Quad Cities Generating Station

After Action Report / Improvement Plan

Exercise Date – July 12, 2022

Radiological Emergency Preparedness (REP) Program

FEMA

Published October 25, 2022

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After Action Report / Improvement Plan (AAR/IP)

Published October 25, 2022

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EXECUTIVE SUMMARY

On July 12, 2022, the Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Region 7 conducted a biennial Plume exercise for the Quad Cities Generating Station (QCGS).

In addition to the July 12, 2022 exercise, Out-Of-Sequence (OOS) demonstrations/drills were conducted with five of the support entities listed in Section 3.3.3. The purpose of both the exercise and the OOS drills was to assess the level of State and local preparedness in responding to a radiological emergency. The exercise and drills were held in accordance with FEMA's policies and guidance for the exercise of State and local radiological emergency response plans and procedures.

The previous biennial QCGS exercise was conducted on June 29, 2021. The qualifying emergency preparedness exercise was conducted on March 26, 1986.

FEMA wishes to acknowledge the efforts of all who participated in and supported the exercise and drills. Along with the State of Iowa, Scott County and Clinton County participated along with the various State and local organizations. The staff of Constellation Energy should also be commended for their work on the training, scenario development, and exercise preparation.

Protecting the public health and safety is the full-time job of some exercise participants and an additionally assigned responsibility for others. Numerous individuals have willingly sought this responsibility by volunteering to provide vital emergency services to their community. The cooperation and teamwork of all the participants were evident during this exercise. Thanks to all who participated in this community service.

Cooperation and teamwork of all the participants were evident during this exercise. The State of Iowa and local organizations demonstrated knowledge of their emergency response plans and procedures and adequately implemented them.

This report contains the evaluation of the biennial full-scale exercise and associated OOS demonstrations, and in summary:

FEMA observed a Level 1 Finding (including three evaluation criteria) for the Clinton

County Emergency Operations Center during the plume exercise. In addition to the Level 1 Finding, two Level 2 Findings and a Planning Issue were observed at locations during the plume exercise, and one Level 2 Finding was also discovered during OOS demonstrations. The Level 2 Findings for the Clinton County Emergency Operations Center and Medic EMS - DeWitt were redemonstrated during the exercise/drill and closed. The Level 1 Finding was corrected and closed on October 6, 2022.

The final Protective Action Decision (PAD) during the emergency plume phase was the evacuation (simulated) of portions of Clinton and Scott Counties in Iowa. This final PAD directed residents in portions of both Clinton and Scott Counties in Iowa, to evacuate.

In Clinton County, sub-areas 1, 3, and 5 were directed to evacuate. In Scott County, sub-area 2 was also directed to evacuate. Approximately 5,216 Iowa residents were affected by the protective action decisions.

A total of 64 jurisdictions, agencies and organizations participated in the plume exercise and out of sequence demonstrations.

ACRONYMS & ABBREVIATIONS

Acronym	Meaning
AAR/IP	After Action Report/Improvement Plan
DHS	Department of Homeland Security
EAL	Emergency Action Level
EAS	Emergency Alert System
EMA	Emergency Management Agency
EMD	Emergency Management Director
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EPZ	Emergency Planning Zone
EW	Emergency Worker
FCP	Forward Command Post
FEMA	Federal Emergency Management Agency
GE	General Emergency
GIS	Geographic Information System
HSEMD	Iowa Homeland Security & Emergency Management Department
IDPH	Iowa Department of Public Health
IP	Improvement Plan
JIC	Joint Information Center
KI	Potassium Iodide
NARS	Nuclear Accident Reporting System
NOUE	Notification of Unusual Event
OOS	Out of Sequence
ORO	Off-Site Response Organization
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PIO	Public Information Officer
POC	Point of Contact
PPX	Plume Exercise
QCGS	Quad Cities Generating Station
REP	Radiological Emergency Preparedness
RPM	REP Program Manual
SAE	Site Area Emergency
SEOC	State Emergency Operations Center
SOP	Standard Operating Procedure
TACP	Traffic and Access Control Point

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name
Quad Cities Generating Station (QCGS)

Type of Exercise
Plume (PPX)

Exercise Date
July 12, 2022

Program
Department of Homeland Security/FEMA Radiological Emergency Preparedness

Scenario Type
Radiological Emergency

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1.3 Participating Organizations

The following jurisdictions and agencies participated in the 2022 QCGS exercise:

State Jurisdictions or Agencies:
Iowa Department of Agriculture
Iowa Department of Aging
Iowa Department of Environmental Health and Safety
Iowa Department of Homeland Security and Emergency Management
Iowa Department of Human Services Commerce – Utilities Division
Iowa Department of Inspections and Appeals
Iowa Department of Natural Resources
Iowa Department of Public Health
Iowa Department of Public Safety
Iowa Department of Transportation
Iowa Governor's Office
Iowa National Guard
Iowa State Patrol
Iowa State University - Environmental Health and Safety
University of Iowa - State Hygienic Lab

Risk Jurisdictions or Agencies:
City of Clinton
City of Comanche
Clinton County Auditor's Office
Clinton County Board of Supervisors
Clinton County Communications
Clinton County Community Emergency Response Team (CERT)
Clinton County Emergency Management Agency
Clinton County Engineer
Clinton County GIS
Clinton County Law Enforcement Center
Clinton County Public Health
Clinton County Public Information Officer
Clinton County Secondary Roads Department
Clinton County Sheriff's Office
Clinton Police Department
Mississippi Basin Education Agency
Scott County Administrator
Scott County Board of Supervisors
Scott County Emergency Communications
Scott County Emergency Management Agency
Scott County Facility and Support Services
Scott County GIS

Scott County Health Department
Scott County Human Resources
Scott County Information Technology
Scott County Secondary Roads
Scott County Sheriff's Office
Quad Cities CERT

School Districts:
North Scott School District
Pleasant Valley School District

Support Organizations or Agencies:
Genesis – Davenport
Genesis – DeWitt
Medic EMS – Davenport
Medic EMS – DeWitt

Private Organizations:
American Red Cross
Constellation Energy
ICF International (Federal Contractor)
Salvation Army

Federal Jurisdictions or Agencies:
Federal Emergency Management Agency
National Weather Service – Davenport Office
Nuclear Regulatory Commission

SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

Quad Cities Generating Station's (QCGS) Emergency Plan describes the capability to respond effectively to a radiological emergency at the site, and provides a detailed description of interaction with Federal, State, and local government agencies as well as private organizations. The Emergency Plan provides for continuous emergency preparedness including the conduct of an annual exercise and preparatory drills.

