E201B occurred due to a loss of RHR to RHRSW pressure differential and the existing tube leak. The RHR to RHRSW system leak caused contamination in the RHRSW. Operator action in containing the release was not successful and a radiological release in excess of 10 CFR 20 limits occurred via the discharge canal. An UNUSUAL EVENT was declared. Subsequently, the situation was escalated to an ALERT after further sample analysis was completed of the RHRSW.

An erroneous temperature indication caused a main turbine trip and a subsequent reactor scram. The reactor vessel water level decreased rapidly and caused activation of the plant's safety systems, including high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC). Shortly afterward there was an indication of a steam leak

in the steam tunnel area and the HPCI turbine tripped. However, the inboard HPCI steam line inboard isolation valve failed to close. A SITE AREA EMERGENCY was declared due to an unisolable steam break outside of containment. Reactor vessel water level was restored and maintained with feed pumps and RCIC. The size of the steam leak was such that reactor pressure did not rapidly decrease. However, the Automatic Depressurization System was found to be inoperative due to a failure in the logic circuit. Reactor pressure and temperature decreased, but reactor pressure was greater than low pressure coolant injection (LPCI) and Core Spray initiation pressure. Reactor vessel water level was maintained with feedwater pumps.

An erroneous main condenser hotwell level signal caused the condensate pumps to trip which subsequently resulted in a trip of the feedwater pumps. Reactor vessel water level decreased rapidly and the core was partially uncovered. Major fuel damage occurred and the steam leak to the environment became a major radiological release. A GENERAL EMERGENCY was declared.

Reactor pressure decreased and LPCI and Core Spray began injecting water into the reactor vessel. Further core degradation was prevented as reactor vessel water level was regained. The radiological release continued, but the release rate gradually decreased as reactor pressure was reduced and flow from the ruptured steam line decreased. The release was terminated when the HPCI isolation valve was successfully closed.

Plant conditions were stabilized and the RHR Heat Exchange was returned to service. Off-site radiation levels decreased. The emergency was de-escalated. Reentry and recovery operations commenced.

Sequence of Major Events On-Site

Date	Approximate Time	Event
8/1/84	0430	Initial conditions are established.
	0440	UNUSUAL EVENT declared due to a liquid release greater than 10CFR20 limits.
	0520	ALERT declared due to a liquid release more than 10 times greater than 10CFR20 limits.
	0635	SITE AREA EMERGENCY declared due to an unisolable steam break outside of containment.
	0810	GENERAL EMERGENCY declared due to loss of two out of three fission product barriers with potential loss of the third.

1130	Off-site radiation levels at background. Plant conditions stable. Reentry discussions commence.
1145	GENERAL EMERGENCY de-escalated.
1200	Reentry/recovery efforts initiated.
1230	Exercise is terminated.

1.6 MILESTONES FOR EXERCISE OBJECTIVES AND CRITIQUES

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

Activity	Scheduled	Actual	Comment
State and licensee jointly submit exercise objectives to FEMA and NRC regional offices.	5/18/84	5/9/84 (I) 6/7/84 (U)	(I) = Iowa (U) = IELP Revised objectives
FEMA and NRC regional offices discuss and meet with licensee/ State as necessary and prepare response.	6/2/84	6/1/84	
State and licensee scenario developers submit exercise scenario to FEMA and NRC regions for review	6/17/84	6/15/84 6/25/84	Additional radiological and meteorological data required
FEMA and NRC regions notify State and licensee of scenario acceptability	6/27/84	6/27/84	
FEMA and NRC regions develop specific post-exercise critique schedule with the state and advise FEMA and NRC headquarters	7/2/84	7/5/84	
RAC chairman and NRC team leader meet to develop observer action plan	7/17/84	7/13/84 - letter 7/17/84 - phone	
Meeting in the exercise area, of all federal observers both on-site and off-site to finalize assignments, and give instructions	7/31/84	7/31/84	

Exercise	8/1/84	8/1/84
FEMA and RAC observers caucus to collate observations. NRC observers also caucus to collate observations	8/1/84	8/1/84
RAC chairman and NRC team leader meet, as soon after their respective caucuses as practical, to coordinate federal participation in critique	8/1/84	8/1/84
RAC Chairman and Exercise Team leaders conduct exit interview with state and local governments	8/2/84	8/2/84
Joint RAC/NRC critique	8/2/84	8/2/84

1.7 STATE AND LOCAL RESOURCES

Indicated below is a list of organizations which planned to participate in the August 1, 1984 exercise.

State of Iowa

- Iowa Office of Disaster Services
- Iowa State Department of Health
- University of Iowa Hygienic Laboratory

Linn/Benton Counties

- Linn/Benton County Municipal Civil Defense and Disaster Services
- Linn/Benton County Health Departments
- Linn/Benton County Sheriff's Department
- Linn/Benton County Highway Engineering Departments
- Linn/Benton County Red Cross
- Linn/Benton County Board of Supervisors

2 EXERCISE EVALUATION

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

2.1 IOWA STATE OPERATIONS

2.1.1 Emergency Operations Facility (EOF)

Overview

Activation and staffing of the EOF was performed promptly by those agencies participating in the exercise. Two volunteers from each county arrived prior to 0730. These county liaison representatives were knowledgeable of their responsibilities and demonstrated a conscientious attitude. Information was promptly relayed to their respective county EOCs. Although a 24-hour staffing capability was not demonstrated, the liaison officers presented current lists of trained replacements. The response by Iowa State agencies was somewhat weak and not in accordance with planned procedures. No representatives from the Iowa Department of Health were present. Their absence was most conspicuous during the recovery/reentry activities. Two representatives from the Iowa Office of Disaster Services (ODS) arrived at the EOF by 0715, after simulating an estimated 1.5-hour flight from Des Moines. Alert and mobilization of state personnel in real time was not demonstrated and represents a recurring deficiency identified in earlier exercises. [It has not been established how this mobilization time frame was arrived at, nor have procedures been demonstrated verifying that arrangements for this type of emergency transportation have been made.] The ODS representatives, one of which was in training status, acted as the State's primary liaison with the utility and also as the State's public information officer (PIO) at the emergency news center (ENC).

