



## Federal Emergency Management Agency

Region VII  
2323 Grand Blvd., Suite 900  
Kansas City, MO 64108-2670

OCT 21 2002

Mr. James E. Dyer  
Regional Administrator  
U.S. Nuclear Regulatory Commission, Region III  
801 Warrenville Road  
Lisle, Illinois 60532-4351

Dear Mr. Dyer:

Enclosed is a copy of the final report for the July 12, 2002, full-scale emergency planning zone exercise of the offsite radiological emergency response plans site-specific to the Quad Cities Nuclear Power Station. The state of Iowa and the counties of Scott and Clinton participated in this exercise. The Federal Emergency Management Agency (FEMA) Region VII prepared the report. A copy of the final report will be provided to the state of Iowa by the FEMA Region VII staff.

There were no deficiencies identified during the exercise. There were seven Areas Requiring Corrective Action (ARCAs) identified during this exercise. One ARCA from the 2000 Quad Cities exercise was corrected during this exercise.

Based on the results of the full-scale exercise, the offsite radiological emergency response plans and preparedness for the State of Iowa, and affected local jurisdictions, site-specific to the Quad Cities Nuclear Power Station are determined to be adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site. Therefore, based on the above, the Title 44 CFR, Part 350 approval, granted on March 26, 1986, will remain in effect.

Should you have any questions, please contact Mr. Eric A. Jenkins, RAC Chairman, at (816) 283-7021 or [Eric.Jenkins@fema.gov](mailto:Eric.Jenkins@fema.gov).

Sincerely,



Richard Hainje  
Regional Director

Enclosure

cc: Vanessa Quinn, ONP-TH-RP (w/o enclosure)  
Ken Wierman, ONP-TH-RP (w/o enclosure)  
Roland Lickus, NRC III (w/o enclosure)  
Kevin Appel, Exelon (w/o enclosure)  
Kathy Halvey Gibson, NRC-HQ (w/enclosure)

OCT 25 2002

Clinton and Camanche metropolitan areas. There are 24 major employers in the Iowa EPZ. The Iowa 10-mile EPZ is divided into 12 pre-identified subareas which are defined for the public in terms of clearly recognizable landmark descriptions.

Major parks and recreational areas located in the EPZ include the Upper Mississippi River National Wildlife/Fish Refuge, Princeton State Wildlife Management Area, Fairbanks Fishing Hole, Rock Creek Park, Riverview Park, Riverview Stadium, and passenger riverboats.

Area transportation includes the Mississippi River, Clinton County airport, railroads, and major highways.

## **B. Exercise Participants**

The following agencies, organizations, and units of government participated in the Quad Cities Nuclear Power Station exercise on July 10, 2002.

### **STATE OF IOWA**

- Governor's Office
- Emergency Management Division
- Adjutant General
- National Guard
- National Weather Service
- Iowa State University – Extension Service
- Iowa Department of Environmental Health and Safety
- University of Iowa
- Department of Public Health
- Department of Public Safety
- Department of Human Services
- Department of Natural Resources
- Department of Transportation
- Department of Agriculture and Land Stewardship
- Department of Elder Affairs
- RACES
- Iowa State Patrol
- USDA-Emergency Board Chairman

### **RISK and SUPPORT JURISDICTIONS**

#### **Clinton County**

- Board of Supervisors
- Mayor of Clinton

Mayor Pro Tem of Camanche  
County Emergency Management Agency  
Sheriff's Department  
Communications Office  
Area Education Agency  
Public Information Officer  
County Health Department  
Department of Human Services  
Dosimetry Control Officer  
Engineer Office  
Iowa State Patrol  
KROS Radio Station  
KCLN Radio Station

### **Scott County**

Scott County Administrator  
Mayor of Princeton  
County Emergency Management Agency  
Emergency Management Commission  
Sheriff's Department  
Communications Office  
Health Office  
Engineer Office  
Public Information Officer  
School Representative  
Dosimetry Control Officer  
WOC Radio Station

### **PRIVATE/VOLUNTEER ORGANIZATIONS**

Exelon Nuclear  
American Red Cross  
Salvation Army

### **FEDERAL PLAYERS**

FEMA Region VII State Liaison – State EOC  
FEMA Region VII Public Affairs - JPIC  
FEMA Region VII Regional Operations Center – Regional Office

### C. Exercise Time line

Table 1, on the following page, presents the time at which key events and activities occurred during the Quad Cities Nuclear Power Station exercise held on July 10, 2002. Also included are times that notifications were made to the participating jurisdictions/functional entities.

## EXERCISE TIMELINE

DATE AND SITE: July 10, 2002 Quad Cities Nuclear Power Station

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken											
		Iowa EOC	Dose Assessment	Field Team Coord.	Forward Command Post	JPIC			Clinton County EOC	Scott County EOC	WOC EAS	KROS EAS	KCLN EAS
Unusual Event	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A
Alert	0837	0852	0855	0858	0858	N/A			0850	0850			
Site Area Emergency	1004	1012	1015	1027	1018	1010			1013	<sup>4</sup> 1012 1020			
General Emergency	1125	1133	1132	1130	1133	1135			1136	1137			
Rad. Release Started	1125	1133	1126	1130	1132	1215			1128	1134			
Rad. Release Terminated													
Facility Declared Operational		0920	0953	1018	1000	0937*			1045	0955			
Governor Declared State of Emergency		0915	0915		<sup>2</sup> 0914 1014	0920			1018	1018			
Exercise Terminated <sup>1</sup>		1430	1630	1550	1627	1330			1605	1630			
KI Recommended		1138	1138	1138	1139				1138	1142			
KI to Emergency Workers		1145	N/A	<sup>3</sup> 1139 1145	1139	1135			1144	1143			
1 <sup>st</sup> Protective Action Decision: ANIMALS ON STORED FEED		1019			1021	1037			1026	1020			
Scott County: 1st Siren Activation		1037								1037			
Scott County message: Dairy Animal PAD											1033		
Clinton County: 1 <sup>st</sup> Siren Activation									1037				
Clinton County message: SAE and Dairy PAD												1035	1038

LEGEND D - Decision Making Jurisdiction A - Activating Jurisdiction N/A - Not Applicable <sup>1</sup> Various times are indicated due to the completion of exercise evaluation areas  
 \* declared activated <sup>2</sup> -Time received verbally; time hardcopy received <sup>3</sup> -Time first team called; time second team called <sup>4</sup> -time heard on phone & hard copy received

DATE AND SITE: July 10, 2002 Quad Cities Nuclear Power Station

EMERGENCY ACTIONS AND EVENTS	Time that Notification Was Received or Action Was Taken										
	Iowa EOC	Dose Assessment	Field Team Coord	Forward Command Post	JPIC		Clinton County EOC	Scott County EOC	WOC EAS	RCOS EAS	RCOS EOC
1. Protective Action Decision: EVA. ALL SUBAREAS 1, 2, 4, and 6							1107	1108			
Scott County Sirens								1115			
Scott County message: Evacuate sub areas 2, 4, and 6									1110		
Clinton County Sirens							1115				
Clinton County message: Evacuate sub area 1										1122	1122
2. Protective Action Decision: EVA. SUBAREA 12 AND EMERGENCY WORKERS TAKE K1	1151	1146		1148	1150						
Scott County Sirens								1200			
Scott County message: Evacuate sub area 12									1155		
Clinton County Sirens							N/A				
Clinton County message:							N/A				
3. Protective Action Decision: EVA. ALL SUBAREAS 3, 7, 8, 9, AND 10	1241			1241	1245		1241	1241			
Scott County Sirens								1255			
Clinton County message: Evacuate sub areas 3 and 10									1247		
Clinton County Sirens							1255				
Clinton County message: Evacuate 3, 7, and 9										1255	1258

WOC - Working Jurisdiction; A - Activating Jurisdiction; N/A - Not Applicable; Various times are indicated due to the completion of exercise objectives

## IV. EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities that participated in the July 10, 2002, exercise to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the Quad Cities Nuclear Power Station.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria contained in exercise evaluation areas delineated in Federal Register notices of September 12, 2001, and April 25, 2002. Detailed information on the exercise objectives and the extent-of-play agreement for this exercise is found in Appendix 3 of this report.