The purpose of the July 12, 2022 exercise was to activate and evaluate portions of the Iowa State Radiological Emergency Response Plan, the Scott and Clinton County emergency plans, and associated implementing procedures in accordance with 44 CFR 350. Furthermore, these exercises and drills tested the QCGS emergency response community's ability to assess and respond to emergency conditions and coordinate efforts with other agencies for protection of the health and safety of the public. The conduct and evaluation of this exercise provided additional training for emergency response organization personnel and a means to further enhance QCGS's emergency response capability.

The scenario was designed to provide the basis for a simulated radiological accident initiated bya Radiological Plume event at QCGS through which the capabilities and effectiveness of the emergency response plans can be evaluated. The scenario was used by the exercise controllers and evaluators as the control mechanism for the conduct of the exercise.

QCGS Emergency Planning personnel developed the scenario, and it was reviewed and approved by FEMA. The scenario, as driven by the QCGS Control Room Simulator and injects, depicted a simulated sequence of events which resulted in escalating conditions of sufficient magnitude to warrant mobilization of State and local agencies to respond to the simulated emergency. Whenever practical, the exercise incorporated provisions for "free play" on the part of the participants.

2.2 Exercise Objectives, Capabilities, and Activities

Quad Cities Generating Station (QCGS) exercises and drills are conducted to test and provide the opportunity to evaluate emergency plans, associated implementing procedures, facilities, and equipment. This exercise tested the QCGS offsite response organizations' ability to assess and respond to emergency conditions as well as coordinate efforts with other agencies for protection of the health and safety of the public.

The QCGS Emergency Preparedness Exercise and Drill Program objectives are based on the Federal requirements delineated in 44 CFR 350, as well as on the priorities and procedures detailed in the emergency preparedness plans for the State of Iowa as well as Scott and Clinton Counties. Additional guidance provided in NUREG-0654/FEMA-REP-1, NUREG-0696, and NUREG-0737 was used in developing these objectives.

The overall objective of the exercise was to evaluate the integrated capability of a major portion of the basic elements existing within the offsite emergency plans and emergency response organizations. The exercise tested the implementation of the plans and procedures of participating agencies, along with the capability of these agencies to conduct operations in accordance with these plans. This objective is further defined by the criteria evaluated for each participating location.

The exercise included full participation by the State of Iowa and Scott and Clinton Counties, as well as other associated offsite response organizations.

A summary of the specific criteria evaluated for each of the participating organizations is listed in Table 3.1.

2.3 Scenario Summary

The following is the scenario summary provided by Quad Cities Generating Station Emergency Preparedness personnel and approved by Department of Homeland Security/FEMA for use during the exercise:

EXERCISE TIMELINE/SUMMARY (June 12, 2022)

Unit 1 Initial Conditions	**Unit 2 Initial Conditions**
▪ Unit 1 at Full Power. ▪ 638 days online – Online Risk: GREEN ▪ **Equipment OOS** o U1 SBO is OOS o 6B CRD Flow Control Valve ▪ **Protected Pathway** – 1A CRD, FPC, RBCCW ▪ Online Fire Risk: GREEN ▪ **Major evolutions** o MMD to continue major overhaul of the Unit 1 SBO. Work is expected to be completed in two days. o 6B CRD Flow Controller repair of mechanical failure of the FIC. Work is expected to be completed in approximately 8-hours.	▪ Unit 2 at 75% Power ▪ 105 days online – Online Risk: ACTION GREEN ▪ **Equipment OOS** – U2 RAT OOS for troubleshooting (U2 Aux Transformer is powering U2) ▪ **Protected Pathway** – FPC, RBCCW ▪ Online Fire Risk: BLUE ▪ **Major evolutions** – None. **Weather Forecast:** Thunderstorms possible in the morning, with overcast skies throughout the day. High near 72 degrees with wind from the South.

T=0	0800	**Start Scenario** Wind direction – from 180 degrees, 9.0 mph, Stability Class D
T+5	0805	**EVENT #1 – Equipment Malfunction: 1A TBCCW Pump Trip** Crew starts the standby (1B) TBCCW Pump. NSO should verify systems temperatures and pressures are steady and in band. NSO should report 1A TBCCW Pump is in Trip-Free condition with no obvious reason for the trip. When dispatched to MCC 15-1, EO will report the 1B TBCCW Pump breaker is in the trip position. EO dispatched to check Unit 1 TBCCW system verifies the standby pump has been started, and then states The TCV is controlling temperature without any issues. The 1B TBCCW Pump post- start checks are sat." **IP-1**

T+15	0815	**EVENT #2 – UNUSUAL EVENT: MU1 - Lightning Strike and Loss of U1 Reserve Aux Transformer (T12) and Division 1 ECCS Bus 13-1** A lightning strike onsite will cause the U1 RAT (Transformer T-12) trip. This electrical transient causes Bus 13-1 to trip and the ½ EDG to autostart. (T=0 for UE-MU1) ▪ The team will verify U1 EDG is running properly, and that power is available to ECCS buses. ▪ NSO dispatches an Equipment Operator (EO) to investigate the trip of the RAT. The EO reports that they are unable to determine the cause of the trip and requests OAD assistance. (NOTE: Unit 1 RAT (Transformer 12) will have a wiring fault inside the 901-29 panel.) **IP-2.0** ▪ Unit Supervisor (US) directs power reduction to < 2511 MWt within one-hour of losing the RAT which will lead to stopping one RFP and one CP/CBP per QCOP 3200-05 ▪ Loss of Bus 13-1 will cause RB Vent to trip and SBGT to start. A team will be dispatched to investigate B13-1 trip. **IP-2.1** *ERO Actions* SM/SED should declare NOUE (MU1) due to Loss of ALL power capability to unit ECCS buses for > 15 minutes. SM/SED will classify the event and make necessary state/local notifications using EONs. At the discretion of the SM/SED, Everbridge will be used to notify the ERO of the NOUE (no response to facilities is necessary) OR inform the ERO to respond to the facilities. PA announcements will be made, and NRC ENS notification will be performed.
T+45	0845	**EVENT #3 – Equipment Malfunction: Loss of Condenser Vacuum due to a Condenser Boot Seal Failure** The condenser boot seal will fail causing vacuum to rapidly decrease. The Crew will investigate and respond using QOA 3300-02 and will perform an Emergency Power Reduction. **IP-3**