Within the EOF, space and equipment were set aside for the State and county representatives. In general, the space allotted was adequate for the representatives to perform their functions. However, traffic flow within the EOF created a great deal of congestion.

All necessary displays, maps, and status boards were present, clearly visible, and kept up-to-date. Particularly outstanding were the utility's organizational chart indicating the individual in charge of the various functions, and the frequent, concise briefing sessions. It would be desirable to have the State ODS or Health Department representative participate in the briefing sessions to apprise the utility of off-site activities. Overall, the EOF was well run with command and control clearly

demonstrated. All messages were promptly copied and distributed to each player. A comprehensive recovery/reentry session was conducted involving the State and local liaison officers.

Primary and secondary communication systems were demonstrated by the county liaison officers to their respective counties. In each case, the primary system was commercial telephone. Benton County used a 16-channel, battery powered radio as a backup system. Linn County used a 2-meter Civil Air Patrol frequency as a secondary system.

The State representatives used the administrative hotline (commercial telephone conferencing capabilities) connecting them with the State and local EOCs. One representative was required to hold and monitor the telephone handset for the exercise duration. Some concern for "losing" the line was expressed when the recommendation to install a headset was made. It would be more desirable to have a dedicated conferencing system permanently installed as the primary system. The State had no backup communications system at their station. They suggested that it would have been possible to use the RAD-DATA conference line in an emergency. However, that alternative would have conflicted with the other designated functions for that line. It is recommended that the State ODS liaison have a reliable, backup communications system.

Deficiencies That Would Lead to a Negative Finding

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

Deficiencies and Recommendations

1. **Deficiency:** The Iowa Office of Disaster Services representatives were prepositioned near the EOF and simulated response times (NUREG-0654, II, E.2).
   Recommendation: The Iowa Office of Disaster Services needs to demonstrate the capability to alert and mobilize their representatives to the EOF in real time.

2. **Deficiency:** The Office of Disaster Services had no secondary or backup communication system at the EOC (NUREG-0654, II, F.1.a).
   Recommendation: ODS should establish a reliable backup means of communication.

3. **Deficiency:** The commercial telephone conferencing capabilities are not adequate for emergency situations. Users were concerned with losing the line and the difficulty of reestablishing the connection (NUREG-0654, II, F.1, Appendix 3; C.1.d,f, C.2.d).
   Recommendation: It would be desirable to have a dedicated conferencing system permanently installed with the system features specified in Appendix 3 of NUREG-0654.

4. **Deficiency:** All organizations identified in the plan as having emergency responsibilities at the EOF did not participate in the exercise (NUREG-0654, II, H.4, N.1.b).
   Recommendation: The Iowa Department of Health and Office of Disaster Services need to demonstrate their capability to respond to an accident scenario.

2.1.2 Emergency News Center (ENC)

Overview

The Iowa Office of Disaster Services (ODS) dispatched one public information officer (PIO) and one PIO-trainee to the ENC. It should be noted that these were the same individuals assigned to perform state functions at the EOF (refer to Sec. 2.1.1). They used the EOF (on the 14th floor) as their base of operations rather than the ENC on the 6th floor of the Iowa Electric Tower. The PIOs were prepositioned but simulated 1.5-hours of travel time by air to arrive at the EOF by approximately 0715. [It has not been established how this ~~modification~~ clarification time frame was arrived at, nor have procedures been demonstrated verifying that arrangements for this type of emergency transportation have been made.] The ENC was fully staffed according to the plan. The PIOs were knowledgable of their role although actual demonstrations were not conducted, presumably due to the limited state involvement. For this same reason, clerical support required at the ENC was lacking and could not be evaluated.

The facilities for the PIOs were adequate. The ENC is located outside of the 10-mile emergency planning zone (EPZ). Approximately 100 media representatives could be accommodated at the ENC. Media kits containing information on the utility, nuclear power plants, radiation, and the local area were available. Adequate space and furniture were available for the media. Only three telephones were available outside of the ENC for media representatives. Supplies, such as typewriters, for media representatives were not observed.

The primary communication link to the State and county EOCs consisted of a prearranged conference call placed through the local commercial telephone company. This administrative hotline was the same line as described for the EOF (refer to Sec. 2.1.1). Additional conferencing would be available if such a request was made before the call was set up through the telephone operator. Concern was expressed that the quality of transmission may deteriorate if too many additional stations were tied in. There was no secondary communication link. The RAD-DATA hotline which also links the EOF to the State and county EOCs was offered as an emergency backup. Such an arrangement would not comprise an adequate secondary link and it is recommended that the State acquire a reliable backup communication system. Hard copy transmission equipment was available at the ENC but was not demonstrated.

Three media briefings were conducted by the utility's PIO. The State PIO did not participate in these briefing sessions. The State and utility PIOs exchanged information throughout the exercise. The utility briefings were generally accurate, complete, and utilized effective display materials. Hard copy news releases were telefaxed to the

State EOC by the utility. However, the state PIO at the EOF did not promptly receive copies of the releases nor did he participate in the formulation of the contents of the releases.

Radio and television broadcasts were not monitored to evaluate the news the public was receiving. However, the utility's PIO did monitor the Edison Electric Institute, Electronic Information Service, Electronic Mail and Industry News system by hard copy to be cognizant of releases going out through the major news services at the state, regional, and national levels.

The State PIOs were not involved in drafting instructions for the public. They did monitor the administrative hotline throughout the exercise and, as such, did participate in decision making with the State and local EOCs concerning the drafting of public information releases and instructions.

Rumor control was not an exercise objective at the EOF. This function was to be performed at the State and county EOCs. Other than a media advisory prepared prior to the exercise and made available at the ENC, there was no mention of the rumor control phone numbers.

