



Cooper Nuclear Station After Action Report/ Improvement Plan

Exercise Date – May 25-26, 2021
Radiological Emergency Preparedness (REP) Program



FEMA

Published August 25, 2021

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EXECUTIVE SUMMARY

On May 25-26, 2021, the Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA) Region VII evaluated a plume and ingestion pathway exercise for the Cooper Nuclear Station. This exercise was postponed from May 5-6, 2020, due to the Covid-19 pandemic. In addition, out-of-sequence drills were conducted on March 12, March 17 and October 16, 2020, June 16, June 17, and July 6, 2021. A re-demonstration of one criterion was held at the Richardson County Emergency Operations Center on June 17, 2021. The purpose of the exercise and 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 concerning the exercise of State and local radiological emergency response plans and procedures.

The previous exercise at this site was conducted on July 31, 2018. The qualifying emergency preparedness exercise was conducted on April 6, 1983.

FEMA wishes to acknowledge the efforts of all who participated in and supported the exercise and drills. Along with the States of Missouri and Nebraska, Atchison County in Missouri and Nemaha, Richardson, and Otoe Counties in Nebraska contributed to the success of this exercise. The efforts of the Nebraska Public Power District (NPPD) staff 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 exercise participants and an additionally assigned responsibility for others. Still others 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. A special thank you to all the wonderful volunteers who participated in this community service.

The state and local organizations demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Level 1 findings resulting from this exercise. Three Level 2 findings were discovered during the exercise: one with the Missouri Joint Information Center (JIC), one with the Nebraska JIC, and one with Richardson County. Two of the three Level 2 findings have been adequately re-demonstrated and the issues are considered closed. Additionally, there were three planning issues identified: one with the Nebraska Governor's Authorized Representative, one with the Nebraska JIC and one with Nemaha County. The planning issue identified at Nemaha County involves a document that is used at several evaluated locations. For simplicity, the planning issue has only been listed under the demonstration for Nemaha County, but the recommendation from FEMA includes the correction of this issue at all locations affected.

There is one open Level 2 Finding from a previous exercise in 2014. Due to the nature of the location and scenario type, the Level 2 Finding at the Nebraska Forward Staging Area will be re-demonstrated during the next Cooper Nuclear Station Hostile Action Based (HAB) exercise.

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For this exercise, the final protective action decision (PAD) in Missouri was the evacuation of Subarea 1, which included the city of Watson and the sheltering-in-place of Subarea 2, which included the city of Rock Port. The final PAD in Nebraska was the evacuation Subareas 11 and 15. The PAD in Nebraska included the cities of Brownville, Nemaha, and Peru. Approximately 3,820 residents were affected by the PADs.

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name

Cooper Nuclear Station

Type of Exercise

Radiological Emergency

Exercise Date

May 25-26, 2021

Program

Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

Scenario Type

Plume and Ingestion Phase

1.2 Exercise Planning Team Leadership

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1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the Cooper Nuclear Station exercise:

State Jurisdictions

Missouri Department of Health and Senior Services
Missouri State Emergency Management Agency
Nebraska Department of Administrative Services
Nebraska Department of Agriculture
Nebraska Department of Correctional Services
Nebraska Department of Environmental Quality
Nebraska Department of Health and Human Services
Nebraska Department of Natural Resources
Nebraska Department of Transportation
Nebraska Emergency Management Agency
Nebraska Game and Parks Commission
Nebraska National Guard
Nebraska State Fire Marshal's Office
Nebraska State Patrol
Nebraska Wesleyan University, Physics Department

Risk Jurisdictions

Atchison County 911
Atchison County Board of Commissioners
Atchison County Emergency Management
Atchison County Health Department
Atchison County Roads and Bridges Department
Atchison County Sheriff's Office
Nebraska Southeast District Health Department
Nemaha County 911 Center
Nemaha County Commissioners
Nemaha County Emergency Management
Nemaha County Sheriff's Office
Richardson County Board of Commissioners

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Richardson County Clerk's Office
Richardson County Emergency Management Agency
Richardson County Road Department
Richardson County Sheriff's Office

Support Jurisdictions

Community Hospital Fairfax
Falls City Public Schools
Midwest Laboratory
Missouri Region H Hazmat Team
Nebraska City School District
Nodaway County Emergency Management Agency
Nodaway County Ambulance Service
Northwest Missouri State University
Otoe County Emergency Management Agency
University of Nebraska Medical Center

Private Organizations

American Red Cross
Nebraska Public Power District - Cooper Nuclear Station
Omaha Public Power District

Federal Organizations

Federal Emergency Management Agency (FEMA)
Federal Radiological Monitoring and Assessment Center (FRMAC)
National Weather Service (NWS)
U.S. Department of Agriculture (Advisory Team)

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SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

Cooper Nuclear Station's (CNS) Emergency Plan describes CNS's capability to respond effectively to a radiological emergency at the site and provides a detailed description of CNS's 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 annual exercises and preparatory drills.

The purpose of the May 25-26, 2021, plume and ingestion phase exercise was to activate and evaluate portions of the State of Missouri, State of Nebraska, Atchison County, Nemaha County, and Richardson County emergency plans and associated implementing procedures, in accordance with 44 CFR 350. Further, these exercises and drills tested the CNS 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 CNS emergency response capability.

The scenario was designed to provide a simulated radiological release from CNS to prompt emergency management personnel from the surrounding offsite response organizations to test their response plans. The scenario was utilized by the exercise controllers/evaluators as the control mechanism for the conduct of the exercise. CNS Emergency Planning personnel developed the scenario with input from designated trusted agents from Missouri and Nebraska Emergency Management and Health staff. The scenario was initially reviewed by a Health Physicist from the FEMA Technological Hazards Program headquarters, prior to final review and approval by FEMA Region VII.

The scenario, as driven by the CNS Control Room Simulator, 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

Cooper Nuclear Station (CNS) 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 CNS 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 CNS Emergency Preparedness Exercise & 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

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emergency preparedness plans for the State of Missouri, State of Nebraska, Atchison County, Nemaha County, and Richardson County. Additional guidance provided in NUREG-0654, NUREG-0696, and NUREG-0737, was utilized in developing these objectives.

The objective of the exercise was to test 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 participation by the State of Missouri, State of Nebraska, Atchison County, Nemaha County, Richardson County, and 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 scenario was provided by Cooper Nuclear Station (CNS) Emergency Preparedness and approved by Department of Homeland Security/FEMA for use during the plume/ingestion pathway exercise which took place on May 25-26, 2021.

Initial Conditions

The scenario began with the power plant at 100% power. The plant was in a normal configuration for operations during spring conditions. High-pressure coolant injection (HPCI) was undergoing corrective surveillance testing. The condition had presented itself 10 hours ago on the previous shift. HPCI was aligned to the Torus through the HPCI-MO-58 suction path. A work order was nearly developed to repair HPCI valve logic to allow for HPCI to be returned to the Emergency Condensate Storage Tank (ECST) suction lineup. Wind speeds were 4 miles per hour (mph) out of the south from 182 degrees and a Tornado Watch had been issued for Southeastern Nebraska.

