



**FEMA**

February 18, 2020

Scott Morris  
Regional Administrator  
U.S. Nuclear Regulatory Commission, Region IV  
1600 E Lamar Blvd  
Arlington, Texas 76011

Dear Mr. Morris:

Enclosed is a copy of the Final After Action Report for the December 3-4, 2019, plume and ingestion pathway exercise of the offsite radiological emergency response plans, site-specific to the Wolf Creek Generating Station. The participants in this exercise included various organizations from the State of Kansas and Coffey County. The report was prepared by Federal Emergency Management Agency (FEMA) Region VII staff. The final report will be provided to the State of Kansas. Further exercise documentation and related materials are retained by FEMA Region VII, the office of record for this exercise evaluation.

There were no Level 1 or Level 2 findings or planning issues identified during the exercise. There were no open Level 1 or Level 2 findings from previous exercises to be addressed.

Based on the results of this exercise, the offsite radiological response plans and preparedness for the State of Kansas and the affected local jurisdictions, site-specific to the Wolf Creek Generating Station, can be implemented and are adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site. Therefore, the Title 44 CFR, Part 350 approval of the offsite radiological emergency response plans and preparedness for the state of Kansas, site-specific to the Wolf Creek Generating Station, granted on April 4, 1989, will remain in effect.

If you have any questions or concerns regarding the report, please contact Mr. Tom Morgan, Regional Assistance Committee Chair, at (816) 808-2756 or by email [Thomas.Morgan5@fema.dhs.gov](mailto:Thomas.Morgan5@fema.dhs.gov)

Sincerely,

**PAUL J**

**TAYLOR**

Paul J. Taylor

Regional Administrator

Digitally signed by

PAUL J TAYLOR

Date: 2020.02.18

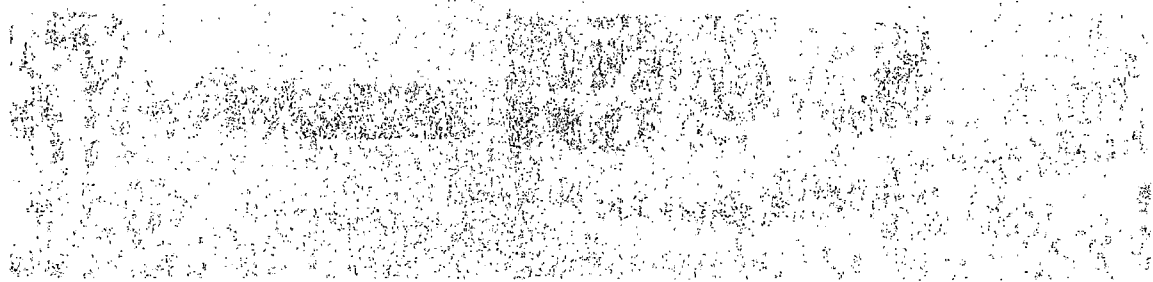
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Enclosure