The combined effects of limited State involvement, vague exercise objectives for the ENC, and the ENC staff also manning the EOF resulted in a generally weak demonstration at the ENC.

Deficiencies That Would Lead to a Negative Finding

There were no deficiencies observed at the ENC that would lead to a negative finding during this exercise.

Deficiencies and Recommendations

1. **Deficiency:** The PIOs at the ENC had no backup or secondary communication system (NUREG-0654, II, F.1.a).
   Recommendation: The State should establish a reliable backup communications system.

2. **Deficiency:** The commercial telephone conferencing capabilities are not adequate for emergency situations (NUREG-0654, II, F.1; Appendix 3, C.1.d,f; C.2.d).
   Recommendation: It would be desirable to have a dedicated conferencing system permanently installed with the system features specified in Appendix 3 of NUREG-0654.

3. **Deficiency:** The combined effects of limited State involvement, vague exercise objectives for the ENC, and the ENC also manning the EOF resulted in a generally weak demonstration at the ENC (NUREG-0654, II, N.1.b, N.3.e).
   Recommendation: The State PIO needs to demonstrate the ability to provide media briefings and draft media releases in coordination with this utility.

2.1.3 State Emergency Operations Center (SEOC)

Overview

The original notification to trigger activation of the SEOC was received at 0528 with the declaration of an ALERT at the DAEC. The duty officer that received the notification was new to the organization and appeared to be unfamiliar with the plan and procedures. The original call was reportedly not verified and some confusion was observed early in the exercise when the plan status was reported by a letter designation rather than by the emergency classification level. This confusion was later resolved when the plan was consulted. The reported status of the plant should have resulted in a more rapid State response. All activation and staffing activities were simulated. For this exercise, the Iowa Department of Health dose assessment team was the only State agency participating at full-scale at the SEOC. The Iowa ODS played primarily a communications function. The Governor's office was kept up-to-date on exercise developments by an IELP representative.

The Director of the Iowa ODS was effectively in charge of the SEOC as prescribed in the plan. Periodic briefings were conducted and all staff present were involved in decision making. Only data logs were maintained and they were duplicated and distributed as necessary. The staff did not have written procedures for reference. Written procedures would have been useful for the new duty officer. Although only experienced Department of Health personnel were utilized, the lack of written departmental procedures could be a problem if the emergency extended over a long period of time.

The SEOC facilities were adequate with sufficient space, furniture, lighting, and telephones. The facility appeared to be capable of supporting extended operations. A source of backup power was available. The status board was clearly visible, but it was not kept up-to-date nor was the emergency classification level posted. All necessary maps and displays were posted. The radiological data were plotted and posted throughout the exercise by the Department of Health. The Department of Health team was located in a separate room without status boards.

An administrative hotline was used by ODS connecting the SEOC with the county EOCs and the EOF. The Department of Health used the RAD DATA line which was connected to the EOF and the dose assessment team at the Linn County EOC. New headsets were also demonstrated. These contributed to overall noise reduction within the SEOC and afforded the players more freedom.

Dose projections were derived from both plant release data and field readings. Dose calculations were performed promptly with programmable calculators and a computer model. The calculations were checked and plotted on a map which correctly defined the plume. In some cases, changes in plant conditions were not promptly relayed to the SEOC; delays of 15 minutes were observed.

Some protective action decisions were reached for plume and ingestion pathway hazards. Protective actions recommending dairy cattle be placed on stored feed were

part of the PAGs for the emergency classification levels. Requests were made to activate reception centers in Marshalltown and Iowa City. Radiation levels never reached a point requiring KI to be administered to emergency workers.

At the SEOC, the exercise was terminated prior to any recovery/reentry activities. Information was received prior to exercise termination that radiation releases were decreased. However, no de-escalation from the GENERAL EMERGENCY classification was received.

Deficiencies That Would Lead to a Negative Finding

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

Deficiencies and Recommendations

1. **Deficiency:** None of the State agencies had written procedures or checklists for reference (NUREG-0654, II, A.1.b, A.2.a).
   Recommendation: Each State agency with emergency responsibilities should develop written procedures and checklists for their staff.

2. **Deficiency:** The status board within the SEOC was not kept up-to-date nor was the emergency classification level posted (NUREG-0654, II, D.3).
   Recommendation: The status board should indicate the current emergency classification level and be kept up-to-date with important messages to ensure all staff members have the same basic information.

3. **Deficiency:** The duty officer that received the initial notification was new to ODS and appeared to be unfamiliar with the plan and procedures and coordination with Federal agencies was inadequate, late, or nonexistent (NUREG-0654, II, O.1, O.4.j, O.5).
   Recommendation: Additional training is required for ODS staff to ensure they are familiar with the plan and can implement the correct procedures in a timely manner.

2.1.4 Dose Assessment and Field Team Coordination

Overview

The State dose assessment and field team coordination functions were performed at the Linn County emergency operations center (LCEOC). This function was staffed by one representative from the University Hygienic Laboratory (UHL) and another from the University of Iowa. According to the participants, the field team coordinator was notified of the UNUSUAL EVENT at approximately 0500 by the Iowa Department of Health. At 0555, after being advised of the ALERT declaration, the coordinator

instructed the field team members to assemble at the University. From Iowa City, they traveled in real time to Cedar Rapids, arriving at the LCEOC at approximately 0735.

The field team coordinator and his assistant were both well-qualified and either could act as coordinator. Command and control was effectively demonstrated and in accordance with the plan. The field teams were thoroughly briefed prior to being dispatched to the field. In addition, the coordinator provided periodic briefings throughout the duration of the exercise and all appropriate sources were involved in decision making.

Space was limited at the LCEOC for the dose assessment and field coordination team, being barely adequate. Most displays, status boards, and maps were posted. However, maps indicating the location of relocation centers, and population density by evacuation area were not observed. The emergency classification level was posted but there were sometimes delays in posting changes. It would be desirable to have a more clearly visible message board in the LCEOC.