Sequence of Events

At 0822 a minor earthquake initiated a small Loss-of-Coolant Accident (LOCA) within Primary Containment. The seismic event also initiated jet pump failure which introduced foreign material exclusion (FME) into the Reactor Core setting the conditions for future fuel element failure. Due to rapidly rising Primary Containment pressure, the Emergency Director classified the event at the Alert Level utilizing FA1.1.

At 0857 a seismic aftershock resulted in Fuel Cladding failure. Main Steam Line Hi-Hi Radiation Annunciation was received indicating Fuel Clad failure as the loss of a second Fission Product Barrier and escalation to a Site Area Emergency under FS 1.1. Drywell rad monitor indications eventually elevated and exceeded 2500 Rem/hr to further indicate fuel cladding damage under LOCA conditions.

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At 1029 a major earthquake resulted in the compromise of the Torus Primary Containment (PC) structure. The compromise involved a break in the Torus within the Torus Airspace. This condition resulted in the PC atmosphere being discharged through the downcomer break directly into the Torus Airspace and into the Reactor Building. The resulting radioactive release was unfiltered through the failed blowout panel on the west side of the building. The Crew addressed the need for Emergency Depressurization as area temperatures and radiation levels dictated. When Emergency Depressurization was ordered, limited Alternate Depressurization methods were available. The rapid drop in elevated PC pressure after LOCA conditions provided indication of PC failure resulting in the loss a 3rd Fission Product Barrier warranting a General Emergency Classification under FGI.1.

At 1327, the exercise was terminated.

The Ingestion Pathway scenarios for the exercise were developed for each of the three risk counties. Map and data products were prepared by the Federal Radiological Monitoring and Assessment Center (FRMAC) that drove exercise play to complete Relocation, Reentry, Return and Ingestion protective actions.

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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 out-of-sequence drills on March 12, March 17 and October 16, 2020, June 16, June 17, and July 6, 2021, and the full-scale plume/ingestion pathway exercise held on May 25-26, 2021. These drills and exercise tested the offsite emergency response capabilities of state and local governments in the 10-mile plume emergency planning zone and 50-mile ingestion pathway zone surrounding the Cooper Nuclear Station.

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

Table 3.1 presents all the exercise criteria which were successfully demonstrated during this exercise and drills, at all participating jurisdictions and functional entities. Any findings and/or planning issues are addressed in Section 3.3: Criteria Evaluation Summaries. The types of findings/issues are:

M – Met, No new Findings or previously unresolved issues

L1 – Level 1 Finding

L2 – Level 2 Finding

P – Planning Issue

N – Not Demonstrated

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Table 3.1 - Summary of Exercise Evaluation (2 pages)

<p>DATE: 2016-06-14 SITE: Cooper Nuclear Station, NE</p> <p>M: Met, L2: Level 2 Finding, L1: Level 1 Finding, P: Plan Issue, N: Not Demonstrated</p>		MO State EOC	MO Dose Assess	MO JIC	MO FCP/GAR	Atchison County EOC	Nodaway Co. EMS	Comm, Hosp Fairfax	Nebraska State EOC	NE Dose Assess	NE FTC	NE RRT # 1	NE RRT # 2	NE Ingest. Samp. Tms	NE JIC	NPPD Call Center
Emergency Operations Management																
Mobilization	1a1	M	M	M	M	M			M	M	M	M	M	M	M	M
Facilities	1b1		M	M	M	M			M	M	M				M	
Direction & Control	1c1	M			M	M			M							
Communications Equipment	1d1	M	M	M	M	M			M	M	M	M	M	M	M	M
Equipment and Supplies	1e1		M	M	M	M	M	M	M	M	M	M	M	M	M	M
Protective Action Decision Making																
EW Exp. Control Decisions	2a1		M		M	M			M							
PARs	2b1		M		M				M							
PADs	2b2		M		M	M			M							
PADs for Disabled/Functional Needs	2c1				M	M										
Ingestion PADs	2d1								M	M						
RRR Decisions	2e1								M	M						
Protective Action Implementation																
EW Exp. Control Implementation	3a1					M	M	M			M	M	M	M		
KI Public/Institutionalized	3b1				M	M										
PAD Imp. Disabled/Functional Needs	3c1					M										
PAD Imp. Schools	3c2					M										
TACP Establishment	3d1					M			M							
Impediments to Evacuation	3d2					M			M							
Implementation of Ingestion PADs	3e1								M							
Ingestion Strategies and Information	3e2								M							
Imp. of RRR Decisions	3f1					M			M							
Field Measurement and Analysis																
Field Team Management	4a2										M					
Field Team Operations	4a3											M	M			
Field Team Sampling	4b1													M		
Laboratory Operations	4c1															
Emergency Notification and Public Info																
Initial Alert & Notification	5a1					M			M							
RESERVED	5a2															
Backup Alert & Notification	5a3					M			M							
Exception Area Alerting	5a4															
Subsequent Public Information	5b1			L2	M	M			M						L2, P	M
Support Operations/Facilities																
Reception Center Operations	6a1															
EW Monitoring & Decon	6b1															
Congregate Care	6c1															
Contaminated Injured Transport & Care	6d1						M	M								

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Table 3.1 - Summary of Exercise Evaluation (Continued. page 2/2)

DATE: 2016-06-14 SITE: Cooper Nuclear Station, NE M: Met, L2: Level 2 Finding, L1: Level 1 Finding, P: Plan Issue, N: Not Demonstrated		NE FCP/GAR	Nemaha Co. EOC	Richardson Co EOC	Otoe County EOC	Richardson RC	Midwest Laboratory	Otoe County RCC	NWS - Pleasant Hill	NWS - Valley
Emergency Operations Management										
Mobilization	1a1	M	M	M				M		
Facilities	1b1	M	M	M		M		M		
Direction & Control	1c1	P	M	M				M		
Communications Equipment	1d1	M	M	M				M		
Equipment and Supplies	1e1	M	M	M			M	M		
Protective Action Decision Making										
EW Exp. Control Decisions	2a1	M	M	M						
PARs	2b1	M								
PADs	2b2	M	M	M						
PADs for Disabled/Functional Needs	2c1	M	M	M						
Ingestion PADs	2d1	M								
RRR Decisions	2e1	M								
Protective Action Implementation										
EW Exp. Control Implementation	3a1		P	L2			M	M		
KI Public/Institutionalized	3b1	M	M	M						
PAD Imp. Disabled/Functional Needs	3c1		M	M						
PAD Imp. Schools	3c2		M	M						
TACP Establishment	3d1		M	M						
Impediments to Evacuation	3d2		M	M						
Implementation of Ingestion PADs	3e1	M								
Ingestion Strategies and Information	3e2									
Imp. of RRR Decisions	3f1	M	M	M						
Field Measurement and Analysis										
RESERVED	4a1									
Field Team Management	4a2									
Field Team Operations	4a3									
Field Team Sampling	4b1									
Laboratory Operations	4c1						M			
Emergency Notification and Public Info										
Initial Alert & Notification	5a1		M	M					M	M
RESERVED	5a2									
Backup Alert & Notification	5a3		M	M	M					
Exception Area Alerting	5a4									
Subsequent Public Information	5b1	M	M	M						
Support Operations/Facilities										
Reception Center Operations	6a1							M		
EW Monitoring & Decon	6b1									
Congregate Care	6c1									
Contaminated Injured Transport & Care	6d1									

3.3 Criteria Evaluation Summaries

3.3.1 Missouri State Jurisdictions

3.3.1.1 Missouri State Emergency Operations Center

The Missouri State Emergency Operations Center (SEOC), located in Jefferson City, MO, was partially activated during the May 25, 2021, Cooper Nuclear Station Exercise. All three criteria at this location were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. The State of Missouri utilized very detailed procedures to notify all local, state, and federal agencies in the event of a nuclear power plant accident. The staff was very knowledgeable and worked as a team to support the Governor's Authorized Representative.