### A. Summary Results of Exercise Evaluation

The matrix presented in Table 2, on the following page, presents the status of all exercise evaluation criterion which were scheduled for demonstration during this exercise, at all participating jurisdictions and functional entities. Exercise evaluation areas criteria are identified by a number that identifies the evaluation area it is part of. The demonstration status of each evaluation areas criterion is indicated by the use of the following letters:

- M - Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)
- D - Deficiency assessed
- A - Area Requiring Corrective Action (ARCA) assessed or unresolved ARCA(s) from prior exercises
- N - Not Demonstrated (Reason explained in subsection B)





## B. Status of Jurisdictions Evaluated

This subsection provides information on the evaluation of each participating jurisdiction and functional entity, in a jurisdiction based-issues only format. Presented below is a definition of the terms used in this subsection relative to objective demonstration status:

**Met** - Listing of the demonstrated exercise evaluation criteria under which no Deficiencies or ARCAs were assessed during this exercise, and under which no ARCAs assessed during prior exercise remain unresolved.

**Deficiency** - Listing of the demonstrated exercise evaluation criteria under which one or more Deficiencies were assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.

**Area Requiring Corrective Actions (ARCA)** - Listing of the demonstrated exercise evaluation criteria under which one or more ARCAs were assessed during the current exercise. Included is a description of the ARCA(s) assessed during this exercise and the recommended corrective action to be demonstrated before or during the next biennial exercise.

**Not Demonstrated** - Listing of the exercise evaluation criteria which were not demonstrated as scheduled during this exercise, and the reason they were not demonstrated.

**Prior ARCAs -Resolved** - Description of ARCAs assessed during previous exercises that were resolved in this exercise and the corrective actions demonstrated.

**Prior ARCAs -Unresolved** - Descriptions of ARCAs assessed during prior exercises that were not resolved in this exercise. Included is the reason the ARCAs remain unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

The following are definitions of the two types of exercise issues which are discussed in this report.

- \* A **Deficiency** is defined as "... an observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."
- \* An **ARCA** is defined as "... an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety."

FEMA has developed a standardized system for numbering exercise issues (Deficiencies and ARCAs). This system is used to achieve consistency in numbering exercise issues between FEMA Regions and site-specific exercise reports within each Region. It is also used to expedite tracking of exercise issues on a nationwide basis.

The identifying number for Deficiencies and ARCAs includes the following elements, with each element separated by a hyphen (-).

- \* **Plant Site Identifier** - A two-digit number corresponding to the Utility Billable Plant Site Codes.
- \* **Exercise Year** - The four digits of the year the exercise was conducted.
- **Evaluation criteria Number** - A number, small letter, and a second number corresponding to the exercise evaluation criteria.
- \* **Issue Classification Identifier** - (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports.
- \* **Exercise Issue Identification Number** - A separate two (or three) digit indexing number assigned to each issue identified in the exercise.

## 1. STATE OF IOWA

1.1 **State Emergency Operations Center (EOC).** The State EOC is located in the STARC Armory, Level B in Johnston, Iowa. This is an excellent facility to support emergency response. Rumor Control staff demonstrated good communications and coordination. They identified the rumor trend regarding KI and addressed it very well. There was an excellent discussion between the State and the two risk counties regarding sheltering vs. evacuation. The participants were aware of their emergency response duties and were very dedicated to their missions.

- a. **MET:** Evaluation Criteria 1.a.1; 1.b.1; 1.c.1; 1.d.1; 1.e.1; 2.b.2; 2.e.1; 3.d.1; 3.f.1; 5.b.1
- b. **DEFICIENCY:** NONE
- c. **ARCAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** Objective 12 (5.b.1)



## Exercise Report

# Quad Cities Nuclear Power Station

Licensee:                      **Exelon**  
Exercise Date:                **July 10, 2002**  
Report Date:                 **October 18, 2002**

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
REGION VII  
2323 GRAND BOULEVARD, SUITE 900  
KANSAS CITY, MISSOURI 64108-2670**

**RICHARD HAINJE, REGIONAL DIRECTOR**

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## I. EXECUTIVE SUMMARY

On July 10, 2002, the Federal Emergency Management Agency (FEMA), Region VII, conducted an exercise in the plume exposure pathway emergency planning zone (EPZ) around the Quad Cities Nuclear Power Station. The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans and procedures.

The previous exercise at this site was conducted on July 12, 2000. The qualifying emergency preparedness exercise was conducted on March 26, 1986.

FEMA wishes to acknowledge the efforts of many individuals who participated in this exercise. In the State of Iowa the counties of Clinton and Scott participated along with the State government. The efforts of the utility should also be commended for their work on the scenario development and exercise preparation.

Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still, others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork of all the participants were evident during this exercise.

The State and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. No Deficiencies and seven Areas Requiring Corrective Action (ARCAs) were identified as a result of this exercise. This report contains the final evaluation of the biennial full-scale exercise.

One ARCA from the July 12, 2000, exercise was corrected during this exercise.

The final protective action decision (PAD) during the emergency plume phase was an evacuation of portions of both Clinton and Scott Counties in Iowa. In Clinton County, sub-areas 1 (approximately 2 mile radius from the plant), 3, 7, and 9 in a northwest direction from the plant were evacuated. In Scott County, sub-areas 2 (approximately 2 mile radius from the plant) 4, 6, 8, 10, and 12 were evacuated. In Scott County the towns of Princeton, McCausland, and LeClaire were evacuated. In Clinton County the towns of Folletts, Low Moor and Elvira were evacuated. Approximately 8,500 residents and transients in Iowa were affected (simulated) by the evacuation protective action decision.

## II. INTRODUCTION

On December 7, 1979, the President directed FEMA to assume lead responsibility for all offsite nuclear planning and response. FEMA's activities are conducted pursuant to 44 Code of Federal Regulations (CFR) Parts 350, 351, and 352. These regulations are a key element in the Radiological Emergency Preparedness (REP) Program that was established following the Three Mile Island Nuclear Station accident in March 1979.

FEMA Rule 44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of State and local governments' radiological emergency planning and preparedness for commercial nuclear power plants. This approval is contingent, in part, on State and local governments' participation in joint exercises with licensees.

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

- \* Taking the lead in offsite emergency planning and in the review and evaluation of radiological emergency response plans (RERP) and procedures developed by State and local governments.
- \* Determining whether such plans and procedures can be implemented on the basis of evaluation of exercises of the plans and procedures conducted by State and local governments.
- \* Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA (Federal Register, Vol.58, No.176, September 14, 1993).
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:
  - U.S. Department of Commerce,
  - U.S. Nuclear Regulatory Commission,
  - U.S. Environmental Protection Agency,
  - U.S. Department of Energy,
  - U.S. Department of Health and Human Services,
  - U.S. Department of Transportation,
  - U.S. Department of Agriculture,
  - U.S. Department of the Interior,
  - U.S. Food and Drug Administration.