~T+50	~0850	**EVENT #4 – ALERT: MA3 - Reactor Scram w/ ATWS** (Release Status: No Release) Condenser leak will cause the crew to SCRAM on condenser backpressure. The exact scram time will vary based on operator response. Only half the rods insert due to a half Core Hydraulic ATWS. (T=0 for ALERT-MA3). The crew will take ATWS actions to lower power and shutdown the reactor. **IP-4.0** ATWS causes fuel damage. Radiological dose rates in the Drywell and plant will begin to slowly rise. MSIVs will close due to high condenser vacuum (Main Steam Line High Flow fuse has blown, which caused the spurious Group I isolation). ERVs will lift to control pressure, dumping the radioactive gases and iodine from the damaged fuel into the torus. Torus area radiation levels will begin to rise. Drywell radiation levels will begin to rise as the gases in the torus migrate into the drywell atmosphere. RCIC (and possibly HPCI) will be used to control pressure. Gamma radiation levels in the RCIC cubicle will begin to rise due to the increased fission product gases in the steam system. There will be no rise in beta dose rates in the RCIC room, since all radioactive gases are contained within the piping. The crew will notify RP and enter QCOA 1800-01, Area High Radiation, to identify the cause and establish radiological controls. If RP performs contamination surveys, low levels of loose surface contamination will be indicated on horizontal surfaces. **IP-4.1** One train of SBLC will fail. As Equipment Operator sent to investigate the failed SBLC pump, wait 5-minutes and report: "The SBLC pump appears to have tripped on overcurrent. There are no obvious signs of damage to the SBLC pump's motor. I recommend having EMD investigate the breaker" **IP-4.2** There is no radioactive release to the environment. *ERO Actions* Regardless of SM/SED decision to activate the ERO at the UE, Command and Control is expected to remain with the MCR/SIM for this classification. The SM/SED should declare ALERT (MA3) within a few minutes of the ATWS. If the ERO was not activated at the NOUE, then Everbridge will be used to request the ERO activate the emergency response facilities. The SM/SED will classify the event and make necessary state/local notifications using EONs. PA announcements will be made, and NRC ENS notification will be performed.
T+55	0855	**EVENT #5 Equipment Malfunctions - Failure of the 6A CRD Flow Control Valve** NSO reports indication of lowering CRD Flow and rising CRD Charging Pressure. ▪ NSO dispatches EO to investigate who reports the instrument airline to the 6A is broken. ▪ ERO should dispatch team from TSC/OSC to investigate and repair the 6A CRD Flow controller. **IP-5.0**

T+105	0945	**EVENT #6 – SITE AREA EMERGENCY: FS1 - RCIC Non-Isolable Steam Line Break** RCIC Non-Isolable Steam Line Break with a failure of the isolation valves to shut. Secondary Containment temps and rads rise (RCIC Cubicle). RCIC room temps and rads are greater than Max Safe. T=0 for SAE – FS1 (RC4.1/RC4.3 and CT6.1/CT6.3) If EO/RP is sent to RCIC room, then wait 5 minutes and receive report "The Unit 1 RCIC/Core Spray Room is flooded with steam. All personnel are clear of the area." **IP-6.0** ▪ If EO is sent to close the RCIC-17, wait 5 minutes "The breaker for the RCIC 17 valve is open". Wait 5 minutes and EO reports The RCIC 17 is mechanically bound. I'm unable to close the valve." **IP-6.1**
T+110	0950	**EVENT #7 – RADIOLOGICAL RELEASE** Based on the RCIC Non-Isolable steam line break (upstream of the trip throttle valve), the Reactor Building will begin to fill with radioactive fission gases and iodine from the damaged fuel. A Radioactive Release will begin through Pathway F (RCS=>RB=>SBGT=>Chimney=>Env). NOTE: When RCIC steam line breaks, the RB pressure will be positive. The ERO should pursue validation of a possible ground level radioactive release by dispatching an onsite field team. Radiation levels will be as read in all locations with the exception of gamma radiation levels directly under the plume. The wind direction will be from 200 degrees. Onsite field team will confirm/detect no ground level release. **IP-7.0** *ERO Actions* ▪ TSC should declare SITE AREA EMERGENCY (FS1) due to Potential Loss of Reactor Coolant System (RC4.1/RC.4.3) and Loss of Containment (CT6.1/CT.6.3) ▪ EOF will notify state/local agency using EONs. ▪ TSC will notify NRC using ENS. ▪ Station Assembly and Accountability will be simulated ▪ Actions should be taken to mitigate the radiological release.
T+170	1050	**EVENT #8 – U1 EDG Trips, Loss of ECCS Bus (Concurrent EAL – MS1)** U1 EDG which is powering Bus 14-1 seizes, resulting in a loss of both ECCS Busses. This is a concurrent EAL MS1. Crew should begin determining how long ECCS buses will remain de- energized and start 1-hour timeclock for General Emergency escalation. ▪ NSO dispatches EO to investigate trip of the U1 EDG and reports that the U1 EDG has mechanically failed and oil is all over the room. MMD assistance is requested. **IP-8.0** ▪ NSO attempts to crosstie 14-1 and 24-1 and the breaker at bus 14-1 fails. EO sent to investigate will report "The breaker is tripped and shows signs of charring and smells of burnt insulation. The breaker is also misaligned in the cubicle, and it looks like it will be difficult to remove. There is no sign of a fire though." **IP-8.1** ▪ US enters QCOA 6100-04, STATION BLACKOUT, and directs actions including 125 VDC load shed per QOA 6900-07. ▪ NSO maintains pressures and level HPCI or relief valves. ▪ Actions should be taken to restore power to ECCS busses.

T+195	1115	**EVENT #9 – GENERAL EMERGENCY: MG1 - ECCS Buses Not Recoverable within 1 hour (MG1)** MMD Crew should determine that EDG cannot be restored within 1 hour. Attempts to manually turnover the motor will indicate a seizure and several oil pipes are ruptured. Estimated repair time is at least 12 hours. T=0 for General Emergency (MG1) is when control message is delivered that EDG damage will take more than 1 hour to repair. It will take more than 1 hour to restore at least one unit ECCS bus. **IP-9.0** *ERO Actions* ▪ TSC should declare General Emergency (MG1) ▪ EOF will notify state/local agency using EONs. TSC will notify NRC using ENS.

SUMMARY OF EXPECTED EALs and PAR - Wind from 180 degrees

Time	Event	Release	Affected Counties / Sub-Areas
0815	Unusual Event (EAL MU1)	None	None
0850	Alert (EAL MA3)	None	None
0945	Site Area Emergency (EAL FS1)	None	None
1115	General Emergency (EAL MG1)	Yes	**IOWA (Evacuate):** 1,3,5- Clinton County 2 – Scott County

SECTION 3: ANALYSIS OF CAPABILITIES

3.1 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 12, 2022 exercise; as well as the five out-of-sequence drills held before the exercise.

The exercise/drills tested the offsite emergency response capabilities of the State and local governments within the Iowa portion of the 10-mile plume emergency planning zone (EPZ) surrounding the QCGS.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of the criteria delineated in FEMA's Radiological Emergency Preparedness Program Manual, dated January 2016.