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

- a. MET: 1a1, 1c1, 1d1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.2 Missouri Dose Assessment

During the May 25, 2021, Cooper Nuclear Station Exercise, the Missouri Department of Health and Senior Services (DHSS) conducted Missouri Dose Assessment from the CNS Emergency Operations Facility in Auburn, NE. All seven criteria were demonstrated adequately and in accordance with the plans, procedures, and extent of play agreement. The Missouri DHSS demonstrated great coordination with the Nebraska Dose Assessment team. Staff displayed excellent working knowledge and especially while using a pre-calculated plume arrival chart. Although not evaluated, the staff provided strong support to Atchison County during the ingestion pathway portion of the exercise on May 26

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

- a. MET: 1a1, 1b1, 1d1, 1e1, 2a1, 2b1, 2b2
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.3 Missouri Joint Information Center

The Missouri Joint Information Center (JIC) staff was co-located with the Nebraska Public Power District (NPPD) and Nebraska JIC staff at the Cooper Nuclear Station (CNS) Emergency Operations Facility (EOF) in Auburn, Nebraska. Four of five criteria were demonstrated adequately in accordance with plans, procedures, and the extent of play agreement during the

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May 25, 2021, CNS Exercise. One Level 2 finding was identified. The Public Information Officer (PIO) Job Action Sheets used by the staff are an excellent tool. The rumor control staff did an outstanding job handling the public inquiry calls.

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

- a. MET: 1a1, 1b1, 1d1, 1e1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: 5b1, One

ISSUE NO.: 16-21-5b1-L2-01

CONDITION:

There was a lack of coordination between the Assistant Public Information Officer (PIO) and Atchison County officials when the County's Protective Action Decision changed. The Missouri Joint Information Center (JIC) received input regarding protective actions from Atchison County officials and prepared News Release (NR) No. 2. NR No. 2 was released at 1108, prior to concurrence from Atchison County officials. Atchison County officials reviewed the message and saw evacuation impediment information was included in NR No. 2 that was confusing and that the County's desire to have Subarea 2 Shelter-In-Place was not included. The JIC prepared NR No. 2A that corrected the information, confirmed the content with Atchison County officials and released the message at 1125. It was noted, a method for concurrence and approval is not included in the Assistant PIO's Job Action Sheet.

POSSIBLE CAUSE:

No method for concurrence and approval is included in the Assistant PIO's Job Action Sheet.

REFERENCE:

NUREG-0654/FEMA-REP-1, E.5, 7; G.4.a
Cooper Nuclear Station Assistant PIO Job Action Sheet (3/26/22)

EFFECT:

Possible confusion and a delay for residents to take appropriate actions.

CORRECTIVE ACTION DEMONSTRATED:

News Release No. 2A was prepared with the content that was agreed to by Atchison County officials and corrected the issues with NR No. 2. The JIC procedures have been amended to include coordination and concurrence from County officials prior to disseminating a news release.

ISSUE NO.: 16-21-5b1-L2-01 is now closed.

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STATE OF MISSOURI RESPONSE:

The State of Missouri agrees with the finding, has completed the changes to procedures, and appreciates that this effort has improved our processes and reduced the chance that this type of error will occur again.

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

3.3.1.4 Missouri Forward Command Post/GAR

The Missouri Governor's Authorized Representative (GAR) was co-located with the Nebraska GAR at the Cooper Nuclear Station (CNS) Emergency Operations Facility (EOF) in Auburn, Nebraska. The Missouri GAR adequately demonstrated all 11 criteria in accordance with plans, procedures, and the extent of play agreement. The GAR demonstrated a high level of expertise and leadership during the May 25, 2021, CNS Exercise. The Missouri GAR efficiently worked to coordinate a resolution for the evacuation impediment that satisfied all stakeholders. The GAR's use of a Zoom platform provides an effective and continuous verbal and visual bridge line with State and County response organizations.

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

- a. MET: 1a1, 1b1, 1c1, 1d1, 1e1, 2a1, 2b1, 2b2, 2c1, 3b1, 5b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.2 Missouri Risk Jurisdictions

3.3.2.1 Atchison County Emergency Operations Center

The Atchison County Emergency Operations Center (EOC), located in Tarkio, Missouri, was fully activated for the Cooper Nuclear Station Exercise on May 25-26, 2021. Personnel at the Atchison EOC adequately demonstrated the 18 criteria in accordance with plans, procedures, and the extent of play agreement. The Emergency Management Director demonstrated excellent leadership capabilities directing the operations of the EOC. The EOC staff was well versed in their duties and provided strong support.

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

- a. MET: 1a1, 1b1, 1c1, 1d1, 1e1, 2a1, 2b2, 2c1, 3a1, 3b1, 3c1, 3c2, 3d1, 3d2, 3f1, 5a1, 5a3, 5b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None

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

3.3.3 Missouri Support Jurisdictions

3.3.3.1 Nodaway County Ambulance Service

The Nodaway County Ambulance Service participated in an out-of-sequence medical drill with the Community Hospital Fairfax on March 12, 2020. All three criteria were demonstrated adequately in accordance with plans, procedures, and the extent of play agreement. Ambulance crew members demonstrated a strong focus on patient care and excellent contamination control techniques.

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

- a. MET: 1e1, 3a1, 6d1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.3.2 Community Hospital Fairfax

Community Hospital Fairfax, located in Fairfax, Missouri, participated in an out-of-sequence medical drill with the Nodaway County Ambulance Service on March 12, 2020. All three criteria were adequately demonstrated in accordance with plans, procedures, and the extent of play agreement. The hospital staff worked well together as a team and demonstrated effective contamination control and decontamination procedures.

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

- a. MET: 1e1, 3a1, 6d1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.4 Nebraska State Jurisdictions

3.3.4.1 Nebraska State Emergency Operations Center

The Nebraska State Emergency Operations Center (SEOC), located in Lincoln, Nebraska, was fully activated during the May 25, 2021, Cooper Nuclear Station plume exercise and

designated agencies participated in the ingestion exercise in Auburn, NE on May 26, 2021. Fifteen criteria at this location were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. SEOC staff were very knowledgeable and provided strong support to the Nebraska team effort.

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

- a. MET: 1a1, 1b1, 1c1, 1d1, 1e1, 2d1, 2e1, 3d1, 3d2, 3e1, 3e2, 3f1, 5a1, 5a3, 5b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.4.2 Nebraska Dose Assessment

During the May 25-26, 2021, Cooper Nuclear Station (CNS) Exercise, the Nebraska Department of Health and Human Services (DHHS) conducted Nebraska's Dose Assessment from the CNS Emergency Operations Facility during the plume phase and conducted the ingestion phase from the Auburn Eagles Club in Auburn, Nebraska. All nine criteria were demonstrated adequately and in accordance with the plans, procedures, and extent of play agreement. The Nebraska DHHS team demonstrated excellent coordination with the Missouri Dose Assessment team during the plume exercise. The DHHS staff exhibited a strong knowledge of ingestion pathway analysis and coordinated effectively with the Nebraska Governor's Authorized Representative, risk counties and Nebraska State Emergency Operations Center staff.

