



FEMA

JUN 20 2013

Mr. Elmo E. Collins, Jr.
Regional Administrator
U.S. Nuclear Regulatory Commission Region IV
612 E. Lamar Blvd, Suite 400
Arlington, Texas 76011-8064

Dear Mr. Collins:

I am forwarding a copy of the Final After Action Report for the biennial Evacuee Monitoring and Decontamination, Reception and Care Center Exercise held on May 7, 2013, for the Palo Verde Nuclear Generating Station (PVNGS). The purpose of this exercise was to assess the level of state and local preparedness in responding to a radiological emergency. This final exercise report was prepared in coordination with the PVNGS Offsite Response Organizations.

Based on the evaluation of the May 7, 2013 exercise, the offsite radiological emergency response plans for the state of Arizona and the affected local jurisdictions, site-specific to PVNGS, can be implemented, and are adequate to provide reasonable assurance that appropriate measures can be taken off-site to protect the health and safety of the public in the event of a radiological emergency at PVNGS.

Therefore, the Code of Federal Regulations, Title 44 § 350 approval of the offsite radiological emergency response plans and preparedness for the state of Arizona, site-specific to PVNGS, will remain in effect.

I would also like to take this opportunity to acknowledge the many individuals that participated in this successful exercise. Their dedication to this program was clearly evident.

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Mr. Elmo E. Collins, Jr.

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If you have any questions or need additional information, please contact me at (510) 627-7100. Your staff may also contact Paul Anderson, PVNGS Site Specialist, at (510) 627-7093 or Richard Grundstrom, Regional Assistance Committee Chair, at (510) 627-7240.

Sincerely,



for Nancy Ward
Regional Administrator
FEMA Region IX

Enclosure

cc: NRC Headquarters Document Control Desk
US Nuclear Regulatory Commission
Washington, DC 20555-0001

Vanessa Quinn, Chief
Radiological Emergency Preparedness Branch
FEMA Headquarters



Palo Verde Nuclear Generating Station

After Action Report/ Improvement Plan

Exercise Date - May 07, 2013

Radiological Emergency Preparedness (REP) Program



FEMA

Published June 12, 2013

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Radiological Emergency Preparedness Program (REPP)

After Action Report/Improvement Plan

Palo Verde Nuclear Generating Station

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Palo Verde Nuclear Generating Station After Action Report/Improvement Plan

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EXECUTIVE SUMMARY

The U.S. Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Region IX evaluated an Evacuee Monitoring and Decontamination, Reception and Care Center (RCC) Exercise on May 7, 2013 for the 10-mile emergency planning zone (EPZ) around the Palo Verde Nuclear Generating Station (PVNGS). The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. The exercise followed FEMA's policies and guidance for exercising State and local radiological emergency response plans (RERP) and procedures.

The most recent biennial exercise at this site occurred on March 6, 2013. The qualifying emergency preparedness exercise was conducted on April 1, 1981.

FEMA wishes to acknowledge the efforts of the many individuals who participated in this exercise. Protecting the public health and safety is the full-time job of some of the 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 communities. Cooperation and teamwork was evident among all the participants during this exercise.

The local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them during the exercise. There were no Areas Requiring Corrective Action (ARCA) identified as a result of this exercise. There were no uncorrected ARCAs from previous exercises. Two plan issues from the previous exercise were corrected and successfully demonstrated. No new plan issues, identifying areas for improvement, were identified in this exercise.