Representatives of these agencies serve on the FEMA Region VII Regional Assistance Committee (RAC), which is chaired by FEMA.

Formal submission of the RERPs for the Quad Cities Nuclear Power Station to FEMA Region VII by the State of Iowa and involved local jurisdictions occurred on March 23, 1983. Formal approval of these RERPs was granted by FEMA on March 26, 1986, under 44 CFR 350. The prompt alert and notification system was approved by FEMA on December 23, 1989.

A REP exercise was evaluated July 10, 2002, by FEMA Region VII to assess the capabilities of State and local offsite emergency preparedness organizations in implementing their RERPs and procedures to protect the public during a radiological emergency involving the Quad Cities Nuclear Power Station. The purpose of this exercise report is to present the exercise results and findings on the performance of the offsite response organizations (OROs) during a simulated radiological emergency.

The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the FEMA Region VII RAC Chairperson and approved by the Regional Director.

The criteria utilized in the FEMA evaluation process are contained in:

- \* NUREG-0654/FEMA-REP-1, Rev.1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;
- \* Radiological Emergency Preparedness Exercise Evaluation Methodology, criteria, September 12, 2001 and April 25, 2002.

Section III of this report, entitled "Exercise Overview," presents basic information and data relevant to the exercise. This section of the report contains a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

Section IV of this report, entitled "Exercise Evaluation and Results," presents basic information on the demonstration of applicable exercise evaluation area criteria at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues only format. This section contains: (1) descriptions of all Deficiencies and ARCAs assessed during this exercise, recommended corrective actions, and the State and local governments' schedule of corrective actions for each identified exercise issue and (2) descriptions of ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

### III. EXERCISE OVERVIEW

Contained in this section is data and basic information relevant to the July 10, 2002, exercise to test the offsite emergency response capabilities in the area surrounding the Quad Cities Nuclear Power Station. This section of the exercise report includes a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of the actual occurrence of key exercise events and activities.

#### A. Plume EPZ Description

The Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2, is located in Cordova Township, Rock Island County, Illinois, ten miles northeast of the city of LeClaire, Iowa, and ten miles southwest of the city of Clinton, Iowa. The plant is on the eastern bank of the Mississippi River opposite the mouth of the Wapsipinicon River. The site is at Mississippi River Mile Marker Number 507 above the mouth of the Ohio River. The topography of the site and its immediate environs is low and relatively flat, with a mean elevation of approximately 605 feet. The ground surface drops off abruptly, approximately 30 feet down to the bank of the river.

The Mississippi River bisects the Emergency Planning Zone (EPZ) from north to south, passing adjacent to the plant. The river is used for commercial waterborne traffic and is a prime area for recreational boating and fishing. In addition to the river, U.S. Highway 30 passes through the northern portion of the EPZ passing within 6 miles of the plant. U.S. Highway 67, which parallels the Mississippi River, bisects the entire EPZ in a north-south direction passing within 2 ½ miles of the plant and State Highway 136 passes through the northern portion of the EPZ.

The EPZ for the Quad Cities Nuclear Power Station consists of an irregular shaped circle with the power station as the center point. It extends 10 to 13 miles outward, including all of Clinton and LeClaire. The EPZ encompasses the Mississippi River floodplain, including the cities and villages built on the flood plain river bluffs, and gently rolling hills further away from the river. The floodplain on the Iowa side of the Mississippi River is relatively narrow and, thus has constrained urban and industrial development in this area.

The 10-mile EPZ total summer population (permanent residents and transients) based on the 1990 census, is 61,327 of which 53,965 reside within Clinton and Scott Counties in Iowa. The remainder of the EPZ is in Rock Island and Whiteside Counties in Illinois with a population in the summer of 7,362.

Both Clinton and Scott Counties are typical agricultural areas with the majority of land used for cash grain production and livestock. Communities within Scott County that are located in the 10-mile EPZ are McCausland, Princeton, and Le Claire. Communities within Clinton County that are located in the 10-mile EPZ are Low Moor, Folletts, Camanche, Malone, Elvira, and Clinton. Industrial and professional activities are principally located in the

Issue No.: 51-00-12-A-01

**Description:** The first press release issued by the state contained unconfirmed or incorrect information. Specifically:

- Press Release number 1, issued at 0830, stated that the Upper Mississippi National Wildlife Refuge and the Princeton State Wildlife Management Area had been closed. However, at 0918 the Department of Natural Resources briefed the State EOC they were still verifying the closures. In the State EOC message number 27 timed at 0937 the Department of Natural Resources confirmed that the recreational areas had been closed at 0855. (NUREG-0654, E.6., E.7.)

**Recommendation:** Press releases should be thoroughly reviewed prior to being released to the media and the State EOC Emergency Information Center staff should contact all involved agencies to ensure the information is correct. The issuance of accurate press releases by the State must be demonstrated during the 2002 Quad Cities Nuclear Power Station exercise.

**Corrective Actions Demonstrated:** Press release number 1 once again was issued with the information not being verified. However, based on interview with the Public Inquiry Officer, the intent is to keep people out of the area. Therefore, the press release is sent indicating that the recreational areas are closed rather than being in the process of being closed. Based on this interview this issue is closed.

f. **PRIOR ARCAs - UNRESOLVED:** NONE

1.2 **Dose Assessment.** This function is located in the STARC Armory, State Emergency Operations Center, Level B, in Johnston, Iowa. The Dose Assessment Staff maintained contacts with their counterparts in the State of Illinois and had excellent discussions prior to developing Protective Action Recommendations so that the two independent jurisdictions were aware of the actions to be taken by each other. The staff made good use of the Health Physics Hotline to exchange information with the technical staff in the Forward Command Post. The Technical Lead gave outstanding support to the Iowa decision maker and to other Iowa agencies represented in the State Emergency Operations Center.

- a. **MET:** Evaluation Criteria 1.a.1; 1.b.1; 1.c.1; 1.d.1; 1.e.1; 2.b.2; 2.e.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** 2.b.1

Issue No.: 51-2002-2.b.1-A-01

**Description:** The Dose Assessment staff in the State EOC did not convert field measures to dose projections. The MIDAS program in use is not capable of translating field measurement to dose calculations. Therefore, they could not compare the dose projected based on field data to that projected on release rates. The possibility exists of significant errors in computer dose projections because of uncertainties in the source term and other variables. Field monitoring teams are generally dispatched to verify or provide data to modify dose projections. Protective Action Recommendations may not be conservative unless verified by measurements. (NUREG-0654, I.10; Iowa Plan Section II, Part I.V.A.)

**Recommendation:** Add a step in the dose assessment procedures to ensure that dose projections are made based on field data and that the existing Protective Action Recommendations or Protective Action Decisions are revised when necessary. Use an additional code with the current MIDAS code that is capable of making the conversion of field measurements to dose. An alternate approach would be to use the method cited in the plan of using the FRMAC Manual or other federal documents to make the calculation manually. This criterion must be demonstrated during the next Quad Cities biennial exercise using the revised procedures.

**Schedule of Corrections:** The dose assessment procedures will be revised to ensure that field measurements are converted to dose projections. The evaluator was with the Dose Assessment lead throughout the exercise. There is no documentation to show that the conversion of field measurements to dose was done. There were no discussions of this activity. When a reading was extremely high there was no action or discussion regarding this nor was there any contact with the Field Team Coordinator to check on the reading received from them. The criterion will be re-demonstrated during the next Quad Cities biennial exercise.

- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** Objectives 7 and 9 (2.b.1; 2.b.2)

**Issue No.:** 51-00-07-A-02

**Description of Issue:** The Dose Assessment staff did not provide information to the Radiological Emergency Response Team (RERT) Coordinator and did not include the RERT in the decision-making process as stated in the plan. Therefore, the RERT Coordinator did not perform dose assessment functions specified in the Iowa Radiological Emergency Response Plan. The Iowa Plan tasks the RERT Coordinator with several specific dose assessment responsibilities. These responsibilities are summarized in the plan statement, "The

Coordinator and the IDPH State EOC representative will check and compare dose assessment results throughout an incident to ensure the validity of the results." One responsibility specified in the plan requires that the RERT Coordinator and the IDPH State EOC Representative run the same computer-based system in parallel using the same data.

Another recommends that the RERT Coordinator participate in protective action decision-making. With the exception of the MIDAS projections based on the two utility supplied source terms, the RERT Coordinator did not perform dose assessment functions. He did not participate in the protective action decision-making process, and was not consulted concerning the adequacy of the protective action decisions that were implemented in the course of the event. Also, the SEOC did not provide the RERT Coordinator with the entire field monitoring data that had been received from other sources. For the reasons described above, the RERT Coordinator did not participate in the dose assessment process to help ensure the validity of the dose assessment results. (NUREG-0654 Reference: I.10; N.1.a)

**Recommendation:** Provide further training to the Dose Assessment staff regarding coordination with the RERT to include providing complete information and including them in the decision-making process. Allow the Field Team Coordination Staff to perform the functions specified in the Iowa Radiological Emergency Response Plan or revise the plan to reflect the actual practice. This must be demonstrated during the next Quad Cities exercise.

**Corrective Action Demonstrated:** The state plan was revised to clarify the responsibilities of the Iowa Department of Public Health and the Radiological Emergency Response Team regarding dose assessment. FEMA approved the changes on November 14, 2000; therefore, this ARCA is now closed.

**Issue No.:** 51-00-09-A-03 (Corrected at October 18, 2000, Duane Arnold Energy Center exercise)

f. **PRIOR ARCAs - UNRESOLVED: NONE**

**1.3 Field Team Coordination.** This function is performed at the Forward Command Post in Stockton, Iowa. Staff from the University Hygienic Laboratory located in Oakdale, Iowa, deployed in real time after receiving the ALERT notification. A representative from the Illinois Department of Nuclear Safety was co-located at the Forward Command Post. The staff assigned to the Field Team Coordination function conducted their tasks in an excellent and professional manner. They were very knowledgeable of their plans and procedures, and roles and responsibilities. The staff was responsive to the State EOC needs and managed the Field Teams in an efficient manner.

- a. **MET:** Evaluation Criteria: 1.a.1; 1.b.1; 1.c.1; 1.d.1; 1.e.1, 2.a.1; 2.b.1; 3.a.1; 3.b.1; and 4.a.2
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

**1.4 Radiological Field Monitoring Teams, Plume Emergency Planning**

**Zone.** One team was from the University of Iowa Hygienic Laboratory and the other team from Iowa State University. Both teams were very knowledgeable of their procedures and techniques. Each team is to be commended for making the most of a tough situation – having no radio communication. The field radios use a repeater; however, a contract had not been signed by the time of the exercise. Therefore, the field radios were useless. This issue is being addressed separate from the report as the lack of radios did not have a negative effect on the exercise. Their backup communication systems (cell phones) were effective. The teams did a good job in working to locate the plume without the big picture. The team members did a great job in working together.

- a. **MET:** Evaluation Criteria 1.a.1; 1.d.1; 1.e.1; 3.a.1; 3.b.1; 4.a.1; 4.a.3
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

**1.5 Forward Command Post.** The Forward Command Post (FCP) is located at the District 12 Post of the Iowa State Patrol in Stockton, Iowa. State agencies represented at the location included: Iowa National Guard; Iowa State Patrol; Iowa Department of Transportation/Maintenance/Enforcement; Iowa Emergency Management Division; and Iowa Department of Natural Resources. The direction and control, communication and coordination between agencies was exceptional. Traffic and access control needs were anticipated well ahead of time by the State Patrol and DOT

and were thoroughly executed. The State Patrol and DOT representatives were very proactive in coordinating with the counties and taking appropriate actions to protect public safety. When the evacuation area was expanded the staff, in coordination with Clinton County, decided to close eastbound highway 30 and keep the westbound lanes open for evacuees. This decision was made in a very timely manner. The staff of the Forward Command Post is to be commended.

- a. **MET:** Evaluation Criteria 1.a.1; 1.b.1; 1.c.1; 1.d.1; 1.e.1; 2.a.1; 3.a.1; 3.b.1; 3.d.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

**1.6 Joint Public Information Center (JPIC).** This function is located in Morrison, Illinois. This facility is utilized by the utility, the states of Iowa and Illinois, and Federal agencies. Rumor Control is conducted at the State EOC in Des Moines, Iowa. The State PIO actively participated in four media briefings. There was good coordination with Illinois and Exelon. The Iowa State PIO placed considerable emphasis on the Protective Action Decision to evacuate and sincere reassurance that evacuees would be cared for at reception centers. The Iowa PIO handled questions on potassium iodide for the general public in a clear manner. Briefings were given in clear, understandable language and contained accurate, up-to-date information consistent with EAS messages and the public information brochure. Two incorrect rumors were identified and the State PIO provided accurate information in a timely manner.

- a. **MET:** Evaluation Criteria 1.a.1; 1.b.1; 1.d.1; 1.e.1; 3.a.1; and 3.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** 5.b.1

**Issue:** 51-2002-5.b.1-A-02

**Description:** Press Releases number 2, 3, and 4, were not provided to the media at the JPIC in a timely manner and therefore, they did not have a detailed description of the evacuation areas. Specifically, press release number 2 had a 2 hour and 14 minute delay, press release number 3 had a one hour and

15 minute delay, and press release number 4 had a 44-minute delay from the time received at the JPIC until they were provided to the media.

During the press briefings the Iowa PIO referred the media specifically to these press releases. During press briefing 2 at 1110 the PIO referenced press release number 3 for more detailed descriptions of the evacuated areas. However, the press release was not provided until 1215. Likewise, during press briefing 3 (1244), reference again was made to the press releases that were not available until 1305. The only graphic available in the media center was not effective in depicting the evacuation areas nor was it visible to the television audience. The media would not have had the information that they were being referred to and subsequently neither would the general public. (NUREG - 0654, 4.a. & b.)

**Recommendation:** Revise plans/procedures to have a staff member dedicated to checking for incoming messages, copying the messages and distributing them to the media in a timely manner. In addition, revise the existing graphics to be larger and more visible. This criterion must be demonstrated during the next Quad Cities biennial exercise.

**Schedule of Corrective Actions:** The plans/procedures will be revised to indicate the prompt distribution to the media at the JPIC of any press releases. Improved graphics for television will be developed. This criterion will be redemonstrated during the next Quad Cities biennial exercise.

- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

## **2. RISK JURISDICTIONS**

### **2.1 Clinton County**

**2.1.1 Emergency Operations Center (EOC).** The County EOC is located in the Clinton County Courthouse in Clinton, Iowa. Radio stations KROS and KCLN participated throughout the exercise by receiving and simulating broadcast and rebroadcast of messages. Their support in this effort is greatly appreciated. The Emergency Management Coordinator established an outstanding training atmosphere for all of the EOC staff. He kept them involved throughout the exercise and encouraged discussions about "what if" situations. The Dosimetry Control Officer was very knowledgeable and organized. The law enforcement dispatchers are to be commended for their efforts during this exercise.

- a. **MET:** Evaluation Criteria 1.a.1; 1.b.1; 1.c.1; 1.d.1; 1.e.1; 2.a.1; 2.b.2; 2.c.1; 3.a.1; 3.b.1; 3.c.1; 3.c.2; 3.d.1; 3.d.2; 3.f.1; 5.a.3; and 5.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** 5.a.1

**Issue No.:** 51-2002-5.a.1- A-03

**Description:** The siren activation and the initial EAS message for the Site Area Emergency were not completed in the proper order. The EAS message for the Site Area Emergency notification was broadcast (simulated) at 1035. The siren system was activated at 1037 to alert the public of the emergency situation. Although the EAS message would have been repeated by the Clinton County radio stations at 1050, an individual tuning in to the stations after hearing the sirens at 1037 would not have heard this emergency information for approximately 13 minutes until 1050. This was a result of the Clinton County EOC failing to effectively coordinate with the EAS radio stations to ensure that the broadcast time of the EAS and emergency information messages were after the time of the siren activations. This could have resulted in confusion and apprehension for those individuals trying to obtain information on the emergency situation. The sirens and public information messages were also completed out of sequence for one of the subsequent protective action decisions. (NUREG-0654, E.1.,5.6)

**Recommendation:** Revise the EOC procedures for the Public Affairs Officer to clearly indicate that the sirens will be activated first and then the radio stations should be contacted and provided with the emergency information message for immediate broadcast. This process, using the revised procedures should be re-demonstrated during the next Quad Cities exercise.

**Schedule of Corrections:** The EOC procedures for the Public Affairs Officer will be revised to clearly indicate the Alert and Notification sequence. Additional training will be provided to the EOC staff. This criterion, using the revised procedures will be re-demonstrated during the next Quad Cities biennial exercise.

- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

**2.1.2 KCLN EAS RADIO STATION** is located in Clinton, Iowa. The radio station personnel were very conscientious and enthusiastic in the performance of their emergency response functions. They are to be commended for their efforts in support of this exercise and in their sense of community responsibility.

- a. **MET:** Evaluation Criteria 5.a.1 and 5.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

**2.1.3 KROS EAS RADIO STATION** is located in Clinton, Iowa. The KROS staff is comprised of long-term employees who take great pride in providing news and information that will assist and inform their community. There is little or no turnover of employees, so this media "family" works extremely well together with the common goal of helping their friends and neighbors. Their quick and efficient response to local emergencies is evident in everything they do. Their concern for the health and safety of the community is paramount during emergencies of this type.

- a. **MET:** Evaluation Criteria 5.a.1 and 5.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** NONE
- d. **NOT DEMONSTRATED:** NONE
- e. **PRIOR ARCAs - RESOLVED:** NONE
- f. **PRIOR ARCAs - UNRESOLVED:** NONE

## **2.2 Scott County**

**2.2.1 Emergency Operations Center (EOC).** The County EOC is located in the Scott County Courthouse basement in Davenport, Iowa, which is outside the 10-mile emergency planning zone. The Scott County EOC staff worked in a well integrated manner such as the Sheriff's Department Representative and County Engineer with the Iowa State Patrol representative and the County Health Department with the Schools Transportation representative. The acting Emergency Management

Coordinator is to be commended for providing outstanding direction and control with only a short notice that he would be acting in that capacity. The Sheriff's Department Dispatch Center processed incoming calls in a timely manner and effectively worked around problems with long distance telephone service. The County Health Department uses telephone devices for the deaf (TDD) to alert hearing-impaired residents in the emergency planning zone, instead of asking the Sheriff's Department to assume responsibility of those notifications. This common sense approach avoids unnecessary use of resources.

- a. **MET:** Evaluation Criteria 1.a.1; 1.b.1; 1.d.1; 2.a.1; 2.b.2; 2.c.1; 3.a.1; 3.b.1; 3.c.1; 3.c.2; 3.d.2; 3.f.1; 5.a.3; and 5.b.1
- b. **DEFICIENCY:** NONE
- c. **AREAS REQUIRING CORRECTIVE ACTION:** 1.c.1; 1.e.1; 3.d.1; 5.a.1

**Issue:** 51-2002-1.c.1-A-04

**Description:** The Scott County Emergency Management Agency Coordinator failed to coordinate with his counterpart in Clinton County concerning the content and release of the initial EAS message, prior to the activation of the Notification system, in accordance with the Scott County Plan, Chapter III Annex, Page III A-5. This resulted in Scott County not issuing an initial EAS message. Scott County's first message related to dairy animals on stored feed; whereas, Clinton County's message informed the public of the situation at the plant. The inconsistent messages by the counties could cause confusion and concern. (NUREG-0654, E.3)

**Recommendation:** Provide additional training regarding the notification of the public and revise the plan and/or procedures to clearly indicate that there must be coordination between the two counties on the release of the initial message. This must be re-demonstrated during the next Quad Cities exercise.

**Schedule of Corrections:** Additional training regarding the notification of the public will be provided. In addition, the plan and/or procedures will be revised to clearly indicate the coordination between the two counties on the release of the initial message. This criterion will be re-demonstrated during the next Quad Cities exercise.

**Issue:** 51-202-1.e.1-A-05

**Description:** The availability of dosimetry and potassium iodide (KI) supplies to be issued to emergency workers in a timely manner was not adequately demonstrated. An inventory of these supplies was not available during the exercise or during the inspection at the Sheriff's Department Substation. While the supplies appeared to include a sufficient number of

most of the elements necessary to put together the 250 kits required by the Scott County plan, the supplies were not well organized and the kits were not assembled (i.e., dosimetry and KI were not included). Only about 150 of the 250 thermoluminescent dosimeters (TLDs) required by the Scott County plan were observed. In the absence of the primary Emergency Management Coordinator (EMC), who was not able to participate in the exercise, the Dosimetry Officers interviewed at the beginning of the exercise did not appear to be sufficiently knowledgeable of the dosimeter and KI supplies to be in a position to prepare and issue the necessary kits to all emergency workers in a timely manner. In addition, the plan currently specifies that the Dosimetry Officers will not be notified by the Sheriff's Department Dispatch Center until the Site Area Emergency; thereby not providing sufficient time to prepare the required kits.

Apparently, the primary Emergency Management Coordinator, in addition to many other very significant responsibilities, is also in charge of maintaining the dosimetry and KI inventory. The position of Dosimetry Officers exists as part of the Scott County plan. Under the current observed conditions, it appears that the dosimetry and KI supplies have not been inventoried and maintained so as to allow the Dosimetry Officers to assume responsibility to effectively issue the necessary kits to all emergency workers in a timely manner in the event of an emergency.