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1X49  
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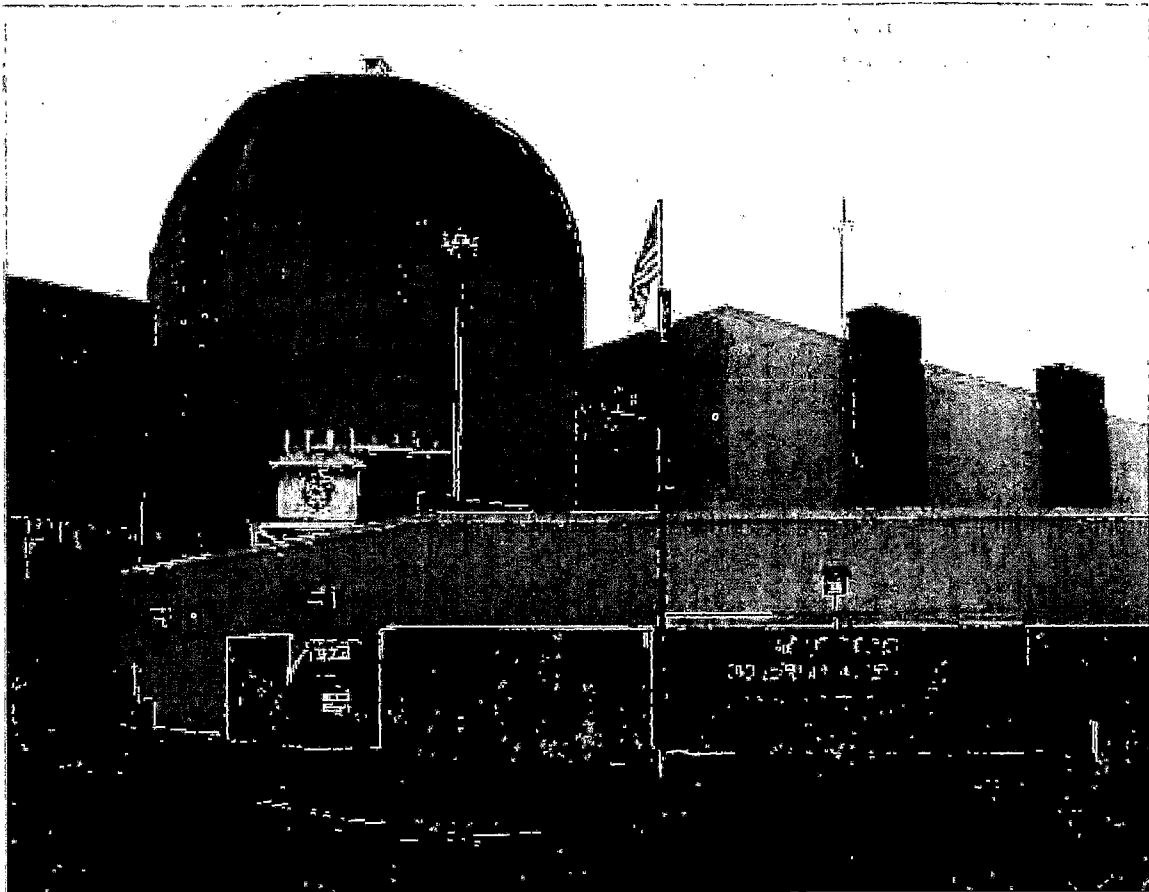


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# Wolf Creek Generating Station After Action Report

Exercise Date – December 3-4, 2019

Radiological Emergency Preparedness (REP) Program



**FEMA**

*February 6, 2020*

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Radiological Emergency Preparedness Program (REP)

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# Wolf Creek Generating Station After Action Report/Improvement Plan

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## EXECUTIVE SUMMARY

On December 3-4, 2019, the Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA) Region VII conducted a plume and ingestion pathway exercise in the emergency planning zone (EPZ) around the Wolf Creek Generating Station (WCGS). In addition, out-of-sequence drills were conducted on March 26, 2019, June 3, 2019, June 5, 2019 and September 12, 2019. 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 November 14, 2017. The qualifying emergency preparedness exercise was conducted on November 7, 1984.

FEMA wishes to acknowledge the efforts of all who participated in and supported the exercise and drills. Along with the State of Kansas, Coffey County, Woodson County and Lyon County participated along with the various State and local organizations. The staff of the utility should also be commended for their work on the scenario development and exercise preparation.

Protecting the public health and safety is the full-time job of some 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. Thanks to all 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 or Level 2 findings or planning issues identified as a result of this exercise. There were no open findings from the previous exercise in 2017.

For this exercise there was one protective action decision (PAD) made. The (PAD) was for the closing and evacuation of Coffey County Lake (CCL), John Redmond Reservoir (JRR) and subzones Center (CTR), North 1 (N-1), Northeast 1 (NE-1), North 2 (N-2), Northeast 2 (NE-2) and Northeast 3 (NE-3). The evacuation included the city of Waverly. Approximately 1167 residents were affected by the evacuation.

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## SECTION 1: EXERCISE OVERVIEW

### 1.1 Exercise Details

**Exercise Name**

Wolf Creek Generating Station

**Type of Exercise**

Plume and Ingestion

**Exercise Date**

December 3-4, 2019

**Program**

Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

**Scenario Type**

Radiological Emergency

### 1.2 Exercise Planning Team Leadership

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### 1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the Wolf Creek Generating Station exercise:

#### State Jurisdictions

- Kansas Division of Emergency Management
- Kansas Department of Health & Environment
- Kansas Health and Environmental Laboratories
- Kansas Army National Guard
- Kansas Air National Guard
- Kansas Highway Patrol
- Kansas Department of Wildlife, Parks and Tourism
- Kansas Department for Children and Families
- Kansas Department of Agriculture
- Kansas Department of Transportation
- Kansas Department of Aging
- Kansas GIS Response Team
- Kansas Adjutant General's Department
- Office of the State Fire Marshal