An adequate supply of self-reading and permanent-record dosimeters was available. The UHL representatives brought their own dosimeters.

Communication with the EOF and SEOC was by conference telephone. The telephone was equipped with a speaker box and a mute to reduce extraneous background noise. The system was very effective and all operators used good identification and communication techniques. Communication with the field team was performed using County Health Department radios. Health Department communicators operated the radio and were very effective in maintaining contact with the teams. It is important to remind the radio communicators to clearly identify radio transmissions as exercise messages to avoid misinterpretation by the public.

Dose assessments were performed quickly and correctly. Initially, dose projections were calculated using plant data. When field measurements became available, the field values were used. The results of calculations were checked with the SEOC. The field teams were well-managed and their activities were coordinated with the utility's teams. Data from the utility and State teams were shared. It would aid overall field team coordination if the locations of the utility's teams were also plotted on the map indicating the State team locations. The field teams were moved frequently to efficiently use their time. Field results were reported promptly and recorded on data sheets. It would be helpful to provide a display board to record field data and eliminate some of the recopying effort. The general plume track was plotted on a map and the field teams were directed in a manner to correctly define the plume.

Protective action recommendations for plume and ingestion pathway hazards were properly coordinated and formulated through good discussions with the SEOC. The recommendations were based initially on the emergency classification level. Later they were based on the plant status and confirmed with dose projections and field measurements. The recommendations were promptly reviewed and updated as conditions changed. An adequate supply of potassium iodide (KI) was available for workers in the field and the coordinator was aware of the conditions for its use. Subsequent decisions concerning the administration of KI were consistent with the plan and based on dose

projections and duration of exposure. As a result, the decision was correctly made that the administration of KI was not necessary. Appropriate ingestion pathway protective actions were implemented. The local water intake was ordered closed because of the liquid release to the Cedar River. Dairy animals were placed on stored feed based on the prescribed protective action guidelines for the emergency classification level. Later, this was extended to 10 miles based on plant status and plume direction.

Procedures for recovery/reentry were discussed. The evacuated area was secured through demonstration of access control. The field teams were directed in a manner to follow the trailing edge of the simulated plume from the area. The field teams were also directed to make surface deposition measurements. Discussions were conducted regarding samples to be collected and analyzed to assure public safety. Actual relaxation was to be based on plant conditions since field data indicated no problems.

The exercise scenario was not adequate to drive the demonstration of all exercise objectives. For example, the scenario did not provide a necessary time break of at least 24-48 hours for the acquisition of representative milk samples. To meet this objective, special arrangements had to be made during the exercise for sampling locations. Also, based on scenario conditions, decontamination was not necessary although a demonstration of decontamination facilities was an exercise objective. Moreover, the decontamination facilities were not prepared for demonstration, even if it had been necessary. Finally, the controller's manual did not provide enough information to the field teams. All data could not be relayed to the decision makers in a usable form.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed at the dose assessment/field team coordination station during this exercise.

Deficiencies and Recommendations

1. **Deficiency:** Space for the dose assessment/field coordination team was barely adequate in the LCEOC. If outside assistance were requested, there would be no space for additional staff (NUREG-0654, II, C.1.c, H.12).
   Recommendation: Larger facilities to accommodate the dose assessment/field coordination team should be sought.

2. **Deficiency:** Information received from the field monitoring teams was recorded on note pads and had to be recopied a number of times (NUREG-0654, II, J.10.a).
   Recommendation: It would be helpful to develop a display board to record field data and display current radionuclide and meteorological information.

3. **Deficiency:** Necessary maps indicating the locations of relocation centers and a map of population densities by evacuation area were not observed (NUREG-0654, II, J.10.a,b).

Recommendation: Maps showing relocation centers and population distribution by sector should be developed and posted.

4. **Deficiency:** On occasion it was observed that radio communications to the field teams were not clearly identified as exercise messages (NUREG-0654, II, O.4.j).
Recommendation: Additional training is required to ensure that the radio operators understand the importance and implement procedures to clearly identify exercise messages as such.

2.1.5 Radiological Field Monitoring Teams

Overview

The field teams were activated during the ALERT classification. The field teams were mobilized from Iowa City and since the Federal observers were scheduled to meet the field teams at the LCEOC, the initial mobilization efforts were not observed. The two field teams (Blue team and Green team) arrived at the LCEOC at approximately 0740, ready for deployment. The teams were briefed prior to being dispatched to the field on plant conditions, meteorological conditions, and general procedures. The field team members were assigned specific responsibilities for the exercise. All members of each team carried out their assignments very effectively.

The field teams were well-equipped with new air sampling equipment and radiation monitoring instruments with sodium iodide detectors. The current air sampling equipment, filter media, and radiation counting equipment are adequate for monitoring radioiodine in the presence of noble gases. This capability corrects a deficiency cited in previous exercise evaluations. However, procedures for use and calibration of the new instruments should be documented immediately. The Green team required additional field sampling equipment (e.g., hand trowels, grass shears).

Each team had two vehicles: a sedan with radio communication equipment and a station wagon for equipment and sample transport. These vehicles were adequate for most purposes and provided adequate space for the team members and equipment. However, some area roads might become impassable under extreme weather conditions including heavy rain or snow. Under such conditions, alternate routes to some sampling locations would have to be taken, causing some delays in field monitoring activities. The drivers of the communications vehicles and other team members were very familiar with the area and located monitoring locations quickly and efficiently.

The field teams were well-trained and knowledgeable in the areas of instrument operation, sample collection, and counting procedures. For example, the Blue team always took air samples to a low background area before counting was initiated. The procedure for monitoring radioiodine in the presence of noble gases was adequately demonstrated by both teams, correcting a previous deficiency.

Collection of soil, water, and vegetation samples were demonstrated, but the collection of a milk sample was simulated. The collection procedures, sampling

equipment, and field radiation monitoring equipment were adequate for monitoring radioiodine in milk. But the radiation monitoring equipment is new and has not yet been calibrated for the counting geometry of the bulk milk sample. It is recommended that the procedures and calibrations be completed as soon as possible.