3.2 Summary Results of Exercise Evaluation

The matrix presented in Table 3.2 presents the status of all exercise criteria, which were scheduled for demonstration during this exercise, at all participating jurisdictions and functional entities. Exercise criteria are listed by number and the demonstration status of those criteria is indicated using the following letters:

1. **M – Met**
   An observed action, behavior, procedure, and/or practice that met the exercise criteria.
2. **1 – Level 1 Finding**
   An observed or identified inadequacy of organizational performance in an exercise that could cause a determination 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 (NPP).
3. **2 – Level 2 Finding**
   An observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety.
4. **P – Plan Issue**
   An observed or identified inadequacy in the offsite response organization's (ORO's)

emergency plan/implementing procedures, rather than that of the ORO's performance.

3.2 Summary of Exercise Evaluation Table

DATE: July 12, 2022 SITE: **Quad Cities Generating Station (Iowa)** *M: Met,1: Level 1, 2: Level 2,* *P: Plan Issue*	**REP Criteria Number**	IA State EOC	IA Dose Assessment	IA Forward Command Post	IA Field Team Coord.	IA Field Team Blue	IA Field Team Green	Iowa JIC	Clinton County EOC	Scott County EOC
Emergency Operations Management										
Mobilization	1a1	M	M	M	M	M	M		M	M
Facilities	1b1	M		M						
Direction & Control	1c1	M		M					M	M
Communications	1d1	M	M	M	M	M	2	M	M	M
Equipment and Supplies	1e1	M	M	M	M	M	M	M	1	M
Protective Action Decision Making										
EW Exposure Control Decisions	2a1		M						M	M
PARs	2b1		M							
PADs for the General Public	2b2	M	M						M	M
PADs for Disabled/Functional Needs	2c1								M	M
Ingestion PADs	2d1									
Relocation, Reentry, and Return Decisions	2e1									
Protective Action Implementation										
EW Exposure Control Implementation	3a1			M	M	M	M		1	M
Implementation of KI Decision for Public/Institutionalized	3b1								1	M
PAD Implementation for Disabled/Functional Needs	3c1									
PAD Implementation for Schools	3c2									
TACP Implementation/Establishment	3d1	M		M					M	M
Impediments to Evacuation	3d2	M		M					M	M
Implementation of Ingestion PADs	3e1									
Ingestion Strategies and Information	3e2									
Implementation of Relocation, Reentry, and Return Decisions	3f1									
Field Measurement and Analysis										
Field Team Management/Coordination	4a2				P					
Field Team Operations (Collection and Sampling)	4a3					M	M			
Ingestion Field Team Measurements and Sampling	4b1									
Laboratory Operations	4c1									
Emergency Notification and Public Info										
Initial Alert and Notification	5a1								2	M
Backup Alert and Notification	5a3									
Exception Area Alerting	5a4									
Subsequent Public Information	5b1	M						M	M	M
Support Operations/Facilities										
Reception Center Operations	6a1									
EW Monitoring and Decontamination	6b1									
Congregate Care	6c1									
Contaminated Injured Individuals Transport and Medical Treatment	6d1									

DATE: July 12, 2022 SITE: **Quad Cities Generating Station (Iowa)** *M: Met,1: Level 1, 2: Level 2,* *P: Plan Issue*	**REP Criteria Number**	Clinton County LE Center	Genesis Davenport	Genesis DeWitt	Medic EMS - Davenport	Medic EMS - DeWitt	NWS Davenport
Emergency Operations Management							
Mobilization	1a1						
Facilities	1b1						
Direction & Control	1c1						
Communications Equipment	1d1						
Equipment and Supplies	1e1		M	M	M	M	
Protective Action Decision Making							
EW Exposure Control Decisions	2a1						
PARs	2b1						
PADs for the General Public	2b2						
PADs for Disabled/Functional Needs	2c1						
Ingestion PADs	2d1						
Relocation, Reentry, and Return Decisions	2e1						
Protective Action Implementation							
EW Exposure Control Implementation	3a1	M	M	M	M	2	
Implementation of KI Decision for Public/Institutionalized	3b1	M					
PAD Implementation for Disabled/Functional Needs	3c1						
PAD Implementation for Schools	3c2						
TACP Implementation/Establishment	3d1						
Impediments to Evacuation	3d2						
Implementation of Ingestion PADs	3e1						
Ingestion Strategies and Information	3e2						
Implementation of Relocation, Reentry, and Return Decisions	3f1						
Field Measurement and Analysis							
Field Team Management/Coordination	4a2						
Field Team Operations (Collection and Sampling)	4a3						
Ingestion Field Team Measurements and Sampling	4b1						
Laboratory Operations	4c1						
Emergency Notification and Public Info							
Initial Alert and Notification	5a1						M
Backup Alert and Notification	5a3						
Exception Area Alerting	5a4						
Subsequent Public Information	5b1						
Support Operations/Facilities							
Reception Center Operations	6a1						
EW Monitoring and Decontamination	6b1						
Congregate Care	6c1						
Contaminated Injured Individuals Transport and Medical Treatment	6d1		M	M	M	M	

3.3 Criteria Evaluation Summaries

3.3.1 Iowa Jurisdictions or Facilities

3.3.1.1 Iowa State Emergency Operations Center (SEOC)

The Iowa State Emergency Operations Center (SEOC), located in Johnston, IA had fourteen (14) State agencies participate in the July 12, 2022, exercise.

The Public Information team worked cohesively together ensuring each team member had good situational awareness and accurate information to provide to the public. Public Inquiry staff fielded many calls from the public with calm and poise throughout the exercise.

All nine (9) criteria at this location were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.b.2, 3.d.1, 3.d.2, 5.b.1.
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.2 Iowa Dose Assessment

Iowa Dose Assessment is housed in the State EOC with Iowa HSEMD and is staffed by the Iowa Department of Public Health.

During the demonstration, there was good communication between the IDPH Radiation Bureau Chief and the Iowa (HSEMD) Director during briefings with the counties. Also, there was great

use of tracking release information by the dose assessment group.

All six (6) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.a.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.3 Iowa Forward Command Post

The Iowa Forward Command Post (FCP), located in Stockton, IA had seven (7) State agencies participate in the July 12, 2022, exercise.

Agencies at the FCP utilized two unique communication tools to allow a multi-agency response to work together and communicate seamlessly among different agency-specific communication platforms.

All seven (7) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, 3.d.1, 3.d.2
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None

e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.4 Iowa Field Team Coordination

Iowa Field Team Coordination is demonstrated at the Forward Command Post in Stockton, IA. Eight (8) state agencies were represented at this location.