#### Risk Jurisdictions

- Coffey County Emergency Management
- Coffey County Public Information Officer
- Coffey County Radiological Officer
- Coffey County Sheriff's Department
- Coffey County KSU Extension
- Coffey County Board of Commissioners
- Coffey County Register of Deeds
- Coffey County Treasurer
- Coffey County Appraiser
- Coffey County Fire Department
- Coffey County Health Department
- Coffey County Highway Department
- Coffey County Clerk's Office
- Waverly USD #243

#### Support Jurisdictions

- Newman Regional Hospital
- Emporia Fire Department
- Lyon County EMS/Ambulance
- Woodson County Emergency Management
- Woodson County Rural Fire Department
- Yates Center Volunteer Fire Department
- Woodson County Clerk

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**Private Organizations**

Wolf Creek Generating Station  
American Red Cross  
Salvation Army  
Waverly Bus Service, LLC  
Kansas Civil Air Patrol

**Federal Organizations**

FEMA State Liaison  
U.S. Department of Agriculture Farm Service Agency  
U.S. Department of Agriculture Natural Resources Conservation Service  
U.S. Army Corps of Engineers  
U.S. Nuclear Regulatory Commission  
Department of Energy, Radiological Assistance Program Team  
Department of Energy, Federal Radiological Monitoring and Assessment Center  
Federal Advisory Team

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## **SECTION 2: EXERCISE DESIGN SUMMARY**

### **2.1 Exercise Purpose and Design**

Wolf Creek Generating Station (WCGS) Emergency Plan describes WCGS's capability to respond effectively to a radiological emergency at the site and provides a detailed description of WCGS'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 December 3-4, 2019, ingestion exercise was to activate and evaluate portions of the State of Kansas and Coffey County emergency plans and associated implementing procedures, in accordance with 44 CFR 350. Further, these exercises and drills tested the WCGS 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 WCGS emergency response capability.

The scenario was designed to provide the basis for the conduct of a simulated radiological accident at WCGS in Burlington, Kansas, through which the capabilities and effectiveness of the emergency response plans for the utility, the State of Kansas and Coffey County could be evaluated. The scenario was utilized by the exercise controllers/evaluators as the control mechanism for the conduct of the exercise. WCGS Emergency Planning personnel developed the scenario with input from Kansas Division of Emergency Management staff. It 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 WCGS 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**

Wolf Creek Generating Station (WCGS) 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 WCGS 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.

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The WCGS 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 emergency preparedness plans for the State of Kansas and Coffey 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 Kansas, Coffey County, Lyon County, Woodson 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 is the scenario provided by Wolf Creek Generating Station (WCGS) and approved by Department of Homeland Security/FEMA for use during the ingestion exercise which took place on December 3-4, 2019.

#### Initial Conditions

Initial conditions establish the plant is operating at 100% power in middle of core life. There is a tube leak in 'D' S/G (~70 gpd). 'A' train is protected, 'B' train work week and 'B' EDG (Emergency Diesel Generator) has been tagged out of service with work to be completed by tomorrow afternoon at 1300. Electrical demand in the area is heavy.

The plant is in Action Level 3 per AP 19B-001, "FAILED FUEL ACTION PLAN". Radiochemical analysis of the Reactor Coolant System (RCS) indicates coolant activity. Xe133/Xe135 ratio is approximately  $3.4E-2$   $\mu\text{Ci/gm}$  sustained for the last 7 days. There has been a recent indication of additional increase in RCS activity. Chemistry is evaluating for changes in Fuel Reliability Index.

Meteorological conditions are clear skies with winds out of the southwest (~202°) towards the northeast (~22°) at ~15 miles per hour. The temperature is ~61° and there is a possibility of storms later in the day.

The Federal Bureau of Investigation (FBI) has indicated there are no credible security threats at this time.

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### Sequence of Events

~0800 The exercise begins when an earthquake is felt and annunciator 00-98D alarms. The epicenter was ~60 miles SW of the plant, near Howard, KS with an estimated strength of ~5.9 Richter scale. This meets the conditions for a NOTICE OF UNUSUAL EVENT (HU2.15).

~0820 There is a second earthquake resulting in an NB02 Lockout. The earthquake was measured at 6.1 on the Richter scale, located about 4 miles southeast of Gridley, KS. OFN SG-3 walkdowns reveal pipe deformation and a crack in the 'A' Containment Spray Header between EN HV-6 and the Containment Penetration. Plant walkdown also indicates some pipe deformation at the same location on the 'B' train.