The radio communications between the field teams and the team coordinator at the LCEOC were very good. Proper radio procedures were used. Communications were clear and understandable. Special attention to the use of measurement units needs to be applied as incorrect units were sometimes transmitted. For example, direct-reading dosimeter values were transmitted as an exposure rate (mR/hr) rather than an integrated exposure (mR). Although minor in this case, care must be exercised to report the correct units with values.

Each field team had adequate supplies of protective clothing, respirators, dosimeters, and KI. The team members were well-trained in the procedures and use of the equipment as well as dose limits and exposure control procedures. They were also familiar with decontamination procedures, however these procedures were not demonstrated. All team members had low- and mid-range, direct-reading dosimeters as well as thermoluminescent dosimeters (TLDs) for permanent exposure records. This corrects a previously noted deficiency.

Other than for air samples, the scenario was inadequate with respect to the field sampling objectives. The controller data was not in the correct format for use with soil, vegetation, or milk samples. No format conversions were available. Further, if milk samples are to be acquired, the scenario requires a break in the time line. Milk samples should be collected at least 24-hours after deposition and ingestion. In this scenario, the milk sample would have been collected too soon for radioiodine to have been present in the milk.

Deficiencies That Would Lead to a Negative Finding

No deficiencies that would lead to a negative finding were observed for either field monitoring team during this exercise.

Deficiencies and Recommendations

1. **Deficiency:** Written procedures for use of the new equipment and documentation for calibration of the same instruments was lacking (NUREG-0654, [illegible], H.10).
   Recommendation: Procedures for use and calibration of the new instruments should be documented as soon as possible.

2. **Deficiency:** The Green team lacked some basic environmental sampling equipment; e.g., hand trowels and grass shears (NUREG-0654, II, H.11, N.2.d).
   Recommendation: The Green team should more carefully inspect and inventory the equipment kits prior to deployment to ensure all equipment is present.

Deficiency: On occasion, incorrect measurement units were transmitted to the LCEOC from the field (NUREG-0654, II, O.4.c,j).

Recommendation: Additional training is necessary to ensure that personnel responsible for transmission of radiological values understand the significance of the units of measure.

2.2 BENTON COUNTY OPERATIONS

Overview

The Benton County Sheriff's Department (the 24-hour county warning point) received the initial notification of the UNUSUAL EVENT at 0501 from the utility. The Sheriff's Department notified the County Civil Defense (CD) Director at home. He began the initial mobilization of the Benton County Emergency Operations Center (BCEOC) staff after arriving at the EOC. BCEOC staffing was essentially complete by 0704, with the exception of the American Red Cross (ARC) representative who arrived at 0814. In addition to the County CD Director, two members of the County Board of Supervisors were present, as well as the sheriff, county PIO, county health department, a utility liaison, radiological officers, SEOC liaison, amateur radio personnel, and the ARC. The staff were adequately trained and knowledgeable. However, a 24-hour capability for extended operations does not exist in the county. A shift change for the County Director was not demonstrated. The county also dispatched two representatives to the EOF to act as liaison and public information contacts. The county adequately demonstrated mobilization and activation of the BCEOC staff.

The County CD Director, as designated in the county plan, was effectively in charge of county operations. He actively involved his executive staff in decision making. However, he did not provide periodic staff briefings during the course of the exercise. The group was small enough that most participants were kept up-to-date through interaction. The county plan was available and frequently used for reference by BCEOC staff throughout the exercise. Messages were reproduced and efficiently distributed. Access to the BCEOC was secured by 0545. A sign-in log and identification badges were used. The ALERT notification was received at 0524. The initial order to shelter the population was given at 0656 when the SITE AREA EMERGENCY was received. Notification of the GENERAL EMERGENCY was received at 0820. In anticipation of an evacuation order, directions to activate the reception center were issued at 0828. The order to evacuate to 5 miles was received at 0903.

Overall, the BCEOC facilities were excellent. Sufficient furniture, space, and lighting were available as was a backup power supply. Noise was adequately controlled. A status board was clearly visible and kept up-to-date. Most necessary maps and displays were posted. However, no map indicating the locations of relocation centers was available. No facilities were available to support extended operations (e.g., kitchen, bunks, showers).

The primary and backup communication systems to all necessary organizations were excellent and generally demonstrated. The primary systems were commercial

telephones in all cases except to the Emergency Broadcast System (EBS) station. The primary system to EBS was Plectron radio. Backup communications were radios. Most backup systems were demonstrated with the exception of the EBS station and the local schools. The county provided and demonstrated a radio backup for the EOF liaisons, a previously undemonstrated objective. A hard copy device was available to the ENC but was not demonstrated since the State did not actively participate at the ENC.

The BCEOC has the primary responsibility for public alerting in Benton County. Public alerting activities were defined as exercise objectives for the county. But, since the State did not participate at full-scale, there was no coordinated effort to activate either the EBS or siren system. The exercise did coincide with the monthly siren test which occurred at 0910, independently of the exercise scenario. EBS was not activated. Somewhat later, the tone alert radios were also activated at the request of the Federal observers.

Public instructions were drafted at the BCEOC using prescripted messages. When circumstances dictated, the county PIO simulated the dispatch of messages to EBS. The messages were generally clear, appropriate to the situation, and protective action areas were described in terms of familiar landmarks and boundaries. However, the messages were prepared without coordination with the SEOC, IELP, or Linn County. Such coordination was defined as an exercise objective for Benton County. According to the plan, the BCEOC encourages media representatives to go to the ENC. However, the BCEOC PIO did provide media briefings outside of the secured BCEOC by reading the prescripted messages to any media representatives that might be present. No formal briefing area for the media was designated and no visual aids could be utilized. According to the plan, Linn County has primary responsibility for message preparation and the BCEOC serves as a backup facility.