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

- a. MET: 1a1, 1b1, 1d1, 1e1, 2a1, 2b1, 2b2, 2d1, 2e1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES – RESOLVED: None
- g. PRIOR ISSUES – UNRESOLVED: None

3.3.4.3 Nebraska Field Team Coordination

During the May 25, 2021, Cooper Nuclear Station (CNS) Exercise, the Nebraska Department of Health and Human Services (DHHS) conducted Nebraska's Field Team Coordination from the CNS Emergency Operations Facility in Auburn, Nebraska. All

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six criteria were demonstrated adequately and in accordance with the plans, procedures, and extent of play agreement. The Nebraska DHHS team demonstrated quick and flexible response to the changing situations and provided very concise instructions to the field teams.

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

- a. MET: 1a1, 1b1, 1d1, 1e1, 3a1, 4a2
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.4.4 Nebraska Radiation Response Team # 1

Nebraska Radiation Response Team #1 prepositioned at the Auburn Eagles Club in Auburn, Nebraska, for the Cooper Nuclear Station Exercise on May 25, 2021. All five criteria were demonstrated in accordance with plans, procedures, and the extent of play agreement. The team was very professional and demonstrated excellent use of their procedures. They exhibited an impressive display of communication skills and showed strong knowledge of the situation by anticipating an impending recommendation to take potassium iodide.

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

- a. MET: 1a1, 1d1, 1e1, 3a1, 4a3
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.4.5 Nebraska Radiation Response Team # 2

Nebraska Radiation Response Team #2 prepositioned at the Auburn Eagles Club in Auburn, Nebraska, for the Cooper Nuclear Station Exercise on May 25, 2021. All five criteria were demonstrated in accordance with plans, procedures, and the extent of play agreement. The team was well organized and equipped. The members demonstrated good teamwork and excellent use of their procedures.

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

- a. MET: 1a1, 1d1, 1e1, 3a1, 4a3
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None

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- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.4.6 Nebraska Ingestion Sampling Teams

The Nebraska Ingestion Sampling Teams participated in an out-of-sequence demonstration at a dairy farm and local park in Lincoln, Nebraska on March 17, 2020.

All five criteria were demonstrated in accordance with plans, procedures, and the extent of play agreement. The teams were well organized and equipped. The members were extremely knowledgeable of environmental sampling techniques.

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

- a. MET: 1a1, 1d1, 1e1, 3a1, 4b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.4.7 Nebraska Joint Information Center

The Nebraska Joint Information Center (JIC) is co-located with the Missouri JIC and the Nebraska Public Power District JIC at the Cooper Nuclear Station Emergency Operations Facility in Auburn, Nebraska. Four of five criteria were demonstrated adequately in accordance with plans, procedures, and the extent of play agreement during the exercise May 25-26, 2021. One Level 2 finding and one Planning issue was identified. The Nebraska JIC staff worked diligently through rapidly changing conditions and operated well as a team.

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

- a. MET: 1a1, 1b1, 1d1, 1e1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: 5b1, One

ISSUE NO.: 16-21-5b1-L2-02

CONDITION:

During Day 2 of the Cooper Nuclear Station (CNS) Ingestion Pathway Exercise May 26, 2021, the State of Nebraska did not coordinate with the risk counties to produce adequate news messaging for the public with regard to protective decisions for reentry, relocation, and return, nor was any news messaging produced for ingestion pathway protective actions in accordance with the extent of play agreement. The extent of play agreement stated "JIC operations will not be evaluated during the second day of the exercise. However, the States of Missouri and Nebraska must be able to support the counties with the coordination and preparation of emergency messages/press releases concerning relocation, reentry, and return, in accordance with plans and procedures. In addition,

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Missouri and Nebraska must also support the preparation of emergency messages/press releases concerning ingestion pathway information, in accordance with plans and procedures.”

POSSIBLE CAUSE:

A breakdown in communicated instructions for players and evaluators led to a misunderstanding of the requirements for producing messaging for the second day of the exercise.

REFERENCE:

NUREG-0654/FEMA-REP-1, Rev. 2 (E.2, E.4, E.5, N.4.e, G.1, G.2, G.3, G.3.a, G.4, G.5, and O.1)
Nebraska RERP

EFFECT:

Incomplete demonstration of the production of emergency messaging regarding relocation, reentry, return and ingestion pathway protective actions.

CORRECTIVE ACTION DEMONSTRATED AND RECOMMENDATION:

The Nebraska JIC coordinated with the necessary stakeholders, utilized the information and data from the ingestion pathway exercise and provided copies of press releases regarding relocation, reentry, return, and ingestion pathway protective actions on June 18, 2021. FEMA recommends that the State of Nebraska schedule a tabletop or training session prior to the next exercise to discuss the process of developing relocation, reentry, and return and ingestion pathway public information with all stakeholders and update plans, procedures, and message templates.

STATE OF NEBRASKA RESPONSE:

The State of Nebraska concurs with the assessment of communication failure between players and evaluators. Nebraska will conduct additional training and plan review prior to the next Ingestion Pathway Exercise.

FEMA COMMENTS TO NEBRASKA RESPONSE:

FEMA recommends that the plan and procedure changes and training take place prior to the next evaluated exercise scheduled for May 2022. The State of Nebraska intends to complete these actions by October 8, 2021, as indicated in the Improvement Plan found in Appendix A of this document.

d. PLANNING ISSUES: 5b1, One

ISSUE NO.: 16-21-5b1-P-03

CONDITION:

Two pre-scripted News Releases at the Cooper Nuclear Station (CNS) Plume Exercise May 25, 2021 were released from the Nebraska Joint Information Center with the incorrect address to the Nebraska City Middle School Reception Center. The address

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discrepancy was in CNS Message R, News Releases 4 and 6 (page 3 of 4) and states the middle school address as 217 S. Ninth Street. The actual address was 909 1st Corso according to the school website and the CNS Emergency Information Brochure. Entering the 217 S. Ninth Street address in a common mapping software, the location pin dropped

near the T-intersection close by to the entrance of the middle school which allowed evacuees to adequately locate the reception center.

It was additionally noted on CNS Message R, News Releases 4 and 6 (page 2 of 4) the evacuation route description to Nebraska City in column two is incomplete and the last word is "First," with no further directions from the highway to the reception center.

POSSIBLE CAUSE:

Not enough attention to detail to ensure all forms of public information have consistent content.

REFERENCE:

FEMA REP Program Manual Part 2 Planning Guidance Evaluation Criterion E.4, G.1.a; Nebraska RERP

EFFECT:

Conflicting or missing information provided to the public regarding the location of the reception center could cause confusion for evacuees traveling to the reception center.

RECOMMENDATION:

Review and update plans, procedures, pre-scripted messages, brochures, and any other materials that are produced for public information to ensure the information is consistent.

STATE OF NEBRASKA RESPONSE:

The State of Nebraska will review and update plans, procedures, pre-scripted messages, brochures, and any other materials that are produced for public information to ensure the information is consistent.