~0820 Main Feed Regulating Valve (MFRV) 520 fails closed. Reactor does not initially trip and will not TRIP using SB HS-1 or 42 (*ref: SA 6.1*). EMG FR-S1 is successful in shutting down the reactor. RCS Activity begins to climb. Dose Equivalent Iodine (DEI) remains below 300 uCi / cc until at least 0920, in order to avoid escalating the classification. An ALERT (SA 6.16 or SA 9.17) should be declared.

~0845 There is a report of a fire in northwest Coffey County. The fire starts from a baler southwest of 19th and Garner Lane. It rapidly spreads through the ground foliage and engages a wooded area. Ultimately, smoke from this fire obstructs 19th Road. The fire advances toward the northeast.

~0900 County dispatch receives reports that the fire has grown in size and that it is spreading across 19th road. The smoke is so thick that visibility on the road is significantly limited.

~0920 There is a loss of the Switchyard. The East and West 345kV buses experience faults. There is a lock out when the Benton and the Rose Hill lines experience simultaneous insulator failures and fall onto the buses and the line to the startup transformer. Switchyard breakers open, thereby causing the loss of the remaining 345KV feeds to the plant (Loss of Off-Site Power). Consequently, NB01 loses power and 'A' EDG fails to automatically start. If necessary, delay energizing NB01 until after 15 minutes has elapsed to ensure that a SITE AREA EMERGENCY (SS 1.18) condition is achieved. The SBO diesel can be started locally, after the emergency declaration has been made. DEI can exceed 300 uCi / cc after the SAE has been declared, which would NOT be provided unless earned.

~0930 It is reported that the smoke from the fire is thick across 19th Road.

~1030 There is a large LOCA (~10,000 gpm) inside Containment. Containment radiation levels increase and GT RE 59/60 exceeds 600 R/Hr. Comp measure area radiation monitors SD RE 40, 41 and 42 read greater than 10 R/Hr and Aux Building area rad monitors >10 R/Hr 'A' Containment Spray penetration fails and is leaking into the penetration room. The LOCA release goes through the Auxiliary building and exits via the unit vent. The flow to most fans is off due to the loss of offsite power (LOOP). The Emergency Exhaust fan is the motive power of the

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release (6500 CFM). General Emergency should be declared. Potential EAL paths are FG 1.19, RG 1.110 or RG 1.211. There is no mitigation that will terminate the release until the plant is cooled to below 212 °F. Environmental samples shall be collected and transported to the EOF.

The drill will be terminated at approximately 1400.

## 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 26, 2019, June 3, 2019, June 5, 2019 and September 12, 2019 and the full-scale plume and ingestion pathway exercise held on December 3-4, 2019. These drills and the exercise tested the offsite emergency response capabilities of state and local governments in the 10-mile plume and 50-mile ingestion emergency planning zones surrounding the Wolf Creek Nuclear Generating Station.

Each jurisdiction and functional entity were 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 scheduled for demonstration during this exercise and drills, 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:

Met (M): No Findings assessed and no unresolved Findings from prior exercises.

Level 1 (L1) 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).

Level 2 (L2) 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.

Plan (P) Issue: An observed or identified inadequacy in the offsite response organizations' (ORO's) emergency plan/implementing procedures, rather than that of the ORO's performance.

N: Not demonstrated.

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**Table 3.1 – Summary of Exercise Evaluation**

DATE: December 3-4, 2019 SITE: Wolf Creek Generating Station			KS SEOC	Coffey Co. EOC	WC EOF	Dose Assess. /FTC	KS RMT #1	KS RMT #2	KS IST #1	KS IST #2	KS JIC	FSA	Woodson Co. R&C	Emporia Fire/EMS	Newman Hospital	Waverly USD #243
M: Met, L1: Level 1 Finding, L2: Level 2 Finding, P: Plan Issue, N: Not Demonstrated																
Emergency Operations Management																
Mobilization	1a1	M	M	M	M						M	M	M			
Facilities	1b1										M		M			
Direction & Control	1c1	M	M	M								M	M			
Communications Equipment	1d1	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	M
Protective Action Decision Making																
EW Exp. Control Decisions	2a1		M	M	M											
PARs	2b1	M			M											
PADs	2b2	M	M	M	M											
PADs for Disabled/Functional Needs	2c1		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	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									M				
Impediments to Evacuation	3d2	M	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																
RESERVED	4a1															
Field Team Management	4a2				M											
Field Team Operations	4a3					M	M									
Field Team Sampling	4b1							M	M							
Laboratory Operations	4c1															
Emergency Notification and Public Info																
Initial Alert & Notification	5a1	M	M													
RESERVED	5a2															
Backup Alert & Notification	5a3															
Exception Area Alerting	5a4															
Subsequent Public Information	5b1	M	M							M						
Support Operations/Facilities																
Reception Center Operations	6a1												M			
EW Monitoring & Decon	6b1												M			
Congregate Care	6c1															
Contaminated Injured Transport & Care	6d1													M	M	