Activation of traffic control points was ordered at 0812. Sheriff's deputies were dispatched in three separate cars to establish three access control points at 0822. Although not observed in the field, radio transmissions between the dispatcher and the traffic control points were monitored by the Federal observer. All access control points were in place by 0840. Frequent radio checks with the BCEOC were conducted. One access control point was relocated. Enough sheriff's deputies are always available to control access at all points for which the county has responsibility. Access control procedures include keeping a lane cleared for emergency vehicles. No other procedures were demonstrated, however the Sheriff indicated that appropriate resources were available to keep the roads clear of obstructions. When the deputies returned to the BCEOC, it was determined through interview that they were familiar with the evacuation routes and the locations of relocation centers.

The activation of reception centers was simulated at 0828 during the GENERAL EMERGENCY in anticipation of the expected evacuation order which came at 0903. As school was not in session, there was no demonstration of school evacuation. Neither was there any demonstration of procedures for evacuating mobility-impaired individuals. Approximately 6-8 mobility-impaired individuals reside in the county and are known to the County Health Department. These individuals normally have their own transportation and no one has ever responded to the information brochure inquiry regarding special transportation or other needs.

Adequate numbers of low-, mid-, and high-range self-reading dosimeters were available for county emergency workers along with dosimeter chargers and record cards. However, the county does not have any permanent-record dosimeters; a deficiency reported at the last exercise. It is recommended that the county acquire permanent-record dosimeters for their emergency workers. The county did have an adequate supply of liquid KI with appropriate instructions for emergency workers. The County Director was aware of the maximum allowable doses without authorization and decontamination procedures.

Deficiencies That Would Lead to a Negative Finding

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

Deficiencies and Recommendations

1. **Deficiency:** A 24-hour staffing capability for extended operations does not exist at the BCEOC (NUREG-0654, II, A.1.e, A.4).
   Recommendation: The BCEOC should be capable of continuous (24-hour) operations for a protracted period. Additional staff from the various response agencies should be trained to provide such support.

2. **Deficiency:** The County CD Director did not provide periodic staff briefings during the course of the exercise (NUREG-0654, II, A.2.a).
   Recommendation: It would be desirable for the County CD Director, or his designee, to provide periodic briefings to the entire BCEOC staff. Continuity of emergency events would be enhanced which would be particularly critical during shift changes.

3. **Deficiency:** No facilities were available at the BCEOC to support and sustain continuous operations over a protracted period (NUREG-0654, II, A.4, H.3).
   Recommendation: The BCEOC should make arrangements to provide food, sleeping, and sanitary facilities for staff in anticipation of a long-term response.

4. **Deficiency:** Public alert and notification was identified as an exercise objective for Benton County, but these functions were not adequately demonstrated (NUREG-0654, II, E.5, E.6).
   Recommendation: Benton County should demonstrate initial notification and warning to the public within the 10-mile EPZ, within the prescribed time constraints.

5. **Deficiency:** No formally designated area for media briefings was available at the BCEOC, even though the county PIO conducted periodic briefings (NUREG-0654, II, G.3.a).
   Recommendation: Since the BCEOC intends to act as a point of contact with the media, a physical location equipped to handle this function should be designated and the plan should be revised to reflect this change.

6. **Deficiency:** Public instructions were prepared without coordination with the SEOC, Linn County, or IELP. Such coordination was defined as an exercise objective for Benton County (NUREG-0654, II, G.4.b).
Recommendation: The Benton County PIO should establish procedures for a coordinated and timely exchange of information with designated spokespersons from other organizations.

7. **Deficiency:** No maps indicating the location of relocation centers were observed (NUREG-0654, II, J.10.a).
Recommendation: The BCEOC should add the location of relocation centers to their map displays.

8. **Deficiency:** The county does not have any permanent-record dosimeters for emergency workers. This deficiency has been identified in previous exercises (NUREG-0654, II, K.3.a).
Recommendation: Benton County should make provisions for distribution of permanent-record dosimeters for emergency workers.

2.3 LINN COUNTY OPERATIONS

Overview

The Linn County emergency operations center (LCEOC) was activated promptly and involved staff mobilization in real time. Notification of the ALERT classification at DAEC was received by the County Sheriff's communicator at 0522. Notification of staff members was conducted according to planned procedures. Staffing of the LCEOC was completed by 0550. All agencies with county emergency responsibility participated in the exercise. All county agencies demonstrated the ability to provide 24-hour support by double staffing. Only the liaisons from the SEOC and IELP did not demonstrate a round-the-clock capability. The CD Director utilized a sheriff's deputy for backup. The deputy demonstrated acceptable training and knowledge of his emergency responsibilities. The county operations officer used trained Civil Air Patrol personnel as backup. Liaisons were dispatched to the EOF when the SITE AREA EMERGENCY was declared.

The LCEOC was well-managed. The CD Director was effectively in charge as specified in the plan. Constant conferencing among staff members almost eliminated the need for message distribution and briefings. All appropriate staff were involved in decision making. A copy of the plan and written procedures were available for reference. Access to the LCEOC was effectively controlled.

Overall, the LCEOC facilities were adequate. The facility was equipped to support extended operations. Backup power for the facility was present but not demonstrated. The status board and all necessary maps and displays were posted and kept current. However, the status board was not clearly visible from the primary operations area.

All primary and backup communication systems were operational and demonstrated, including to local schools. The only backup system undemonstrated was with the SEOC.

The LCEOC played the primary role in public alerting during this exercise. Public alert and notification were initiated by notification of the SITE AREA EMERGENCY (at 0657) and the GENERAL EMERGENCY (at 0820 and 0906) from IELP. The utility included a protective action recommendation with the notification. The LCEOC established off-site concurrence with the protective action recommendation through consultation with the SEOC, EOF, and BCEOC over the administrative hotline. A message was subsequently prepared for EBS release and also transmission over the indoor warning system (tone-alert radios with public address capability from the LCEOC). When the SITE AREA EMERGENCY notification was received at the LCEOC, an EBS message was prepared and telephoned to EBS for simulated transmission by 0715. The 15-minute requirement was not demonstrated considering that an additional few minutes might be required in the relay through the sheriff's communicator and actual activation of the EBS. But the EBS message did contain protective action instructions in addition to the notification of event. This involved extra time to finalize the protective action instructions (0711). An initial message over EBS announcing the situation with instructions to stay tuned was reportedly simulated by the BCEOC at 0702, but was unobserved.