The Radiological Emergency Response Team Coordinator (RERTC), Field Team Coordinator (FTC), and Radio Operator routinely collaborated to evaluate meteorological and radiological conditions to determine optimal use of the Field Monitoring Teams (FMT) to locate and characterize the plume and determine adequate background areas for FMTs to count filter media. Additionally, following the public evacuation protective action decision, the RERTC and FTC coordinated with the Iowa State Patrol to determine the best locations for the FMTs to continue performing their function while avoiding the outgoing traffic.

Four (4) of the five (5) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. A planning issue was identified for criteria 4.a.2. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.a.1, 1.d.1, 1.e.1, 3.a.1
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: 4.a.2
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.5 Iowa Field Team Blue

Field Team Blue is one of the Field Monitoring Teams (FMTs) dispatched from the Forward Command Post (FCP) in Stockton, IA.

The use of the RADRESPONDER Application by ISU and IDPH for tracking Field Monitoring Resources, documentation of survey results and transmission of information was noteworthy.

All five (5) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 4.a.3
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.6 Iowa Field Team Green

Field Team Green is one of the Field Monitoring Teams (FMTs) dispatched from the Forward Command Post (FCP) in Stockton, IA.

Four (4) of the five (5) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. A Level 2 issue was identified for criteria 1.d.1. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.a.1, 1.e.1, 3.a.1, 4.a.3
b. LEVEL ONE: None
c. LEVEL TWO: 1.d.1
d. PLAN ISSUES: None

e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.7 Iowa Joint Information Center

The Iowa Joint Information Center (JIC) function is housed at the Constellation JIC facility in Warrenville, IL. Representatives from Iowa HSEMD travel to this location in the event of an incident at QCGS.

The HSEMD staff actively engaged with the administrative hotline participants to verify county and state precautionary and protective actions and to verify rumors and trends prior to media briefings. This allowed the JIC personnel to be well prepared to deliver timely and accurate emergency information during media briefings. The Iowa PIO accurately answered all media questions with only one question requiring a follow-up answer which was quickly provided.

All four (4) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.d.1, 1.e.1, 5.b.1
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.2 Risk Jurisdictions or Facilities

3.3.2.1 Clinton County Emergency Operations Center (EOC)

The Clinton County EOC located in Clinton, IA had twenty eight (28) participating agencies during the July 12, 2022 exercise.

The Clinton County EOC demonstrated effective use of GIS mapping displays using colors and shading to depict downwind affected sectors and evacuated subareas. The evacuated areas were clearly marked with cross-hatching and the word "Evacuate".

Ten (10) of the thirteen (13) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. Issues were identified under criteria 1.e.1, 3.a.1 and 3.b.1 which resulted in an overall Level 1 Finding for the Clinton County Emergency Management Agency. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.a.1, 1.c.1, 1.d.1, 2.a.1, 2.b.2, 2.c.1, 3.d.1, 3.d.2, 5.a.1, 5.b.1
b. LEVEL ONE: 1.e.1, 3.a.1, 3.b.1 (corrected and closed on October 6, 2022)
c. LEVEL TWO: 5.a.1 (redemonstrated and closed during the exercise)
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: 3.a.1 (51-21-3a1-L2-001)
g. PRIOR ISSUES - UNRESOLVED: None

3.3.2.2 Scott County Emergency Operations Center (EOC)

The Scott County EOC, located in Davenport, IA, had nineteen (19) participating agencies during the July 12, 2022 exercise.

The EOC Manager and staff were very proactive in utilizing SOPs to prepare for SAE and GE before they were declared. Scott County Sheriff's Department representative was well familiar with how to prioritize and strategize staffing of Traffic and Access Control Points through collaboration with state and multiple law enforcement agencies for 100 percent coverage.

The radiological briefing conducted by the Dosimetry Control Officers (DCOs) provided detailed and thorough verbal and visual examples of wear and use of dosimetry, reading and reporting exposure limits to include turn back values, and post mission redeployment requirements

All thirteen (13) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.a.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.d.1, 3.d.2, 5.a.1, 5.b.1
c. LEVEL ONE: None
d. LEVEL TWO: None
e. PLAN ISSUES: None
f. NOT DEMONSTRATED: None
g. PRIOR ISSUES - RESOLVED: 3.a.1 (51-21-3a1-L2-002)
h. PRIOR ISSUES - UNRESOLVED: None

3.3.3 Support Jurisdictions or Facilities

3.3.3.1 Clinton County Law Enforcement Center *(evaluated out-of-sequence on June 9, 2022)*

The Clinton County Law Enforcement Center (CCLEC) is a joint facility that houses the Clinton County EOC, 911 call center, jail, and law enforcement offices. This is an impressive new facility that utilizes current technology for communications and situational awareness between agencies.

Both criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. This was a redemonstration for the out-of-sequence

event in 2021. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 3.a.1, 3.b.1
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: 3.a.1 (51-21-3a1-L2-003), 3.b.1 (51-21-3b1-L2-004)
g. PRIOR ISSUES - UNRESOLVED: None

3.3.3.2 Genesis Davenport *(evaluated out-of-sequence on June 15, 2022)*

All three (3) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.e.1, 3.a.1, 6.d.1
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.3.3 Medic EMS - Davenport *(evaluated out-of-sequence on June 15, 2022)*

All three (3) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.e.1, 3.a.1, 6.d.1
b. LEVEL ONE: None
c. LEVEL TWO: None

d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.3.4 Genesis DeWitt *(evaluated out-of-sequence on June 16, 2022)*

All three (3) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.e.1, 3.a.1, 6.d.1
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.3.5 Medic EMS - DeWitt *(evaluated out-of-sequence on June 16, 2022)*

All three (3) criteria for this function were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 1.e.1, 3.a.1, 6.d.1
b. LEVEL ONE: None
c. LEVEL TWO: 3.a.1 (redemonstrated and closed during the drill)
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.3.6 National Weather Service – Davenport Office

The National Weather Service – Davenport Office is the source of EAS messages for the QCGS EPZ. They demonstrated with a very knowledgeable staff and well defined and effective procedures.

The one (1) criterion for this function was adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. In summary, the status of DHS/FEMA criteria for this location is as follows:

a. MET: 5.a.1
b. LEVEL ONE: None
c. LEVEL TWO: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

SECTION 4: CONCLUSION

Based on the results of this exercise and the associated out-of-sequence drills, the offsite radiological emergency response plans and preparedness for the State of Iowa and affected local jurisdictions are deemed adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency.

Therefore, 44 CFR Part 350 approval of the offsite radiological emergency response plans and preparedness for the State of Iowa, site-specific to the Quad Cities Generating Station, will remain in effect.

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APPENDIX A: EXERCISE TIMELINE

The following graphic represents the times recorded for various activities and decisions at each of the evaluated locations during the Quad Cities Generating Station (QCGS) exercise.

Note: A disparity in times is normal given the need for message transmissions and decision-making at the various locales. The times are recorded as dictated by the scenario.