FEMA COMMENTS TO NEBRASKA RESPONSE:

The State of Nebraska intends to complete these actions by October 8, 2021, as indicated in the Improvement Plan found in Appendix A of this document.

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

3.3.4.8 Nebraska Public Power District Call Center

The Nebraska Public Power District (NPPD) Call Center handles the public inquiry telephone lines for the states of Missouri and Nebraska in response to an event at the Cooper Nuclear Station (CNS). The one criterion was adequately demonstrated during the exercise held on May 25, 2021, in accordance with plans, procedures, and the extent

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of play agreement. NPPD staff were well informed and prepared to properly address each call and coordinate actions with the States.

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

- a. MET: 5b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.4.9 Nebraska Forward Command Post/GAR

During the May 25-26, 2021, Cooper Nuclear Station (CNS) Exercise, the Nebraska Governor's Authorized Representative (GAR) participated at the CNS Emergency Operations Facility (EOF) during the plume phase and participated in the ingestion phase at the Auburn Eagles Club in Auburn, Nebraska. Fourteen of fifteen criteria were adequately demonstrated in accordance with plans, procedures, and the extent of play agreement. One Planning issue was identified. The Nebraska GAR team functioned as a well-trained cohesive unit. The Nebraska GAR team members ensured that each member was informed and aware of changing conditions.

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

- a. MET: 1a1, 1b1, 1d1, 1e1, 2a1, 2b1, 2b2, 2c1, 2d1, 2e1, 3b1, 3e1, 3f1, 5b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: 1c1, One

ISSUE NO.: 16-21-1c1-P-04

CONDITION:

Following the General Emergency Declaration, the Governor's Authorized Representative (GAR) changed the Protective Action Decision (PAD) after the sirens had been activated and the Emergency Alert System (EAS) message had been sent. The sirens/EAS alerting and notification system (ANS) activation had been based on a PAD of sheltering-in-place for subareas 11 and 15 in Nebraska. Following a change in the situation and further discussion between Nebraska and Nemaha County, the PAD was changed to evacuation of subareas 11 and 15. The follow-on press release was issued 26 minutes after the ANS had been activated to alert the public to tune into local media for more information. Nebraska did not coordinate with the Nemaha County Emergency Operations Center to again activate the ANS prior to the new press release. However, with this lengthy delay between the ANS activation and the press release with new PAD information for the public, consideration should have been given to an ANS reactivation at that point.

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POSSIBLE CAUSE:

No method was included in the plans or procedures for discussing the need to alert the public again if there is an excessive time gap between activating sirens and EAS and releasing the follow-on news releases.

REFERENCE:

NUREG-0654/FEMA-REP-1, A.1.d; A.2.a, b; A.3; C.4, 6; E.5, 6, 7;
Nebraska GAR Job Action Sheet

EFFECT:

A long delay between alerting the public to look for protective actions and providing those protective actions could create angst or possible confusion among the public.

RECOMMENDATION:

A step should be added to the GAR and County EMA procedures to consider sounding sirens and activating the EAS message again if there is a significant time gap prior to releasing the follow-on press release.

STATE OF NEBRASKA RESPONSE:

Corrective action training has been completed with members of the GAR support team. In the future, field teams will ensure that sirens are sounded again prior to press releases if there is a delay in press releases.

FEMA COMMENTS TO NEBRASKA RESPONSE:

The State of Nebraska intends to complete these actions by October 8, 2021, as indicated in the Improvement Plan found in Appendix A of this document.

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

3.3.5 Nebraska Risk Jurisdictions

3.3.5.1 Nemaha County Emergency Operations Center

The Nemaha County Emergency Operations Center (EOC), located in Auburn, Nebraska, was fully activated during the May 25, 2021, Cooper Nuclear Station Exercise and participated in the ingestion phase at the Auburn Eagles Club in Auburn, Nebraska on May 26, 2021. Seventeen of eighteen criteria were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement. One Planning issue was identified that was subsequently identified at several other evaluated locations. The Nemaha County initial warning point exhibited an outstanding level of knowledge of procedures. The Nemaha EOC staff demonstrated excellent coordination and synchronization with the other risk counties regarding the activation of sirens.

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

- a. MET: 1a1, 1b1, 1c1, 1d1, 1e1, 2a1, 2b2, 2c1, 3b1, 3c1, 3c2, 3d1, 3d2, 3f1, 5a1, 5a3, 5b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: 3a1, One

ISSUE NO.: 16-21-3a1-P-05

CONDITION:

The “Radiological Emergency Worker Individual Dose Record” tri-fold handout that was distributed lists a “100mR dose limit” at which point the emergency worker is instructed to contact their supervisor. According to the “Nebraska Allowable Exposures for Emergency Workers” card distributed to the EWs, and as indicated in Annex F of the Nemaha County Radiological Emergency Response Plan (Revision 3), the turn-back exposure limit for EWs is 500mR, at which time the emergency worker is instructed to call their supervisor for further instruction. This tri-fold handout is available at several emergency response locations through-out the 10-mile Emergency Planning Zone (EPZ); therefore, this issue is considered a state-wide planning issue that was identified in Nemaha County.

POSSIBLE CAUSE:

Nemaha County relies on the State of Nebraska Department of Health and Human Services, Division of Public Health to establish exposure limits with guidelines for implementation for emergency workers in Nebraska. When the Nebraska Emergency Management Agency revised the Radiological Emergency Worker Individual Dose Record handout, dated July 2018, the instruction to contact your supervisor ‘if you reach your 100mR dose limit’ was not updated.

REFERENCE:

NUREG-0654/FEMA-REP-1, K.3.a, b; K.4
Radiological Emergency Worker Individual Dose Record- handout
Nebraska Allowable Exposures for Emergency Workers- card
Nemaha County Radiological Emergency Response Plan (Revision 3)

EFFECT:

While this explanation satisfied the emergency workers (EW) during the briefing, there is a discrepancy between what is described as the ‘100mR dose limit’ on the Radiological Emergency Worker Individual Dose Record handout and the 500mR dosimeter limit on the Nebraska Allowable Exposures for Emergency Workers card. Whether this 100mR is an outdated dose limit, or whether it is the alarm set point for electronic dosimeters as explained in the briefing, referring to the information as printed on the handout and card could be a source of confusion for EWs about what their dose limit is, when to call their supervisor, and when to turn back.

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RECOMMENDATION:

It is recommended that the Radiological Emergency Worker Individual Dose Record handout be amended to either correct the dose limit or clarify what the 100mR value is, whether that is an alarm set point or otherwise. This new handout should replace all other versions of the Nebraska Emergency Worker Individual Dose Record handout and be distributed to all locations as appropriate. In addition, if any locations are only issued 200 mR direct reading dosimeters (i.e. locations outside 10-mile EPZ), then those locations and instances need to be addressed in the plans, procedures, forms, dose record cards, etc.

STATE OF NEBRASKA RESPONSE:

Kit paperwork will be reviewed, and updates paperwork will be issued where necessary.

FEMA COMMENTS TO NEBRASKA RESPONSE:

The State of Nebraska intends to complete these actions by October 8, 2021, as indicated in the Improvement Plan found in Appendix A of this document. FEMA will need to review the applicable portions of the State, Local, and facility plans and the emergency worker brochures identified in the Recommendation paragraph.