A subsequent message for the initial GENERAL EMERGENCY protective action was relayed for EBS simulation within 17 minutes of receipt from IELP and within 9 minutes of the protective action decision. Another message, upgrading the protective action, was telephoned to EBS for simulated broadcast within 9 minutes. All messages were clear, appropriate to the situation, and used familiar landmark descriptions for affected areas.

The LCEOC also demonstrated its new indoor warning system which uses tone alert radios with public address capabilities. The system is in place at schools, hospitals, nursing homes, ambulances, selected school bus barns, and interested industrial facilities.

The organizational ability and resources necessary to provide an orderly evacuation of schools within the plume EPZ are not well described in the plan. The planned implementation of such an effort was described during the exercise at the LCEOC. The procedure was to have the school children taken home for subsequent evacuation from the EPZ by their parents. But procedures for allowing parents outside the EPZ back into it to pick up their children are not established. Nor are procedures for accounting for children whose homes might be in the protective action area prior to their arrival.

The LCEOC presented its preparation for supplementing state notification of dairy farmers within the county EPZ by identifying farms, phone numbers, and displaying their locations on a map. Actual notification of the farmers would be done by the County Health Department and the County Extension Agent. The county's knowledge of mobility-impaired individuals was based on only two responses from the public information brochure. The county will continue to gather information from service agencies and future responses to the public information brochure.

Decision making and coordination of access control was well-demonstrated by the sheriff's department and the State Highway Patrol. The deputies were promptly directed to the access control points and reassigned as protective action areas changed. The deputies were familiar with the evacuation routes and the locations of reception/care centers. Communication systems were demonstrated to be adequate. There were no demonstrations of obstruction clearing, but resources and equipment are available. The sheriff's deputies had permanent record devices and low-range dosimeters. Mid-range dosimeters are needed. Instructions for reading the dosimeters were not issued with the dosimeters. But instructions are radioed by the LCEOC when the deputies enter the EPZ. Exposure areas and maximum allowable doses would be coordinated with the UHL. Potassium iodide (KI) was available at the LCEOC, would be authorized for use by the state, and would be distributed to emergency workers by the sheriff's rescue squad when needed. Use of KI was not authorized or warranted during this exercise, so distribution was not demonstrated.

The LCEOC provided media briefings over the telephone using the EBS messages as text. Coordination of the information released was done over the administrative hotline linking the LCEOC with the EOF, BCEOC, and the SEOC. The county has not implemented a separate rumor control number, but anticipates the public to use the LCEOC number publicized in the public information brochure.

The timetable for exercise termination did not allow for a demonstration of recovery/reentry activities during the exercise. But the county did exhibit its plans for controlled entry for essential services, relaxation of access control, and withdrawal of other protective actions based on field monitoring data from the State.

Deficiencies That Would Lead to a Negative Finding

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

Deficiencies and Recommendations

1. **Deficiency:** Procedures and plan details for the effective evacuation of school children from the EPZ are not adequate (NUREG-0654, II, E.6).
   Recommendation: Procedures and plan details for ensuring the evacuation of school children should be developed and demonstrated. Special attention should emphasize the evacuation of children whose homes are within the affected area and how they can be accounted for when reuniting with parents.

2. **Deficiency:** Mid-range dosimeters are not available (NUREG-0654, II, K.3.a).
   Recommendation: Mid-range dosimeters should be obtained to account for allowable doses.

3 SCHEDULE FOR CORRECTION OF DEFICIENCIES

Section 2 of this report lists deficiencies based on the findings and recommendations of Federal observers at the radiological emergency preparedness exercise for the Duane Arnold Energy Center held August 1, 1984. These evaluations are based on the applicable planning standards and evaluation criteria set forth in NUREG-0654/FEMA-1, REV. 1 (Nov. 1980), and objectives for the exercise agreed upon by the State, FEMA, and the RAC.

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

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

DUANE ARNOLD ENERGY CENTER EXERCISE - REMEDIAL ACTIONS
AUGUST 1, 1984

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	IOWA STATE OPERATIONS					
	Emergency Operations Facility					
E.2	1. **Deficiency:** The Iowa Office of Disaster Services representatives were prepositioned near the EOF and simulated response times. **Recommendation:** The Iowa Office of Disaster Services needs to demonstrate the capability to alert and mobilize their representatives to the EOF in real time.					
F.1.a	2. **Deficiency:** The Office of Disaster Services had no secondary or backup communication system at the EOC. **Recommendation:** ODS should establish a reliable backup means of communication.					

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F.1, App.3; C.1.d, f; C.2.d	3. **Deficiency:** The commercial telephone conferencing capabilities are not adequate for emergency situations. Users were concerned with losing the line and the difficulty of re-establishing the connection. **Recommendation:** It would be desirable to have a dedicated conferencing system permanently installed with the system features specified in Appendix 3 of NUREG-0654.					
H.4, N.1.b	4. **Deficiency:** All organizations identified in the plan as having emergency responsibilities at the EOF did not participate in the exercise. **Recommendation:** The Iowa Department of Health and Office of Disaster Services need to demonstrate their capability to respond to an accident scenario.					

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	Emergency News Center					
F.1.a	1. **Deficiency:** The PIOs at the ENC had no backup or secondary communication system. **Recommendation:** The State should establish a reliable backup communications system.					
F.1; App.3, C.1.d, f; C.2.d	2. **Deficiency:** The commercial telephone conferencing capabilities are not adequate for emergency situations. **Recommendation:** It would be desirable to have a dedicated conferencing system permanently installed with the system features specified in Appendix 3 of NUREG-0654.					
N.1.b, N.3.e	4. **Deficiency:** The combined effects of limited State involvement, vague exercise objectives for the ENC, and the ENC also manning the EOF resulted in a generally weak demonstration at the ENC. **Recommendation:** The State PIO needs to demonstrate the ability to provide media briefings and draft media releases in coordination with this utility.					