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### 3.3 Criteria Evaluation Summaries

#### 3.3.1 State Jurisdictions

##### 3.3.1.1 Kansas State Emergency Operations Center

The Kansas State Emergency Operations Center (SEOC), located in Topeka, Kansas, had nine State agencies participate in the December 3-4, 2019 Wolf Creek Generating Station (WCGS) Plume and Ingestion Pathway Exercise. In addition, the American Red Cross, FEMA, NRC and Coffey County Emergency Management all had liaisons in the SEOC. All sixteen criteria at this location were adequately demonstrated in accordance with the plans, procedures and extent of play agreement.

The excellent use of scribes for monitoring both internal and external WebEOC entries and other internal communications allowed the Policy Group to stay informed to make timely decisions. The utilization of a rolling SitRep to keep staff informed on both past and current events was observed as a best practice.

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

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### 3.3.1.2 Wolf Creek Emergency Operations Facility

The Wolf Creek Emergency Operations Facility (EOF) is located outside the 10-mile plume EPZ near the junction of State highway 75 and Interstate 35. Personnel at the EOF included staff from Wolf Creek Generating Station (WCGS), Kansas Department of Health & Environment (KDHE), Kansas Division of Emergency Management (KDEM) and Coffey County. These personnel make up a coordinated effort to monitor and assess emergency situations at WCGS. All eight criteria in this area were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement.

During day one of the December 3-4 Ingestion Exercise, the use of a Recorder to support the State Radiological Assessment Manager (SRAM) was an asset and allowed the SRAM to manage and prioritize multiple tasks while ensuring the coordination of information with State Emergency Operations Center, State Joint Radiological Monitoring Teams and Dose Assessment was accurate and timely.

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

### 3.3.1.3 Kansas Dose Assessment & Field Team Coordination

During day 1 of the exercise, the Dose Assessment & Field Team Coordination were conducted out of the Wolf Creek Emergency Operations Facility (EOF). With the utilization of joint monitoring teams, dose assessment and field team coordination are a partnership with staff from the Kansas Department of Health & Environment (KDHE) and Wolf Creek Generating Station (WCGS). During day 2 of the exercise, Dose Assessment activities were conducted out of the Kansas State Emergency Operations Center (SEOC). All ten criteria assigned were adequately demonstrated in accordance with the plans, procedures and extent of play agreement.

The KDHE dose assessment team should be commended for producing a variety of assessment products to support recommendations for relocation and return using spreadsheet calculations and Turbo FRMAC. Products included calculating return timeframes from each soil analysis and estimated doses for those who did not evacuate. This is unique and not a practice demonstrated at many locations nationally and an excellent best practice.

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

#### **3.3.1.4 Kansas Joint Radiological Monitoring Team #1**

Joint Radiological Monitoring Teams (JRMTs) are dispatched from the Wolf Creek Emergency Operations Facility (EOF). Upon arrival at the EOF, Kansas Department of Health & Environment (KDHE) staff join with Wolf Creek Generating Station (WCGS) staff to form JRMTs. These teams are briefed and deployed to predetermined locations. During day 1 of the December 3-4 Ingestion Exercise, two JRMTs were each evaluated for four criteria. JRMT #1 adequately demonstrated all four criteria in accordance with the plans, procedures and extent of play agreement.

JRMT #1 demonstrated excellent use of communications with the Field Team Coordinator (FTC). Team members were very familiar with procedures and used them extensively throughout the exercise.