EXERCISE TIMELINE - RVII - QCGS 2022											
DATE: July 12, 2022		QUAD CITIES GENERATING STATION (QCGS) - IOWA LOCATIONS									
		Time that notifiction was actually received or action was taken									
Emergency Classification Level or Event	Time Utility Declared	SEOC	DOSE ASSESSMENT	FORWARD COMMAND POST	FIELD TEAM COORDINATION	FIELD TEAM BLUE	FIELD TEAM GREEN	NWS	CLINTON County EOC	SCOTT County EOC	JIC
Unusual Event (NOUE)	0821	0826	0837					0830	0829	0826	
Alert (ALERT)	0854	0905	0904	0904	0904	0906	0906	0903	0859	0858	0854
Site Area Emergency (SAE)	0956	1010	1011	1023	1024	1032	1032	1004	1010	1007	0956
General Emergency (GE)	1126	1136	1138	1150	1152	1216	1216	1138	1135	1134	1126
Radiation Release Started		1010	1015	1023	1024	1032	1032		1010	1024	1018
Radiation Release Terminated											
Facility Declared Operational		0915		0950	0950	1008	1012		0933	0929	1031
Governor Declared State of Emergency		0925		0925	0925			0927	0927	0927	
Precautionary Actions											
School Early Dismissal/Closure										1025	1107
Water/Rail Restrictions		1058							1058	1058	1102
Air Restrictions		1010	1031	1023	1024				1025	1025	
Park Closures		0928	0940	1020	0942				0955	1025	1103
Animals on Stored Feed/Water		1010	1031	1023	1024				1025	1025	1102
1st ANS Sequence											
Siren Activation		1025	1025	1025				1025	1028	1025	
EAS Released		1028	1028	1028				1028	1028	1028	
SNB Follow Up										1032	
2nd ANS Sequence											
Siren Activation		1144		1144				1144	1144	1144	
EAS Released		1147		1147				1147	1147	1147	
SNB Follow Up										1207	
Evacuate 1,2,3,5		1159		1159					1159	1159	
KI Decision (NOT to take KI)		1159		1159	1159				1159	1159	
Exercise Terminated		1306	1310	1313	1313	1315	1315	1243	1258	1243	1239

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APPENDIX B: EVALUATORS/TEAM LEADERS

The evaluation team for this exercise and out-of-sequence drills consisted of DHS/FEMA Radiological Emergency Preparedness Program personnel, the EPA, and ICF, a federal contractor.

DATE: 07-12-2022 SITE: Quad Cities Generating Station (QCGS)

LOCATION	EVALUATOR	AGENCY
Iowa State Emergency Operations Center	Darren Bates Bill Webb Lisa Rink Lynn Steffensen	FEMA HQ ICF FEMA HQ ICF
Iowa Dose Assessment	Chuck Hooper	EPA Region 7
Iowa Forward Command Post	Tom Scardino Tom Reynolds	FEMA Region 3 ICF
Iowa Field Team Coordination	Brad McRee	ICF
Iowa Field Team Blue	Ken Wierman	FEMA HQ
Iowa Field Team Green	Janise Stoliarova	FEMA HQ
Clinton County Emergency Operations Center	Greg Voss Heather Wilson Meg Swearingen	FEMA Region 7 FEMA Region 7 ICF
Scott County Emergency Operations Center	Jeff Clark Joe Suders Cody McKown	FEMA Region 7 FEMA Region 3 FEMA Region 7
Clinton County Law Enforcement Center	Darren Bates	FEMA HQ
Genesis Medical Center – Davenport	Andy Chancellor	FEMA Region 7
Genesis Medical Center – DeWitt	Andy Chancellor	FEMA Region 7
Medic EMS – Davenport	Darren Bates	FEMA HQ
Medic EMS – DeWitt	Darren Bates	FEMA HQ
National Weather Service – Davenport Office	Andy Chancellor	FEMA Region 7

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APPENDIX C: IMPROVEMENT PLAN

The following improvement plan includes details on issues identified by FEMA. For each identified item in the improvement plan, the following information is provided: a summary of the issue, the planned improvement action, the primary responsible agency with an agency point of contact (POC), the improvement recommendation, a start date for the improvement action, and an estimated completion date for the improvement action.

NOTE: This Improvement Plan captures the planned enhancement actions as of the date of issuance of this report. For detailed and up to date information on the current status of any improvement plan item listed below, please contact the individual(s) listed in the "Agency POC" field associated with the improvement plan item.

FEMA Issue Number: **51-22-1e1-L1-005**	**Criterion: 1.e.1** **Location: Clinton County EOC**
Issue Description: Sufficient quantities of potassium iodide (KI) were not available for emergency workers and institutionalized individuals. 600 packages of KI were available while the Dosimetry Control Officer's Spreadsheet indicated a need for 700. Sufficient quantities of permanent record dosimeters were not available. 600 Thermoluminescent Dosimeters (TLDs) were available, while 700 were needed according to the quantities listed by the Dosimetry Control Officer's Spreadsheet. Sufficient quantities of direct-reading dosimeters (DRDs) adequate to read the administrative reporting limits and exposure limits as required by the plans/procedures were not available. The Dosimetry Control Officer's Spreadsheet indicated a need for 612 DRDs for emergency workers. While total quantities of DRDs meet the quantity needed by the Dosimetry Control Officer's Spreadsheet, this included 510 model 622 (0-20R) DRDs in addition to 214 model 725 (0-5R) DRDs. The model 622 (0-20R) DRDs would not be adequate to read the administrative reporting limit of 0.5R.	
Condition: Insufficient quantities of potassium iodide and dosimetry. Direct-reading Dosimetry issued is not adequate to read reporting limits.	
Possible Causes: Adequate resources were not requested or made available in accordance with the anticipated need. Approved plans and procedures were not followed by the Dosimetry Control Officer.	**References:** NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b
Effect: Inadequate quantity of appropriate supplies/equipment could result in the endangerment of emergency workers.	
Corrective Actions: Validate and update the quantities of required potassium iodide and dosimetry for emergency workers and	

institutionalized individuals in the Clinton County RERP. Conduct training with the Clinton County EMA, Dosimetry Control Officer, and other appropriate staff on document control procedures to ensure correct and approved plans and procedures are implemented. Demonstrate the presence of at least fourteen (14) TLDs designated for special concerns above and beyond the TLDs already observed during the exercise for a total of six hundred and fourteen (614).	
Primary Responsible Agency: Clinton County Emergency Management	**Start Date: 08/08/2022**
Agency POC: Chance Kness, 563-242-5712	**Completion Date: 10/06/2022**