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

3.3.5.2 Richardson County Emergency Operations Center

The Richardson County Emergency Operations Center (EOC), located in Falls City, Nebraska, was fully activated during the May 25, 2021, Cooper Nuclear Station Exercise and participated in the ingestion phase at the Auburn Eagles Club in Auburn, Nebraska on May 26, 2021. Seventeen of eighteen criteria were adequately demonstrated in accordance with plans, procedures, and the extent of play agreement. One Level 2 finding was identified. The Richardson EOC staff demonstrated exceptional knowledge of the response effort and worked well as a team.

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

- a. MET: 1a1, 1b1, 1c1, 1d1, 1e1, 2a1, 2b2, 2c1, 3b1, 3c1, 3c2, 3d1, 3d2, 3f1, 5a1, 5a3, 5b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: 3a1, One

ISSUE NO.: 16-21-3a1-L2-06

CONDITION:

During the EW briefing, the Radiological Officer briefed on and provided an Arrow Tech 138 (0-200mR) direct reading dosimeter and a Landauer thermoluminescent permanent record dosimeter. Administrative limits for Emergency Workers provided during the Radiological Briefing was a reporting limit of 100 mR and turnback of 1R. Only low-level reading dosimetry was provided to the Emergency Workers.

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POSSIBLE CAUSE:

The Radiological Officer was not aware of the need for dosimetry required to read the administrative limits for high and low readings.

The Richardson County Radiological Emergency Response Plan provides for 500 mR reporting, turnback of 1R, and 2.5R life-saving exposure limits. The Radiological Emergency Worker record and instruction form provide for a reporting limit of 100 mR. This is conflicting information on administrative limits and may have led to the issuance of the Arrow Tech 138 (0-200 mR) dosimeter with the intent of removing the Emergency Worker at the briefed reporting limit of 100 mR.

The Radiological Officer was not aware of the administrative limits in the Richardson County Radiological Emergency Response Plan and did not refer to the plan during the radiological briefing.

REFERENCE:

NUREG-0654/FEMA-REP-1, K.3.a, b; K.4

Richardson County Radiological Emergency Response Plan – Annex F, Attachment 14
Richardson County Emergency Worker Just in Time Training sheet

EFFECT:

The Emergency Workers were issued one low level direct reading dosimeter (0-200 mR). The reporting limit was 500mR, turn back limit 1R, and for lifesaving missions was 2.5R per the Richardson County Radiological Emergency Response Plan (RERP). The briefing provided for a reporting limit of 100mR, which the low-level direct reading dosimeter would provide readings for the briefed limit. The low-level direct reading dosimeter was not sufficient to read any of the administrative limits provided in the plans.

Emergency Workers were not issued dosimetry that provided for the turnback limit of 1R. This could result in an Emergency Worker receiving higher level exposure if authorized to exceed the 100 mR reporting limit. The authorization to exceed the administrative limits is provided by the Nebraska Department of Health and Human Services. If the administrative limits are lower than what the State has identified as 500 mR, 1R, and 2.5R, and not communicated, there is a high potential for additional exposure to Emergency Workers.

CORRECTED ACTION:

The Richardson County Radiological Officer adequately re-demonstrated providing a radiological brief and issuing dosimetry to two Emergency Workers on June 17, 2021.

ISSUE NO.: 16-21-3a1-L2-06 is considered closed.

STATE OF NEBRASKA RESPONSE:

None.

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

3.3.6 Nebraska Support Jurisdictions

3.3.6.1 Otoe County Emergency Operations Center

The Otoe County Emergency Operations Center (EOC) participated in the Cooper Nuclear Station Exercise held on May 25, 2021, in accordance with plans, procedures, and the extent of play agreement. One criterion was adequately demonstrated. Otoe County EOC staff were well informed and prepared to coordinate backup alerting for the risk counties.

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

- a. MET: 5a3
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.6.2 Richardson County Reception Center and Emergency Worker Decontamination Center

The Richardson County Reception Center and Emergency Worker Decontamination Center, located at Falls City, Nebraska High School, participated in an out-of-sequence demonstration on October 16, 2020. One criterion was demonstrated adequately in accordance with plans, procedures, and the extent of play agreement. The Falls City High School facilities provide for an excellent reception center in the event of a nuclear power plant accident.

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

- a. MET: 1b1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

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3.3.6.3 Midwest Laboratory

The Midwest Laboratory, located at 700 Landwehr Road, Northbrook, IL, participated in an out-of-sequence demonstration on June 16, 2021. All three criteria were demonstrated adequately in accordance with plans, procedures, and the extent of play agreement. Midwest Laboratory is very capable of supporting sample analysis in response to a nuclear power plant accident.

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

- a. MET: 1e1, 3a1, 4c1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.6.4 Otoe County Reception and Care Center

The Otoe County Reception and Care Center, located in Nebraska City, Nebraska, participated in an out-of-sequence drill on June 17, 2021. All seven criteria were demonstrated adequately in accordance with plans, procedures, and the extent of play agreement. The staff, representing several local agencies and many volunteers, was enthusiastic and was diligent in following the position specific procedures and checklists.

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

- a. MET: 1a1, 1b1, 1c1, 1d1, 1e1, 3a1, 6a1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES – RESOLVED: None
- g. PRIOR ISSUES – UNRESOLVED: None

3.3.7 Federal Jurisdictions

3.3.7.1 National Weather Service, Pleasant Hill, Missouri

The National Weather Service (NWS), located in Pleasant Hill, Missouri, participated in an out-of-sequence drill on July 6, 2021. The one criterion was adequately demonstrated in accordance with plans, procedures, and the extent of play agreement. The Meteorologist provided an excellent demonstration of NWS alerting capabilities and expert knowledge of the procedures to activate the Emergency Alert System (EAS).

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

- a. MET: 5a1

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- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

3.3.7.2 National Weather Service, Valley, Nebraska

The National Weather Service (NWS), located in Valley, Nebraska, participated in an out-of-sequence drill on June 16, 2021. The one criterion was adequately demonstrated in accordance with plans, procedures, and the extent of play agreement. The staff on duty were very knowledgeable and provided an excellent explanation of the Emergency Alert System (EAS) activation procedures.

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

- a. MET: 5a1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLANNING ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

SECTION 4: CONCLUSION

Based on the results of the May 25-26, 2021, Plume and Ingestion Phase Exercise, the offsite radiological emergency response plans and preparedness for the States of Missouri and Nebraska 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 States of Missouri and Nebraska, site-specific to the Cooper Nuclear Station, will remain in effect.

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APPENDIX A: IMPROVEMENT PLAN

Issue Number: 16-21-5b1-L2-02	Criterion: 5b1
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ISSUE: During Day 2 of the Cooper Nuclear Station (CNS) Ingestion Pathway Exercise May 26, 2021, the State of Nebraska did not coordinate with the risk counties to produce adequate news messaging for the public with regard to protective decisions for reentry, relocation, and return, nor was any news messaging produced for ingestion pathway protective actions in accordance with the extent of play agreement. The extent of play agreement stated “JIC operations will not be evaluated during the second day of the exercise. However, the States of Missouri and Nebraska must be able to support the counties with the coordination and preparation of emergency messages/press releases concerning relocation, reentry, and return, in accordance with plans and procedures. In addition, Missouri and Nebraska must also support the preparation of emergency messages/press releases concerning ingestion pathway information, in accordance with plans and procedures.”