If emergency workers are not issued the dosimeters and KI in complete kits and in a timely manner, the level of exposure protection that must be provided to them may not be achieved. Additionally, a delay in issuing dosimeters and KI kits to emergency workers could in turn result in delays in evacuation of the general public. (NUREG-0654, H., J.10.a.b.e.f.j.k; 11, K.3.a)

**Recommendation:** The dosimeters and KI supplies should be adequately inventoried and organized. The position of Dosimetry Officer in Scott County should be strengthened. Revise the training provided to individuals who serve in that position so they can assume responsibility for the inventory and that they can effectively ensure that adequate dosimeters and KI kits are provided to emergency workers in a timely manner. Additionally, consideration should be given to including the Dosimetry Officers in the list of key personnel that are notified at the Alert. This criterion will be re-demonstrated during the next Quad Cities biennial exercise.

**Schedule of Corrections:** The dosimetry and KI supplies will be adequately inventoried and organized to facilitate distribution. The position of Dosimetry Officer will be provided additional training to take responsibility for the inventory and ensure that dosimetry is provided to emergency workers in a timely manner. The procedures will be revised to have the Dosimetry Officer notified at the ALERT. These changes will be submitted to FEMA for

approval. This criterion will be demonstrated during the next Quad Cities biennial exercise.

**Issue:** 51-2002-3.d.1-A-06

**Description:** The briefing on use of dosimetry and potassium iodide (KI) provided to two Sheriff's Department Deputies, who would potentially be involved in the implementation of traffic and access control points was inadequate because it failed to address the purpose of the different dosimeters, the complementary use of the low range and the high range direct reading dosimeters, and the relationship between those dosimeters and the reporting limit and "turnback" values. It should be noted that during the Sheriff's Deputies interview, the deputies indicated that they would strictly follow the written procedure that they had been issued, which would ensure adequate use of their dosimetry and timely reporting of their dosimetry readings and ultimately ensure their protection as emergency workers.

During previous exercises, as well as during training, the key person in charge of providing the briefings on use of dosimetry and KI has been the primary Emergency Management Coordinator (EMC). However, the primary EMC did not participate in this exercise and one of the Dosimetry Officers from the Sheriff's Department was asked to conduct the briefing. The Dosimetry Officer assigned to the task requires further training in order to deliver a briefing that is clear and unambiguous regarding the purpose of the dosimetry and KI. The briefing on dosimetry and KI that is provided to emergency workers in the event of an emergency is intended to serve as quick refresher training. If that briefing does not adequately emphasize the purpose and complementary use of dosimeters, there is a risk that emergency workers will not use the dosimetry in the intended manner and that the level of exposure protection that is to be provided to them is not achieved. (NUREG-0654, J.10.g., j., k.)

**Recommendation:** The position of Dosimetry Officer in Scott County should be strengthened and the persons that serve in that position should receive more training so that they can effectively ensure that dosimeters and KI are adequately used by emergency workers as means for exposure protection. This criterion must be re-demonstrated during the next Quad Cities biennial exercise.

**Schedule of Corrections:** Additional training will be provided to the Dosimetry Officer(s) for Scott County. This criterion will be re-demonstrated during the next Quad Cities biennial exercise.

**Issue:** 51-2002-5.a.1-A-07

**Description:** All four EAS messages prepared by the County Public Affairs Officer were faxed to the EAS Station WOC and were broadcast (simulated) by the station prior to the sirens being activated (simulated) by the County Dispatcher staff. The procedures for the County Public Affairs Officer do not contain a step requiring verification that the sirens have been activated prior to releasing the EAS message to the radio station. This could have caused confusion to the public by seeing or hearing an EAS message prior to having been alerted to tune to the EAS station by the sirens. In addition, when the public did hear the sirens, they may not have heard the EAS message repeated for several minutes after tuning in. (10 CFR 50)

**Recommendation:** Modify the procedures for the County Public Affairs Officer by adding a step requiring him to ensure that sirens have been activated prior to sending a message to the radio station. This step is already in the procedures for the Clinton County Public Affairs Officer. This process, using the revised procedures must be re-demonstrated during the next Quad Cities biennial exercise.

**Schedule of Corrections:** Procedures for the County Public Affairs Officer will be revised and submitted to FEMA for approval. This process, using the revised procedures will be re-demonstrated during the next Quad Cities biennial exercise.

- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

2.2.2 **WOC EAS RADIO STATION** is located in Davenport, Iowa. The staff was very knowledgeable regarding their emergency response functions. They have established several methods to notify everyone when an emergency message arrives including a bell on the facsimile machine and strobe lights in the hall.

- a. **MET:** Evaluation Criteria 5.a.1 and 5.b.1
- b. **DEFICIENCY: NONE**
- c. **AREAS REQUIRING CORRECTIVE ACTION: NONE**
- d. **NOT DEMONSTRATED: NONE**
- e. **PRIOR ARCAs - RESOLVED: NONE**
- f. **PRIOR ARCAs - UNRESOLVED: NONE**

## Appendix 1 - Acronyms and Abbreviations

The following is a list of the acronyms and abbreviations that were used in this report.

ARCA	Area Requiring Corrective Action
CAP	Civil Air Patrol
CFR	Code of Federal Regulations
CPM	Counts Per Minute
DIL	Derived Intervention Level
DOT/FHWA	Department of Transportation/Federal Highway Administration
EA	Evaluation Area
EAS	Emergency Alert System
EBS	Emergency Broadcast System (replaced by EAS)
ECL	Emergency Classification Level
EMC	Emergency Management Coordinator
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOM	End of Message
EPA	U.S. Environmental Protection Agency
EPZ	Emergency Planning Zone
ERDS	Emergency Radiological Data System
FCC	Federal Communications Commission
FCP	Forward Command Post
FEMA	Federal Emergency Management Agency

FRMAC	Federal Radiological Monitoring and Assessment Center
ICF	ICF Consulting (REP Contractor)
IDPH	Iowa Department of Public Health
JPIC	Joint Public Information Center
KI	Potassium Iodide
mR	Milliroentgen
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).
ORO	Offsite Response Organization
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PIO	Public Information Officer
R	Roentgen
RAC	Regional Assistance Committee
RACES	Amateur radio operators
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
RERT	Radiological Emergency Response Team
SAE	Site Area Emergency
TL	Team Leader
TLD	Thermoluminescent Dosimeter
USDA	U.S. Department of Agriculture

## Appendix 2 - Exercise Evaluators and Team Leaders

The following is a list of the personnel who evaluated the Quad Cities Nuclear Power Station exercise on July 10, 2002. The letters "TL" indicates evaluator Team Leaders after their names. The organization, which each evaluator represents, is indicated by the following abbreviations:

- FEMA - Federal Emergency Management Agency
- ICF - ICF Consulting
- DOT/FHWA - U.S. Department of Transportation/Federal Highway Administration
- EPA - U.S. Environmental Protection Agency
- USDA - U.S. Department of Agriculture

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
<u>STATE OF IOWA</u>		
Emergency Operations Center	Sharron McDuffie - TL	FEMA
	George MacDonald	ICF
	Joe Chandler	FEMA
Dose Assessment	Joseph Keller	ICF
Field Team Coordination	Hollis Berry	ICF
Plume Field Monitoring Teams	Bob Dye	EPA
	Eric Penner	USDA
Joint Public Information Center	Richard Echavarria	FEMA
Forward Command Post	Rex Jennings	FEMA
<u>CLINTON COUNTY</u>		
Emergency Operations Center	Norm Valentine - TL	FEMA
	LaRue Stivers	FEMA
<u>EAS Station (KROS)</u>	Nancy Johnson	ICF
<u>EAS Station (KCLN)</u>	Robert Rospenda	ICF

SCOTT COUNTY

Emergency Operations Center	Joe Schulte -- TL	FEMA
	Alejandro Fernandez	ICF

<u>EAS Station (WOC)</u>	Al Lookabaugh	ICF
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FEMA

Regional Office Coordination	Jessyca Frasher	FEMA
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### **Appendix 3 - EXERCISE EVALUATION AREAS, SUB CRITERION, and REGIONAL EXTENT-OF-PLAY**

This appendix lists the exercise evaluation areas and criteria that were submitted on February 28, 2002, for demonstration in the Quad Cities Nuclear Power Station exercise and the extent-of-play agreements coordinated with the State of Iowa and approved by FEMA Region VII on May 24, 2002. Each extent-of-play element is delineated under "Expected Demonstration"

These evaluation areas and associated criteria represent a functional translation of the planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for the Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980.