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

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

#### **3.3.1.5 Kansas Joint Radiological Monitoring Team #2**

Joint Radiological Monitoring Teams (JRMTs) are dispatched from the Wolf Creek Emergency Operations Facility (EOF). Upon arrival at the EOF, Kansas Department of Health & Environment (KDHE) staff join with Wolf Creek Generating Station (WCGS) staff to form JRMTs. These teams are briefed and deployed to predetermined locations. During day 1 of the December 3-4 Ingestion Exercise, two JRMTs were each evaluated for four criteria. JRMT #2

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adequately demonstrated all four criteria in accordance with the plans, procedures and extent of play agreement.

JRMT #2 members conducted themselves very professionally and worked well together as a joint field team. Extensive use of procedures was observed, and ambient open/closed readings were taken to ensure entire air sample was taken while in the plume.

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

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

### 3.3.1.6 Kansas Ingestion Sampling Team #1

The evaluation of the Kansas Ingestion Sampling Teams (ISTs) occurred out of sequence from the exercise on June 5, 2019. The ISTs were deployed out of the KDHE Building at Forbes Field in Topeka, Kansas. Teams consisted of representatives from Kansas Department of Agriculture, KDHE, and a Department of Energy, Radiological Assistance Program (RAP) team member. These teams were briefed and sent to predetermined locations to collect environmental samples. Two ISTs were each evaluated for four criteria. IST #1 adequately demonstrated all four criteria in accordance with the plans, procedures and extent of play agreement.

IST #1 worked extremely well as a team with each member taking on specific tasks utilizing their expertise. IST #1 utilized procedures, checklists and peer checks during each sample collection.

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

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

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### 3.3.1.7 Kansas Ingestion Sampling Team #2

The evaluation of the Kansas Ingestion Sampling Teams (ISTs) occurred out of sequence from the exercise on June 5, 2019. The ISTs were deployed out of the KDHE Building at Forbes Field in Topeka, Kansas. Teams consisted of representatives from Kansas Department of Agriculture, KDHE, and a Department of Energy, Radiological Assistance Program (RAP) team member. These teams were briefed and sent to predetermined locations to collect environmental samples. Two ISTs were each evaluated for four criteria. IST #2 adequately demonstrated all four criteria in accordance with the plans, procedures and extent of play agreement.

IST #2 members paid close attention to minimize any cross-contamination issues during environmental sample collections and bagging. RadResponder was used extensively to mark waypoints of each sample collection location.

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

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

### 3.3.1.8 Kansas Joint Information Center

The Kansas Joint Information Center (JIC) is located with the Kansas State Emergency Operations Center (SEOC) in Topeka, Kansas. In addition to the JIC, a Joint Media Center (JMC) is located in the Wolf Creek Emergency Operations Facility (EOF). The JMC served as the coordinating location for the release of information to the general public during Day 1 of the exercise. Numerous State agencies, Coffey County and Wolf Creek Generating Station (WCGS) have PIO staff that report to the JIC and JMC. Five criteria at the JIC were adequately demonstrated in accordance with the plans, procedures and extent of play agreement.

All State PIO's did an excellent job with media monitoring and crisis communications. They monitored and fielded social media posts using SimDeck. In addition to replying to posts, they kept agency websites updated and posted exercise information to social media.

During day 1 of the exercise there were an impressive 28 News Statements generated and disseminated. One of these News Statements, put out by the Joint Media Center (JMC) at the Wolf Creek Emergency Operations Facility, was not approved by the Policy Group in Topeka.

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Due to this oversight, FEMA recommends bringing in an additional KDEM staff member to work with the Wolf Creek News Writer to help manage and validate all News Statements that are disseminated from the JMC.

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

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

### 3.3.1.9 Forward Staging Area

The Forward Staging Area (FSA) is located at the junction of Highway 75 and Old State Highway 50, approximately 1.5 miles south of I-35. The State of Kansas deploys three state agencies to this location to stage State resources. These agencies include the Kansas National Guard, Kansas Highway Patrol and the Kansas Department of Wildlife, Parks and Tourism. This location adequately demonstrated seven criteria in accordance with the plans, procedures and extent of play agreement.

An outstanding job was done of organizing the layout of the staging area making it completely functional for all purposes of the December 3-4, 2019, Wolf Creek Generating Station (WCGS) Ingestion Exercise. Kansas National Guard personnel worked especially well together and demonstrated a good working knowledge of necessary actions.