RECOMMENDATION: The Nebraska JIC coordinated with the necessary stakeholders, utilized the information and data from the ingestion pathway exercise and provided copies of press releases regarding relocation, reentry, return, and ingestion pathway protective actions on June 18, 2021. FEMA recommends that the State of Nebraska schedule a tabletop or training session prior to the next exercise to discuss the process of developing relocation, reentry, and return and ingestion pathway public information with all stakeholders and update plans, procedures, and message templates.

CAPABILITY: Alert and Notification	PRIMARY RESPONSIBLE AGENCY: NEMA
CAPABILITY ELEMENT: Emergency Information and Instructions	START DATE: 9 AUG 2021
AGENCY POC: Deb Robinson, State Radiological Planner	ESTIMATED COMPLETION DATE: 8 OCT 2021

Issue Number: 16-21-5b1-P-03	Criterion: 5b1
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ISSUE: Two pre-scripted News Releases at the Cooper Nuclear Station (CNS) Plume Exercise May 25, 2021 were released from the Nebraska Joint Information Center with the incorrect address to the Nebraska City Middle School Reception Center. The address discrepancy was in CNS Message R, News Releases 4 and 6 (page 3 of 4) and states the middle school address as 217 S. Ninth Street. The actual address was 909 1st Corso according to the school website and the CNS Emergency Information Brochure. Entering the 217 S. Ninth Street address in a common mapping software, the location pin dropped near the T-intersection close by to the entrance of the middle school which allowed evacuees to adequately locate the reception center.

It was additionally noted on CNS Message R, News Releases 4 and 6 (page 2 of 4) the evacuation route description to Nebraska City in column two is incomplete and the last word is “First,” with no further directions from the highway to the reception center.

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RECOMMENDATION: Review and update plans, procedures, pre-scripted messages, brochures, and any other materials that are produced for public information to ensure the information is consistent.

CAPABILITY: Alert and Notification	PRIMARY RESPONSIBLE AGENCY: NEMA
CAPABILITY ELEMENT: Emergency Information and Instructions	START DATE: 9 AUG 2021
AGENCY POC: Jodie Fawl, Public Information Officer	ESTIMATED COMPLETION DATE: 8 OCT 2021

Issue Number: 16-21-1c1-P-04

Criterion: 1c1

ISSUE: Following the General Emergency Declaration, the Governor's Authorized Representative (GAR) changed the Protective Action Decision (PAD) after the sirens had been activated and the EAS message had been sent. The sirens/EAS alerting and notification system (ANS) activation had been based on a PAD of sheltering-in-place for subareas 11 and 15 in Nebraska. Following a change in the situation and further discussion between Nebraska and Nemaha County, the PAD was changed to evacuation of subareas 11 and 15. The follow-on press release was issued 26 minutes after the ANS had been activated to alert the public to tune into local media for more information. Nebraska did not coordinate with the Nemaha County EOC to again activate the ANS prior to the new press release. However, with this lengthy delay between the ANS activation and the press release with new PAD information for the public, consideration should have been given to an ANS reactivation at that point.

RECOMMENDATION: A step should be added to the GAR and County EMA procedures to consider sounding sirens and activating the EAS message again if there is a significant time gap prior to releasing the follow-on press release.

CAPABILITY: Emergency Operations Management	PRIMARY RESPONSIBLE AGENCY: NEMA
CAPABILITY ELEMENT: Direction and Control	START DATE: 9 AUG 2021
AGENCY POC: James Rashilla, Technical Hazards Unit Supvsr	ESTIMATED COMPLETION DATE: 8 OCT 2021

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Issue Number: 16-21-3a1-P-05

Criterion: 3a1

ISSUE: The “Radiological Emergency Worker Individual Dose Record” tri-fold handout that was distributed lists a “100mR dose limit” at which point the emergency worker is instructed to contact their supervisor. According to the “Nebraska Allowable Exposures for Emergency Workers” card distributed to the EWs, and as indicated in Annex F of the Nemaha County Radiological Emergency Response Plan (Revision 3), the turn-back exposure limit for EWs is 500mR, at which time the emergency worker is instructed to call their supervisor for further instruction. This tri-fold handout is available at several emergency response locations through-out the 10-mile Emergency Planning Zone (EPZ); therefore, this issue is considered a state-wide planning issue that was identified in Nemaha County.

RECOMMENDATION: It is recommended that the Radiological Emergency Worker Individual Dose Record handout be amended to either correct the dose limit or clarify what the 100mR value is, whether that is an alarm set point or otherwise. This new handout should replace all other versions of the Nebraska Emergency Worker Individual Dose Record handout and be distributed to all locations as appropriate. In addition, if any locations are only issued 200 mR direct reading dosimeters (i.e. locations outside 10-mile EPZ), then those locations and instances need to be addressed in the plans, procedures, forms, dose record cards, etc.

CAPABILITY:
Exposure Control

PRIMARY RESPONSIBLE AGENCY:
NEMA

CAPABILITY ELEMENT:
Emergency Worker Exposure Control Mgt

START DATE:
9 AUG 2021

AGENCY POC:
Terry Miller, Calibration Specialist

ESTIMATED COMPLETION DATE:
8 OCT 2021

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APPENDIX B: EXERCISE TIMELINE

Table 1, on the following pages, presents the times recorded for various activities and decisions at each of the evaluated locations during the Cooper Nuclear Station plume exercise held on May 25, 2021. A disparity in times is normal given the need for message transmissions and decision-making at the various locales.

MISSOURI EXERCISE TIMELINE									
Date & Site: May 25, 2021		Cooper Nuclear Station Plume Exercise							
Emergency Classification Level or Event	Time Utility Declared	Time that notification was received or action was taken							
		Missouri State EOC	Missouri EOF/GAR	Missouri JIC	Dose Assessment	Field Team Coord.	Field Monitoring Team - A	Field Monitoring Team - B	Atchison County EOC
Unusual Event (NOUE)	N/A					X	X	X	
Alert	0822	0831	0829	0829	0835	X	X	X	0830
Site Area Emergency (SAE)	0857	0909	0908	0905	0906	X	X	X	0906
General Emergency (GE)	1029	1042	1030	1030	1029	X	X	X	1039
Radiation Release Started	1108		1108	1108	1108	X	X	X	1131
Radiation Release Terminated						X	X	X	
Facility Declared Operational		0831	0935	0845		X	X	X	0837
Governor Declared State of Emergency			0840	0845		X	X	X	0920
Precautionary Protective Actions - Control access 2 miles, animals stored feed and water. Go indoors and monitor local media. Special facilities notified.				0845	0910	X	X	X	0910
Siren Activation			0915	0915		X	X	X	0915
Initial EAS Message			0917	0917		X	X	X	0917
SNB Follow-up to EAS Message PR1			0927	0927		X	X	X	0927
1st Protective Action Decision - Evacuate Subarea 1, Shelter-in-Place Subarea 2. 10 mile food			1041	1041	1041	X	X	X	1041
Siren Activation		1050	1050	1050		X	X	X	1050
EAS Message		1052	1052	1052		X	X	X	1052
SNB Follow-up to EAS Message PR2 at 1108, corrected at 1125 with PR2A.		1108/1125	1108/1125	1108/1125		X	X	X	1108/1125
2nd Protective Action Decision - Extend food embargo to 50 miles		N/A			1126	X	X	X	
Siren Activation		N/A				X	X	X	
EAS Message		N/A				X	X	X	
SNB Follow-up to EAS Message		N/A				X	X	X	
KI Recommended to Emergency Workers		N/A	1133		1132	X	X	X	1133
Exercise Terminated		1327	1326	1326	1326	X	X	X	1324
*Reminder: time of notification is when operator hangs up the phone or fax is received									