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	State Emergency Operations Center					
A.1.b, A.2.a	1. **Deficiency:** None of the State agencies had written procedures or checklists for reference. **Recommendation:** Each State agency with emergency responsibilities should develop written procedures and checklists for their staff.					
D.3	2. **Deficiency:** The status board within the SEOC was not kept up-to-date nor was the emergency classification level posted. **Recommendation:** The status board should indicate the current emergency classification level and be kept up-to-date with important messages to ensure all staff members have the same basic information.					
O.1, O.4.j, O.5	3. **Deficiency:** The duty officer that received the initial notification was new to ODS and appeared to be unfamiliar with the plan and procedures and coordination with Federal agencies was inadequate, late, or non-existent.					

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	Recommendation: Additional training is required for ODS staff to ensure they are familiar with the plan and can implement the correct procedures in a timely manner.					
	Dose Assessment and Field Team Coordination					
C.1.c, H.12	1. **Deficiency:** Space for the dose assessment/field coordination team was barely adequate in the LCEOC. If outside assistance were requested, there would be no space for additional staff.					
	Recommendation: Larger facilities to accommodate the dose assessment/field coordination team should be sought.					
I.10.a	2. **Deficiency:** Information received from the field monitoring teams was recorded on note pads and had to be recopied a number of times.					
	Recommendation: It would be helpful to develop a display board to record field data and display current radionuclide and meteorological information.					

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J.10. a,b	3. **Deficiency:** Necessary maps indicating the locations of relocation centers and a map of population densities by evacuation area were not observed. **Recommendation:** Maps showing relocation centers and population distribution by sector should be developed and posted.					
O.4.j	4. **Deficiency:** On occasion it was observed that radio communications to the field teams were not clearly identified as exercise messages. **Recommendation:** Additional training is required to ensure that the radio operators understand the importance and implement procedures to clearly identify exercise messages as such.					

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	Radiological Field Monitoring Teams					
H.10	1. **Deficiency:** Written procedures for use of the new equipment and documentation for calibration of the same instruments was lacking. **Recommendation:** Procedures for use and calibration of the new instruments should be documented as soon as possible.					
H.11, N.2.d	2. **Deficiency:** The Green team lacked some basic environmental sampling equipment; e.g., hand trowels and grass shears. **Recommendation:** The Green team should more carefully inspect and inventory the equipment kits prior to deployment to ensure all equipment is present.					

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O.4. c,j	3. **Deficiency:** On occasion, incorrect measurement units were transmitted to the LCEOC from the field. **Recommendation:** Additional training is necessary to ensure that personnel responsible for transmission of radiological values understand the significance of the units of measure.					
	Benton County Operations					
A.1.e, A.4	1. **Deficiency:** A 24-hour staffing capability for extended operations does not exist at the BCEOC. **Recommendation:** The BCEOC should be capable of continuous (24-hour) operations for a protracted period. Additional staff from the various response agencies should be trained to provide such support.					

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A.2.a	2. **Deficiency:** The County CD Director did not provide periodic staff briefings during the course of the exercise. **Recommendation:** It would be desirable for the County CD Director, or his designee, to provide periodic briefings to the entire BCEOC staff. Continuity of emergency events would be enhanced which would be particularly critical during shift changes.					
A.4, H.3	3. **Deficiency:** No facilities were available at the BCEOC to support and sustain continuous operations over a protracted period. **Recommendation:** The BCEOC should make arrangements to provide food, sleeping, and sanitary facilities for staff in anticipation of a long-term response.					

DUANE ARNOLD ENERGY CENTER EXERCISE - REMEDIAL ACTIONS
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E.5, E.6	4. **Deficiency:** Public alert and notification was identified as an exercise objective for Benton County, but these functions were not adequately demonstrated. **Recommendation:** Benton County should demonstrate initial notification and warning to the public within the 10-mile EPZ, within the prescribed time constraints.					
G.3.a	5. **Deficency:** No formally designated area for media briefings was available at the BCEOC, even though the county PIO conducted periodic briefings. **Recommendation:** Since the BCEOC intends to act as a point of contact with the media, a physical location equipped to handle this function should be designated and the plan should be revised to reflect this change.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
G.4.b	6. **Deficiency:** Public instructions were prepared without coordination with the SEOC, Linn County, or IELP. Such coordination was defined as an exercise objective for Benton County. **Recommendation:** The Benton County PIO should establish procedures for a coordinated and timely exchange of information with designated spokespersons from other organizations.					
J.10.a	7. **Deficiency:** No maps indicating the location of relocation centers were observed. **Recommendation:** The BCEOC should add the location of relocation centers to their map displays.					
K.3.a	8. **Deficiency:** The county does not have any permanent-record dosimeters for emergency workers. This deficiency has been identified in previous exercises. **Recommendation:** Benton County should make provisions for distribution of permanent-record dosimeters for emergency workers.					

NUREG Element	RAC Recommendation Corrective Action	State (S)/County (C) Response (ACTION)	Proposed Completion Date	FEMA Evaluation of State/County Response	Response Adequate (A) Inadequate (I)	Remedial Action Complete (C) Incomplete (I)
	Linn County Operations					
K.6	1. **Deficiency:** Procedures and plan details for the effective evacuation of school children from the EPZ are not adequate. **Recommendation:** Procedures and plan details for ensuring the evacuation of school children should be developed and demonstrated. Special attention should emphasize the evacuation of children whose homes are within the affected area and how they can be accounted for when re-uniting with parents.					
K.1.a	2. **Deficiency:** Mid-range dosimeters were not available. **Recommendation:** Mid-range dosimeters should be obtained to account for allowable doses.					