Because the exercise evaluation areas are intended for use at all nuclear power plant sites and because of variations among offsite plans and procedures, an extent-of-play agreement dated May 24, 2002, was prepared by FEMA Region VII and provided to the state of Iowa for further clarification of expected demonstration of the evaluation areas.

Listed below are the specific REP exercise evaluation areas criteria scheduled for demonstration during this exercise and the extent of play agreement (Expected Demonstration), if applicable. For all evaluation areas the generic extent of play for each criterion is valid.

The "Expected Demonstration" includes any significant modification or change in the level of demonstration of each exercise criterion.

#### **Evaluation Area 1: Emergency Operations Management**

**Evaluation criterion 1.a.1. - Mobilization:** All telephone calls to mobilize personnel or place them on standby must actually be made. After the EOC is activated a copy of who was notified will be provided to the evaluator. Based on the Extent of Play meeting, primary or key EOC personnel will actually be notified. All other contacts to potential responders to the EOC, will be simulated.

For the day of the exercise, the following staffs are approved for pre-positioning:

- STARC Armory – State Emergency Operations Center (EOC) – Emergency Management Staff
- Forward Command Post – Emergency Management Staff
- Clinton County EOC – Emergency Management Staff
- Scott County EOC – Emergency Management Staff
- Joint Public Information Center – Emergency Management Staff
- Field Monitoring Teams at the EOF – Iowa State University Department of Environmental Health and Safety Staff

We recognize that the staff at the State EOC could be there during the working day. However, at all other locations State staff may not arrive until one hour after the Offsite Response Organizations (OROs) have received notification of the ALERT.

Although we have deleted the Emergency Operations Facility as an evaluated site, any state responders may not arrive until one hour after the ORO has received notification of the ALERT.

**Evaluation criterion 1.b.1 - Facilities:** No modifications at this time.

**Evaluation criterion 1.c.1 - Direction and Control:** No modifications at this time.

**Evaluation criterion 1.d.1 - Communications:** All facilities and field teams that are evaluated must demonstrate communications capability. The evaluators will request copies of all messages and logs of message traffic at each site.

**Evaluation criterion 1.e.1 - Equipment & Supplies to Support Operations:** Verification of dosimetry and KI supplies, as applicable, will occur at the State Forward Command Post, the Clinton and Scott Counties EOCs, and all other facilities that maintain dosimetry and KI supplies in accordance with the plan. Scott County dosimetry and KI supplies are stored in a location separate from the county EOC. Therefore, an evaluator will verify these supplies at the conclusion of the exercise. TLDs have a July 2002 date that is valid until the end of July.

## **Evaluation Area 2: Protective Action Decision-Making**

**Evaluation criterion 2.a.1 - Emergency Worker Exposure Control:** No modifications.

**Evaluation criterion 2.b.1 - Radiological Assessment & PARs & PADs:** No modifications.

**Evaluation criterion 2.b.2 - Radiological Assessment and PARs and PADs:** No modifications.

**Evaluation criterion 2.c.1 - Protective Action Decisions for Special Populations:**  
During the emergency phase of the exercise on July 10, 2002, all appropriate actions (e.g. notification, EAS messages, etc.) must be demonstrated by the EOC staff for any public or private schools affected by protective action recommendations. Contacts with public school systems/districts must be actual and all public school systems/districts in the EPZ must be notified. If there are any private schools or day care centers that require notification and are in the plan, they must also be notified. Calls will only be made to the school district or private school/day care office.

**Evaluation criterion 2.e.1 - Radiological Assessment & Decision Making for Relocation, Re-entry, and Decision Making:** No modifications.

## **Evaluation Area 3: Protective Action Implementation**

**Evaluation criterion 3.a.1 - Implementation of Emergency Worker Control:** Emergency workers must wear appropriate direct-reading and permanent record dosimeters and have access to a dosimeter charger in accordance with state and local plans and procedures. In addition, they must be able to demonstrate basic knowledge of dosimetry, radiation exposure limits, and turn-

back exposure limits through an interview process. Procedures to monitor and record dosimeter readings and to manage radiological exposure control must be demonstrated.

Clinton County will be using group dosimetry in the county EOC and in the county Communications Center.

**Evaluation criterion 3.b.1 – Implementation of KI Decisions:** Although the decision to recommend the use of KI is not due for demonstration during this exercise, it is possible that the scenario could require it. If the decision to use KI is made, the instructions must be appropriately disseminated to all personnel including those deployed (simulated) for traffic and access control and other missions. However, if the decision to use KI is not required by the scenario, all emergency workers, at all facilities, will be expected to demonstrate this criterion through an interview of their knowledge of the procedures for the authorization and the use of KI. Actual administration of KI will be simulated.

**Evaluation criterion 3.c.1 – Implementation of PADs for Special Populations:** Telephone calls to special facilities, individuals with special needs, and transportation providers may be simulated. Actual telephone calls must be made to at least 1/3 of the transportation providers, including special resources for disabled individuals. Based on discussions at the 100-day meeting, notifications to Transportation Providers are as follows: Scott County will contact one school resource and one ambulance service; Clinton County will contact one school resource and either Great River or Clinton MTA.

However, all facilities, individuals with special needs, and transportation providers that are required to be notified must be clearly identified and all contacts, actual and simulated, must be appropriately documented. Telecommunications Device for the Deaf (TDD) calls to the hearing impaired population will be simulated and appropriately documented.

**Evaluation criterion 3.d.1 – Implementation of Traffic and Access Control:** Deployment of traffic and access control personnel to assigned locations will be simulated. However, the locations where traffic and access control would be established must be appropriately documented. Staffing of traffic and access control points must be appropriately coordinated with all involved jurisdictions.

At least two individuals who would perform traffic and access control must be available at both the Scott and the Clinton County EOC's for an interview. The Iowa State Patrol liaisons that will deploy to the counties from the Forward Command Post will be interviewed prior to their departure from the Forward Command Post. During the interviews, all personnel will be expected to demonstrate knowledge of their roles and responsibilities concerning traffic and access control, as well as appropriate knowledge concerning dosimetry and potassium iodide procedures.

**Evaluation criterion 3.d.2. – Implementation of Traffic and Access Control (Impediment Removal):** No modifications.

**Evaluation criterion 3.f.1. – Implementation of Relocation, Re-entry, and Return Decisions:** No modifications.

## **Evaluation Area 4: Field Measurement & Analysis**

**Evaluation criterion 4.a.1. – Plume Phase Field Measurement & Analysis:** Each of the deployed field monitoring teams must take radiation measurements at a sufficient number of locations to identify the plume. A demonstration of an operational check of the instruments utilizing a check source is required. Information on the proper reading or range of readings should be attached to or accompany the instrument. Radiological detection instruments, equipment, and protective clothing as annotated in Section II, Part I of the Iowa State Plan should be available for the demonstrations. The Field Teams will be deployed from the Forward Command Post in Stockton, Iowa.