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

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### 3.3.2 Risk Jurisdictions

#### 3.3.2.1 Coffey County Emergency Operations Center

The Coffey County Emergency Operations Center (EOC) is located in the Coffey County Courthouse in Burlington, Kansas. There were representatives from numerous County agencies present to assist the Emergency Management staff in the EOC. Coffey County EOC adequately demonstrated all fifteen criteria in accordance with plans, procedures and the extent of play agreement.

An excellent display of leadership and participation from the County Commissioners was observed. Each county agency duty station had available checklists which referenced the location within the county plans and procedures pertinent to each step taken during an emergency exercise. Coffey County also successfully demonstrated the use of the Integrated Public Alert & Warning System (IPAWS) for alert and notification of the public.

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

#### 3.3.2.2 Waverly USD #243

Waverly Unified School District (USD) #243 is located in Waverly, Kansas, within the Wolf Creek Generating Station (WCGS) 10-mile plume Emergency Planning Zone (EPZ). There were two criteria adequately demonstrated by Waverly USD #243.

Staff were extremely knowledgeable of radiological plans and procedures and had ample resources to protect the health and safety of all students.

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

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

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

n.  
**3.3.3 Support Jurisdictions**

**3.3.3.1 Emporia Fire Department/Lyon County EMS-Ambulance**

Emporia Fire Department/Lyon County EMS is located in the host community of Emporia, Kansas. All three criteria were adequately demonstrated in accordance with the plans, procedures and extent of play agreement.

Personnel demonstrated excellent awareness and contamination control throughout the demonstration. Staff followed procedures for patient assessment and transport.

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

**3.3.3.2 Newman Regional Health – REA**

Newman Regional Health is located in the host community of Emporia, Kansas. All three criteria were adequately demonstrated in accordance with the plans, procedures and extent of play agreement.

Hospital staff utilized a new hospital addition and Radiological Emergency Area (REA) design. This new area allowed staff to be very effective in preventing the spread of any contamination. Staff utilized procedures and checklists extensively during the demonstration.

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 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None

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

### 3.3.3.3 Woodson County Reception Center

Woodson County Reception Center is located in the Woodson County Rural Fire Department building in Yates Center, Kansas. This facility is designed for monitoring and decontamination of evacuees and vehicles during a Wolf Creek Generating Station (WCGS) event. All eight criteria at this location were adequately demonstrated in accordance with the plans, procedures, and extent of play agreement.

Staff exhibited excellent teamwork in demonstrating the reception and decontamination capabilities of this new facility. The facility was small, but staff were able to make use of all available space for a successful demonstration.

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, 6.a.1, 6.b.1
- b. LEVEL 1 FINDINGS: None
- c. LEVEL 2 FINDINGS: 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 the December 3-4, 2019 ingestion exercise, the offsite radiological emergency response plans and preparedness for the State of Kansas 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 Kansas, site-specific to the Wolf Creek Generating Station, will remain in effect.

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## APPENDIX A: EXERCISE TIMELINE

Table 1 presents the times recorded for various activities and decisions at each of the evaluated locations during the Wolf Creek Generating Station ingestion exercise held on December 3-4, 2019. A disparity in times is normal given the need for message transmissions and decision-making at the various locales.

Date & Site: December 3-4 Wolf Creek IPX

Wolf Creek Generating Station - Time Line

Emergency Classification Level or Event	Time Utility Declared						
		Coffey	Kansas	Dose	Kansas	Kansas	Wolf
		County	EOF	and	JIC	State	Creek
		EOC		ET Coord.		EOC	FSA
Unusual Event (NOUE)	0806	0818			0815	0815	
Alert (ALERT)	0830	0843		0906	0900	0837	0909
Site Area Emergency (SAE)	0924	0934	0924	0924	0924	0929	0941
General Emergency (GE)	1036	1050	1036	1036	1036	1046	1047
Radiation Release Started	1029	1050	1029	1029		1046	
Radiation Release Terminated							
Facility Declared Operational		0847	0928		0925	0911	0940
Governor Declared State of Emergency - state			1107	1107	1029	0949	
Board of Commissioners Declared Local Disaster of Emergency - county		0943	0943	0943			
<u>1st Precautionary Action Recommendation</u> <u>Evacuate CCL, JRR &amp; REC Areas</u>		0934				0924	
<u>1st IPAWS Message</u>		0957				0957	
<u>2nd Precautionary Action Recommendation</u> <u>Access Control of Air 5 mi, 10,000, Rail 10 mi.</u>		1050				1059	
<u>1st Protective Action Decision - Evacuate Subareas JRR,</u> <u>CCL, CTR, N-1, NE-1, N-2, NE-2, NE-3</u>		1056				1103	
<u>2nd IPAWS Message</u>		1103				1103	
KI Approved		1107	1053			1059	1114
Exercise Terminated		1256	1300	1300		1300	