FEMA Issue Number: **51-22-3a1-L1-007**	**Criterion: 3.a.1** **Location: Clinton County EOC**
Issue Description: The emergency worker radiological briefing did not include information regarding the increased radiation risk or additional requirements and procedures related to lifesaving, protection of valuable property, or protection of large populations missions. The Extent of Play Agreement specified that if the emergency workers briefed are not tasked with these activities, then the procedures and exposure limits for these missions would be explained by the Dosimetry Control Officer. When the evaluator asked the DCO to do so, the controller stopped the DCO and stated that this information was not required to be briefed. There was a misunderstanding between the DCO, evaluator and controller on what was required per the EOPA, which resulted in this portion of the EW briefing not being demonstrated. Two models of DRDs are designated for emergency workers, the model 622 (0-20R) and model 725 (0-5R). Administrative exposure limits for emergency workers was 500mR and turn-back value was 5R, and the equipment provided was not adequate to measure these limits if equipped with the model 622 DRD. No specification was given to which emergency workers would be issued the model 622 or the 725. Additionally, per applicable plans and procedures, the dose limit for undertaking life-saving missions or protecting valuable property or large populations is 25R. Emergency workers tasked with these missions would require higher range dosimetry which would be provided at the Emergency Worker Monitoring and Decontamination Center. The Dosimetry Control Officer did not explain what high range dosimetry would be issued or the process for how it would be issued. Ten (10) model 740 (0-100R) DRDs were available at the EOC, but were not briefed by the Dosimetry Control Officer.	
Condition: Inadequate emergency worker briefing left out necessary information for emergency worker exposure control. Emergency workers did not know maximum exposure limits, what activities would warrant receiving that kind of dose, or who would authorize such activities. Direct-reading dosimetry issued is not adequate to read the 0.5R reporting limit if issued only the model 622 (0-20R). Direct-reading dosimetry issued is not adequate to read the 25R maximum exposure limit for life-saving missions or protection of large populations without the issuance of additional high-range dosimeters.	
Possible Cause: Inadequate training on necessary briefing information. Inadequate familiarity with equipment. Adequate resources appropriate for reading the administrative reporting limits were not requested or made available in accordance with the anticipated need.	**References:** NUREG-0654/FEMA-REP-1, K.3.a, b; K.4 CLINTON COUNTY EMERGENCY OPERATIONS CENTER Dosimetry Control Officer SOP-11 dated 05/2022 v2 Clinton County RERP dated 05/2022

Adequate resources appropriate for reading the maximum exposure limits were not requested or made available in accordance with the anticipated need. Lack of clarity regarding the EOPA requirements (this is an exercise control and evaluation concern, not a performance issue).	
Effect: Emergency workers could be unprepared for the potential to exceed turnback limits and the authorization needed to do so. Emergency workers may be unable to accurately read the reporting limit which could lead to unnecessary exposure to the harmful effects of radiation. Emergency workers may be unable to read the maximum exposure limit for life-saving missions or protection of large populations which could lead to unnecessary exposure to the harmful effects of radiation.	
Corrective Actions: Redemonstration of the portion of the emergency worker briefing related to procedures and additional requirements for lifesaving, protection of valuable property, and protection of large populations missions. The State of Iowa should reassess their emergency worker exposure control plans and procedures and update, as appropriate, the reporting limit and other dose limits. Based on this reassessment, appropriate dosimetry should be designated for emergency worker use. Coordination should occur between HSEMD, IDPH, FEMA, and other agencies as appropriate to develop an implementation plan for any resulting changes.	
Primary Responsible Agencies: Clinton County Emergency Management Iowa HSEMD	**Start Date: 08/08/2022**
Agency POC: Chance Kness, 563-242-5712 Jeremy Sroka, 515-321-5578	**Completion Date: 10/06/2022**

FEMA Issue Number: **51-22-3b1-L1-006**	**Criterion: 3.b.1** **Location: Clinton County EOC**
Issue Description: The Dosimetry Control Officer's spreadsheet indicated an allotment of 30 packages of KI for jail staff and inmates combined, which is significantly less than the average jail population (80) and the maximum jail population (117), as detailed by the acting Emergency Management Director.	
Condition: Insufficient quantities of potassium iodide (KI) for institutionalized individuals.	
Possible Causes: Adequate resources were not requested or made available in accordance with the anticipated need.	**References:** NUREG-0654/FEMA-REP-1, J.10.e, f

Approved plans and procedures were not followed by the Dosimetry Control Officer.	
Effect: Inadequate quantity of potassium iodide (KI) could endanger the health and safety of institutionalized individuals.	
Corrective Action: Provide confirmation of or updates to the required quantities of KI listed in the Clinton County RERP. The quantities of required KI must include institutionalized individuals at the Clinton County Law Enforcement Center. The quantities of KI for institutionalized individuals should be based on the maximum capacity of the jail, or on another planning factor (such as average population) with specific procedures included in the plan for requesting additional KI when needed.	
Primary Responsible Agency: Clinton County Emergency Management	**Start Date: 08/08/2022**
Agency POC: Chance Kness, 563-242-5712	**Completion Date: 10/06/2022**

FEMA Issue Number: **51-22-5a1-L2-008**	**Criterion: 5.a.1** **Location: Clinton County EOC**
Issue Description: According to procedures, the Prompt Notification System was activated at the Site Area Emergency, Emergency Classification Level (ECL). There was a three-minute delay in activating the sirens that provided an alert signal to the populated areas throughout the 10-mile plume Emergency Planning Zone within Clinton County.	
Condition: The alert signal was simulated and did not precede the simulated transmission of the instructional message. The emergency information and instructions to the public were transmitted simultaneously as the alarm signal sirens were sounding. The steady tone of the sirens lasted three minutes, and the transmitted information lasted approximately one and a half minutes.	
Possible Cause: The delay in activating the sirens was due to an oversight from the Clinton County Emergency Management Agency Coordinator to inform the Communications Manager that the sirens were to be activated (simulated) at 1025. Upon receiving the direction from the EMAC, the Communications Manager and the designated 911 Dispatcher immediately activated the sirens at 1028.	**References:** NUREG-0654/FEMA-REP-1, E.6 Clinton County Emergency Operations Center Standard Operating Procedure; Prompt Notification System; SOP-3: Rev. 05/2022, pages 3 and 5.
Effect: The sirens were successfully activated. However, with the three-minute delayed sounding of the sirens and the emergency message transmitted simultaneously, there would be a high probability that the public would not	

hear the message. This could prevent members of the public from hearing critical information regarding protective actions.	
Corrective Action: A re-demonstration of the inadequately demonstrated activation of the Prompt Notification System was accomplished during the second activation of the sirens at the General Emergency ECL. This issue is considered closed.	
Primary Responsible Agency: Clinton County Emergency Management	**Start Date: 07/12/2022**
Agency POC: Chance Kness, 563-242-5712	**Completion Date: 7/12/2022**