**Evaluation criterion 4.a.2. – Plume Phase Field Measurement & Analysis:** The field teams from the State of Iowa must demonstrate their actions as they would in an actual emergency. Activities related to the use of equipment and procedures for the collection and transport of samples from areas that received deposition from the airborne plume must be demonstrated. The evaluator will interview the field teams as to the procedures for the physical turn over of the samples (to include transfer of custody forms) to the Civil Air Patrol.

**Evaluation criterion 4.a.3. – Plume Phase Field Measurements & Analysis:** No modifications.

## **Evaluation Area 5: Emergency Notification & Public Instructions**

**Evaluation criterion 5.a.1. - Activation of Prompt Alert and Notification System:** An evaluator will be assigned at WOC/WLLR, KCLN, and KROS EAS radio stations to observe the stations' procedures for broadcasting all exercise related messages. We expect to see coordination between the two counties regarding the issuance of the EAS and Public Information messages and coordination of siren activation. We expect to see the actual receipt of the messages from the county EOC(s). Following receipt at the stations, procedures to broadcast the message must be fully demonstrated up to the point of transmission. Actual broadcasts of the messages or EAS test messages are not required. The FEMA evaluators will remain at the EAS stations until the termination of the exercise to observe receipt and broadcast procedures for all EAS messages and Public Information messages. Copies of all EAS messages and Public Information messages will be requested from the facilities.

The initial EAS message should include the elements required by current FEMA REP guidance. The Federal Register notice of September 12, 2001, states that the initial message must contain 1) identification of the State or local government organization and official with the authority for providing the alert signal and instructional message; 2) identification of the commercial nuclear power plant and a statement that an emergency exists at the plant; 3) Reference to REP specific emergency information; and, 4) closing statement asking that the affected and potentially affected population stay tuned for additional information or that the population tune to another station for additional information.

The procedures for siren activation must be demonstrated up to the point of actual activation. Actual siren activation may be simulated. In addition, the indoor warning

system (tone alert radios) and weather radio activation may be simulated.

**Evaluation criterion 5.a.3. – Activation of Prompt Alert and Notification System:**

To be demonstrated only if there is a failure in the primary alert and notification sequence.

**Evaluation criterion 5.b.1. – Emergency information and instructions for the Public and the Media:** All subsequent protective action instructions provided to the public after the initial notification should be disseminated in a timely manner. Messages should be all inclusive by including previously identified protective action areas as well as new areas. Procedures must be demonstrated, if appropriate, to ensure that EAS messages and Public Information messages containing Protective Action Recommendation(s) (PARs) that have been changed are rescinded and not repeated by the EAS station. In addition, procedures must be demonstrated to ensure that EAS messages and Public Information messages containing current PARs are repeated at pre-established intervals.

Media briefings will be conducted at the Joint Public Information Center (JPIC) located in Morrison, Illinois. Press Releases will be prepared at the State EOC and printed for distribution at the JPIC.

The Emergency Information hotline (formerly rumor control, now Public Inquiry) staff at the State EOC must demonstrate this criterion. Each staff member must demonstrate the capability to respond to an average of at least six calls per hour throughout the emergency phase. Calls will be made on the phone; however, use of the Internet is allowed and a printout of the call and response must be provided to the evaluator.

The staff should demonstrate the capability to monitor the contents of broadcast media coverage of the emergency situation. Any trends in rumors identified by Public Inquiry staff (formerly rumor control) must be addressed by the State EOC in news releases or by the Joint Public Information Center (JPIC) in media briefings. Therefore, appropriate demonstration will require close coordination between utility staff and state public information staff at the Joint Public Information Center. At least one message should address a false or misleading rumor for which measures should be taken.

Successful demonstration of this evaluation criterion will close the Area Requiring Corrective Action (51-00-12-A-01) identified during the 2000 Quad Cities exercise.

**Evaluation Area 6: Support Operations Facilities**

There were no criterion from this Evaluation Area demonstrated during this exercise as there were no out of sequence events.

## Appendix 4 - Exercise Scenario

This appendix contains a summary of the simulated sequence of events that was used as the basis for invoking emergency response actions by OROs in the Quad Cities Nuclear Power Station exercise conducted July 10, 2002.

This original exercise scenario was submitted by Exelon on May 10, 2002, with revisions on June 4, 2002, and approved by FEMA Region VII on July 8, 2002.

During the exercise, controllers from Exelon provided "inject messages," containing scenario events and/or relevant data, to those persons or locations who would normally receive notification of such events. Additionally, the Clinton County Coordinator used the exercise to provide training to his staff. Inject messages was the method used for invoking response actions by OROs.

The times indicated are from the scenario. Actual times of the exercise events can be found in Table 1 of this report.

### SCENARIO SUMMARY:

#### **Emergency Plume Phase**

##### July 10, 2002

- 0745 Initial Conditions were established. Commence the 2002 QCNPS Exercise.
- 0837 The U-1 DG will experience a crankcase explosion. The DG will trip and fire alarms will sound in the Control Room. The DG will be damaged and the room will be filled with smoke. The DG was running for a 24 hour surveillance run and was connected to the bus. When the DG tripped the DG feed breaker to the bus will open. The bus will remain powered from the offsite source. An ALERT is declared per EAL HA5 (Fire or Explosion Affecting Plant Operations).
- 0840 Condensate Pump will trip on instantaneous overcurrent. This will cause the standby condensate pump to auto start.
- 0855 1B Rx Vessel NR Lvl Indication will fail low. There will be no effect on any operating equipment or on the unit.
- 0915 Governor declared a State of Emergency
- 1004 A Hi Vibration alarm on the Main Turbine will come on which will cause an auto trip of the main turbine. The reactor will fail to fully SCRAM automatically and manually; half the control rods remain withdrawn. As result of the transient, fuel damage will increase and main steam line radiation will begin to increase. The 1A CRD pump trips. Following actuation of the Standby Liquid Control the 1A pump fails to start. When the MS Line Hi-Hi radiation alarm sound the operator

will close the Main Steam Isolation Valve (MSIVs) and the D MSIVs will fail to close. This will result in the loss of the Containment barrier. A SITE AREA EMERGENCY should be declared based on a Failure of the reactor to trip automatically or manually per EAL MS3.

- 1120 - A Main Steam (MX) Line break occurs on the turbine deck (D ring). Additional fuel damage occurs with a resultant increase in Dry Well and MS Line radiation monitors. Dry Well Radiation Monitors will increase to >1750 R/hr and MS Line Radiation Monitors will increase to > HI HI level. A GENERAL EMERGENCY based on EAL FG1 with the loss of all three fission product barriers with a release in progress. All appropriate notifications should be made. Protective Action Recommendations should be to evacuate sub-sectors Illinois 1, 2, 3, 6 and Iowa 1, 2, 3, 4, 5, 6. Entry into Severe Accident Management Guidelines (SAMG) may occur at this time.
- 1215 The wind shifts from a base of 0 degrees to 85 degrees. The shift will take about 10 minutes to complete based on the 15 minute average upper wind direction. Command and Control should issue a NARS notification that recommends evacuating additional sub-areas.
- 1330 There is a 48-hour time jump to Friday, July 12, 2002, for the state of Iowa, Clinton and Scott Counties.
- 1400 Reentry/Recovery Phase
- 1630 **EXERCISE TERMINATED**