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## APPENDIX B: EXERCISE EVALUATORS AND TEAM LEADERS

DATE: 12/3-4/2019

SITE: Wolf Creek Generating Station

LOCATION	TEAM LEADER	AGENCY
Kansas State Emergency Operations Center	*Joe Suders Tim Pflieger Brad DeKorte	FEMA R3 FEMA R6 FEMA R6
Wolf Creek Emergency Operations Facility	* Darren Bates Tina Thomas	FEMA HQ FEMA R3
Kansas Dose Assessment & Field Team Coordination	*Nan Williams Chuck Hooper	FEMA R6 EPA
Kansas Joint Radiological Monitoring Team #1	*Greg Voss	FEMA R7
Kansas Joint Radiological Monitoring Team #2	*Ken Wierman	FEMA HQ
Kansas Ingestion Sampling Team #1	*Greg Voss	FEMA R7
Kansas Ingestion Sampling Team #2	*Jeff Clark	FEMA R7
Kansas Joint Information Center	*Linda Gee Jennifer Greene	FEMA R6 FEMA R3
Forward Staging Area	*Cody McKown	FEMA R7
Coffey County Emergency Operations Center	*Elsa Lopez Lisa Rink Andy Chancellor	FEMA R6 FEMA HQ FEMA R7
Waverly USD #243	*Jeff Clark	FEMA R7
Emporia Fire Dept/Lyon County EMS-Ambulance	*Chuck Hooper	EPA
Newman Regional Health - REA	*Greg Voss	FEMA R7
Woodson County Reception Center	*Jeff Clark Norm Valentine Greg Voss Dan Kanakares	FEMA R7 FEMA R7 FEMA R7 FEMA R7
*Team Leader		

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## APPENDIX C: ACRONYMS AND ABBREVIATIONS

Acronym	Description
ANS	Alert and Notification System
CCL	Coffey County Lake
CFR	Code of Federal Regulations
CTR	Center
DA	Dose Assessment
DHS	Department of Homeland Security
DRD	Direct Reading Dosimeter
EAL	Emergency Action Level
EAS	Emergency Alert System
ECL	Emergency Classification Level
EDG	Emergency Diesel Generator
EMS	Emergency Medical Service
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Extent of Play
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
ERO	Emergency Response Organization
EW	Emergency Worker
EWMDS	Emergency Worker Monitoring and Decontamination Station
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FRMAC	Federal Radiological Monitoring and Assessment Center
FSA	Forward Staging Area
FTC	Field Team Coordinator
GE	General Emergency
IC	Incident Commander
ICP	Incident Command Post
IPAWS	Integrated Public Alert & Warning System
IST	Ingestion Sampling Team
JIC	Joint Information Center
JMC	Joint Media Center
JRMT	Joint Radiological Monitoring Team
JRR	John Redmond Reservoir
KDEM	Kansas Division of Emergency Management
KDHE	Kansas Department of Health & Environment
KDWPT	Kansas Department of Wildlife, Parks, and Tourism

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KHP	Kansas Highway Patrol
KI	Potassium Iodide
KNG	Kansas National Guard
LOCA	Loss of Coolant Accident
LOOP	Loss of Offsite Power
MS-1	Medical Service
NOUE	Notification of Unusual Event
NRC	Nuclear Regulatory Commission
OCA	Owner Controlled Area
OOS	Out Of Sequence
ORO	Offsite Response Organization
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PIO	Public Information Officer
PPE	Personal Protective Equipment
RAP	Radiological Assistance Program
RCA	Radiological Controlled Area
RCS	Reactor Coolant System
REA	Radiological Emergency Area
REP	Radiological Emergency Preparedness
RMS	Radiation Monitoring System
RMT	Radiological Monitoring Team
RO	Radiological Officer
SAE	Site Area Emergency
SEOC	State Emergency Operations Center
SFP	Spent Fuel Pool
SRAM	State Radiological Assessment Manager
T/ACP	Traffic/Access Control Point
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
USD	Unified School District
WCGS	Wolf Creek Generating Station
WCNOC	Wolf Creek Nuclear Operating Corporation

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Radiological Emergency Preparedness Program (REP)

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