FEMA Issue Number: **51-22-1d1-L2-004**	**Criterion: 1.d.1** **Location: Field Team Green**
Issue Description: Not all communications capabilities were managed to ensure timely communications for conducting emergency operations. Communication between the FMT Green and the Radiological Emergency Response Team Coordination (RERTC) was not immediate when it was appropriate.	
Condition: The field team had been directed to take an air sample if they were immersed. To determine immersion in the plume, FMT Green must take a series of exposure rate measurements. The measurements showed that the team was no longer immersed in the plume. According to the 2022 Complete Field Team and Coordination SOP, three situations justify the need for the FMT to communicate with the RERTC: upon finding the plume edge, completing a traverse, and when the exposure rate changes from a previous measurement at a traverse point. The FMT Green immediately communicated the first two items but did not communicate the change in exposure rate from a previous measurement at a traverse point.	
Possible Cause: The team provided exposure rate measurements in RadResponder; however, this is not intended as a primary means of communication for changing field conditions. Therefore, the RERTC would not expect to refer to RadResponder for the specified situation which requires direct communication with the RERTC, e.g., exposure rate change from a previous measurement at a traverse point.	**References:** NUREG0654/FEMA-REP-1 F.1, 2 2022 Complete Field Team and Coordination SOP, Plume Monitoring Section
Effect: The change in exposure rate was not acknowledged by RERTC. Had the team communicated this change in field conditions directly to the RERTC, they would likely have been moved to a different location to obtain an air sample in an appropriate location. As a result, the team spent time collecting and moving to background to measure an air sample that originated from a location that would not produce meaningful data. In addition, the RERTC was not immediately apprised of exposure rate changes, which could delay characterization of plume shifts to other affected areas.	
Corrective Actions: The SOP- Plume Monitoring has been reviewed and updated to identify the location of measurement of rate change. Verbiage was changed from “Exposure rate change from a previous measurement at a traverse point” to “Significant	

exposure rate change (factor of 10) from…" A discussion was held with IDPH and HSEMD to determine the purpose of this communication to RERTC. It was determined that the updated verbiage will resolve this issue. This update will be incorporated into the state plan revisions for 2023 in alignment with 2019 RPM adjustments. This change to the SOP will be communicated and trained on November 15, 2022, during the Annual Field Team Training session with all field teams participating. During this session, FEMA observations from the exercise will be shared and discussed.

Primary Responsible Agency: Field Team- IDPH/ISU/SHL	**Start Date: 08/08/2022**
Agency POC: Amanda Hughes 319-621-2445 Kelly Gillette 515-451-9368	**Estimated Completion Date: 11/15/2022**

FEMA Issue Number: **51-22-4a2-P-003**	**Criterion: 4.a.2** **Location: Field Team Coordination**
Issue Description: The Radiological Emergency Response Team Coordinator (RERTC) in the Forward Command Post (FCP) is responsible for Field Monitoring Team (FMT) management for location and characterization of the plume; however, actual decision-making for taking air samples in the field resided with the Iowa Department of Public Health (IDPH), located in the State Emergency Operations Center (SEOC).	
Condition: The IDPH informed the RERTC that IDPH would make decisions regarding when and where air samples were to be taken. The decision-making process was delayed during the exercise when the RERTC informed the IDPH that FMTs were immersed in the plume and requested direction on where the FMTs should take air samples. The decision conveyed placed the FMT in a location where the plume was no longer present, and the IDPH either didn't notice that the FMT was no longer immersed or didn't have a process in place to identify where to take a sample that would characterize the plume. The FMT informed the RERTC and IDPH of the changing field conditions through RadResponder.	
Possible Cause: The IDPH is responsible for making FMT air sample decisions. The RERTC did not have decision-making authority for where FMT air samples are taken. Procedures are not clear regarding decision-making responsibilities for when/where to take air samples.	**References:** NUREG0654/FEMA-REP-1, C.1; H.12; I.7, 8, 11; J.10.a RERT Command and Control, Section 2, Sample Strategy, September 2015
Effect: There was a delay in making decisions on where to take air samples, and the plume was no longer present in the location specified by IDPH.	
Corrective Action: The SOP-RERT Command and Control has been reviewed and coordination procedures updated. Dose Assessment job aides will be updated to ensure communication between organizations is consistent. During an actual event the field team will continue monitoring the plume location by bouncing off the edge of the plume (3X BKG) until RERTC is requested to obtain an air sample by dose assessment. During a drill it is very common to take an air sample at the first encounter of the plume. The need to demonstrate specific skills in a compacted timeline creates artificiality. The RERT Command and Control Procedure was updated. Section 2.a. a step added to the Plume phase section. This statement was added "Make contact with state EOC to determine sampling needs." These updates will be incorporated into the state plan revisions for 2023 in alignment with 2019 RPM adjustments. This change to the SOP will be communicated and trained on November 15, 2022, during the Annual Field Team Training session with all field teams participating. During this session, FEMA observations from the exercise will be shared and discussed. Training will also include a discussion of differences between exercises and real events to assist in mitigating risk of drill artificiality challenges.	

Primary Responsible Agency: Field Team- IDPH/SHL	**Start Date: 08/08/2022**
Agency POC: Amanda Hughes 319-621-2445 Angela Leek 515-371-2255	**Estimated Completion Date: 11/15/2022**

FEMA Issue Number: **51-22-3a1-L2-002**	**Criterion: 3.a.1** **Location: Medic EMS DeWitt**
Issue Description: Dosimetry Control Brief was quick and unorganized. During the dosimetry brief, the briefer left out all potassium iodide (KI) information due to paramedic's medical and drug knowledge. The evaluator interviewed the paramedics; they were unable to explain the indications, doses, intervals, or actions of the use of KI tablets.	
Condition: Emergency workers were not given protective drugs, education, and information regarding the thyroid protective drug available (potassium iodide).	
Possible Cause: There were no job aids, checklist, or script for the DCO briefer to ensure all points were covered during the brief. The EW kits are not pre-arranged. Many real-world distractions including a dispatch to a real-world incident near the plant led to participants, controllers, and evaluators being distracted for a moment before the controller stated it was not part of the scenario.	**References:** NUREG0654/FEMA-REP-1, J.11.b
Effect: Emergency workers would have been unaware that they needed KI and likely not taken KI into the field with them.	
Corrective Action: A re-demonstration of the inadequately demonstrated dosimetry control brief was accomplished on the day of the exercise. This issue is considered closed.	
Primary Responsible Agency: Medic EMS Dewitt	**Start Date: 6/16/2022**
Agency POC: Jeremy Sroka, 515-321-5578	**Completion Date: 6/16/2022**