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NEBRASKA EXERCISE TIMELINE										
Date & Site: May 25, 2021		Cooper Nuclear Station Plume Exercise								
Emergency Classification Level or Event	Time Utility Declared	Time that notification was received or action was taken								
		Nebraska State EOC	Nebraska FCP/EOF GAR	Nebraska JIC	Dose Assessment	Field Team Coord.	Field Monitoring Team 1	Field Monitoring Team 2	Nemaha County EOC	Richardson County EOC
Unusual Event (NOUE)						X	X	X		
Alert	0822	0830	0829	0829	0828	X	X	X	0836	0830
Site Area Emergency (SAE)	0857	0908	0905	0905	0906	X	X	X	0908	0905
General Emergency (GE)	1029	1040	1030	1030	1029	X	X	X	1039	1040
Radiation Release Started	1108	1108	1108	1108	1108	X	X	X	1108	1108
Radiation Release Terminated						X	X	X		
Facility Declared Operational			0949	0949		X	X	X	0907	0835
Governor Declared State of Emergency		1001	1001	1001		X	X	X	1001	1001
Precautionary Protective Actions - Animals stored feed and water, Air space closed to 5000 ft - 10 miles, closed river, rail, recreation areas.			0909			X	X	X	0910	0910
Siren Activation		0915	0915	0915		X	X	X	0915	0915
Initial EAS Message		0917	0917	0917		X	X	X	0917	0917
SNB Follow-up to EAS Message #2 SAE		0920	0920	0920		X	X	X	0920	0920
1nd Protective Action Decision - Evacuate subareas 11 & 15.			1100		1108	X	X	X	1101	
Siren Activation		1050	1050	1050		X	X	X	1050	1050
EAS Message		1052	1052	1052		X	X	X	1052	1052
SNB Follow-up to EAS Message #4		1115	1115	1115		X	X	X	1115	1115
2nd Protective Action Decision -						X	X	X		
Siren Activation						X	X	X		
EAS Message						X	X	X		
SNB Follow-up to EAS Message						X	X	X		
						X	X	X		
						X	X	X		
KI Recommended to Emergency Workers		1117	1009	1009	1009	X	X	X	1023	1020
						X	X	X		
						X	X	X		
Exercise Terminated			1326	1326	1326	X	X	X	1324	
*Reminder: time of notification is when operator hangs up the phone or fax is received										

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APPENDIX C: EXERCISE EVALUATORS AND TEAM LEADERS

SITE: Cooper Nuclear Station

LOCATION	EVALUATOR	AGENCY
Missouri State Emergency Operations Center - Cooper	*Clay Spangenberg	ICFI
Missouri Dose Assessment	*Nan Williams	FEMA HQ
Missouri Joint Information Center	*Linda Gee Tom Hegele	FEMA R6 ICFI
Missouri Forward Command Post/GAR	*Tim Pflieger Lynn Steffensen	FEMA R6 ICFI
Nebraska State Emergency Operations Center	*Darren Bates Meg Swearingen	FEMA HQ ICFI
Nebraska Dose Assessment	*Ken Wierman	FEMA HQ
Nebraska Field Team Coordination	*Mike Howe	FEMA HQ
Nebraska Radiation Response Team # 1	*Jeff Clark	FEMA R7
Nebraska Radiation Response Team # 2	Chuck Hooper	EPA R7
Nebraska Ingestion Sampling Teams	*Jeff Clark Greg Voss	FEMA R7 FEMA R7
Nebraska Joint Information Center	*Lisa Rink Tom Hegele	FEMA HQ ICFI
Nebraska Forward Command Post (GAR)	*James Greer Lynn Steffensen	ICFI ICFI
NPPD Call Center	*Don Carlton	ICFI
Atchison County Emergency Operations Center	*Brian Hasemann Miriam Weston Haas Scott Hallett	FEMA R2 FEMA R2 FEMA HQ
Nodaway County Ambulance Service	*Greg Voss	FEMA R7
Community Hospital Fairfax	*Jeff Clark	FEMA R7
Nemaha County Emergency Operations Center	*Andy Chancellor Kathy Duran Heather Wilson	FEMA R7 FEMA R3 FEMA R7
Richardson County Emergency Operations Center	*Brad DeKorte Larry Broockerd Cody McKown	FEMA R6 FEMA HQ FEMA R7
Otoe County Emergency Operations Center	*Henry Christiansen	ICFI
Midwest Laboratory	*Mike Howe	FEMA HQ
Richardson County Reception Center & Emergency Worker Decon	*Greg Voss	FEMA R7
Otoe County Reception and Care Center	*Greg Voss Norm Valentine Jeff Clark Darren Bates	FEMA R7 FEMA R7 FEMA R7 FEMA HQ
National Weather Service, Pleasant Hill, Missouri	*Greg Voss	FEMA R7
National Weather Service, Valley, Nebraska	*Greg Voss	FEMA R7
* Team Leader		

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APPENDIX D ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
CFR	Code of Federal Regulations
CNS	Cooper Nuclear Station
DHS	Department of Homeland Security
DHHS	Department of Health and Human Services – Nebraska
DHSS	Department of Health and Senior Services – Missouri
DRD	Direct Reading Dosimeter
EAL	Emergency Action Level
EAS	Emergency Alert System
ECL	Emergency Classification Level
ECST	Emergency Condensate Storage Tank
EMD	Emergency Management Director
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPZ	Emergency Planning Zone
EW	Emergency Worker
FCP	Forward Command Post
FEMA	Federal Emergency Management Agency
FRMAC	Federal Radiological Monitoring and Assessment Center
FTC	Field Team Coordinator
GAR	Governor's Authorized Representative
GE	General Emergency
HAB	Hostile Action Based
HPCI	High-Pressure Coolant Injection
ICFI	FEMA Contractor
ICS	Incident Command System
JIC	Joint Information Center
KI	Potassium Iodide
LOCA	Loss-of-Coolant Accident
mR	Milliroentgen/millirem
MO	Missouri
MPH	Miles Per Hour
NE	Nebraska
NEMA	Nebraska Emergency Management Agency
NOUE	Notice of Unusual Event
NPPD	Nebraska Public Power District

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NRC	Nuclear Regulatory Commission
NWS	National Weather Service
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PC	Primary Containment
PIO	Public Information Officer
PPX	Plume Phase Exercise
R	Roentgen/rem
RC	Reception Center
REM	Roentgen Equivalent Man
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
RMT	Radiological Monitoring Team
RPV	Relief Pressure Valve
RRR	Relocation, Reentry, Return
SAE	Site Area Emergency
SEMA	State Emergency Management Agency – Missouri
SEOC	State Emergency Operation Center
SNB	Special News Broadcast
TACP	Traffic and Access Control Point
TLD	Thermoluminescent Dosimeter