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name

Palo Verde Nuclear Generating Station

Type of Exercise

Evacuee Monitoring and Decontamination Exercise

Exercise Date

May 7, 2013

Program

Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

Scenario Type

Radiological Emergency

1.2 Exercise Planning Team Leadership

Arizona Division of Emergency Management

Bill Wolfe, Radiological Emergency Preparedness Program Coordinator

Arizona Radiation Regulatory Agency

Toby Morales, Emergency Response Program Manager

Sonia Carpena, ER Coordinator

Arizona Department of Economic Security

Alcira Angulo, DES Emergency Coordinator

Maricopa County Department of Emergency Management

John Padilla, Emergency Services Planner

Maricopa County Sheriff's Office

Brad Dunn, Deputy

Maricopa County Animal Care and Control

John Reynolds, Lieutenant

Maricopa County Department of Public Health

Shawn Tennant, MCDPH-OPR, SNS Coordinator

Town of Buckeye Fire Department

Travis Rand, Battalion Chief-Training

Wickenburg Fire Department

Ed Temerowski, Chief

Wickenburg High School

Jacquelyn Jacobson, Principal

American Red Cross, Grand Canyon Chapter

Michael Veucasovic, Disaster Services Coordinator

Jerry Van Rennes, Mass Care Chair

Arizona Public Service, Palo Verde Nuclear Generating Station

David Crozier, Emergency Preparedness Senior Coordinator

1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the PVNGS exercise:

State Jurisdictions

- Arizona Department of Economic Security
- Arizona Division of Emergency Management
- Arizona Radiation Regulatory Agency

Risk Jurisdictions

- Maricopa County Animal Care and Control
- Maricopa County Department of Emergency Management
- Maricopa County Department of Public Health
- Maricopa County Department of Transportation
- Maricopa County Sheriff's Office
- Town of Buckeye Fire Department
- Wickenburg Fire Department
- Wickenburg Police Department
- Wickenburg High School Reception and Care Center

Private Organizations

- American Red Cross, Grand Canyon Chapter
- First Southern Baptist Church of Wickenburg
- Palo Verde Nuclear Generating Station
- Valley Metro-Regional Public Transportation Authority (RPTA)

Tribal Nations

- Tohono O'odham Nation

SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

FEMA Region IX evaluated the RCC Exercise to assess the capabilities of the offsite response organizations (OROs) to protect public health and safety in the event of a radiological emergency at PVNGS. Participant actions were evaluated against current response plans and capabilities related to the release of radiological materials from PVNGS. Exercise play included emergency response actions to a radiological release.

2.2 Exercise Objectives, Capabilities and Activities

The exercise was designed to demonstrate the ORO's capability to respond in accordance with evaluation area criteria listed in the FEMA Radiological Emergency Preparedness (REP) Program Manual, April 2012. The objectives of this exercise are as follows:

Criterion 1.a.1: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654/FEMA REP-1, A.1.a, e; A.3, 4; C.1, 4, 6; D.4; E.1, 2; H.3, 4).

Criterion 1.d.1: At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations. (NUREG-0654/FEMA REP-1, F.1.2)

Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654/FEMA REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b)

Criterion 3.a.1: The OROs issue appropriate dosimetry, KI, and procedures, and manage radiological exposure to emergency workers in accordance with the plans/procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. OROs maintain appropriate record-keeping of the administration of KI to emergency workers (NUREG-0654/FEMA-REP-1, J.10.e; K.3.a, b; K.4)

Criterion 3.b.1: KI and appropriate instructions are available if a decision to recommend use of KI is made. Appropriate record-keeping of the administration of KI for institutionalized individuals is maintained. (NUREG-0654/FEMA-REP-1, J.10.e, f)

Criterion 6.a.1: The reception center facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees. (NUREG-0654/FEMA-REP-1, A.3; C.4; J.10.h; J.12)

Criterion 6.c.1: Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with American Red Cross planning guidelines. Managers

demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities. (NUREG-0654/FEMA-REP-1, J.10.h, J.12)

The core capabilities listed below were selected by the 2013 PVNGS exercise planning team based on a cross-walk with corresponding REP Program criteria. Please note that minor discrepancies between the Homeland Security Exercise and Evaluation Program and REP terminology may be present, but that these present no significant issues. Elements of the following capabilities provide the foundation for the integration of the REP Program objectives and the development of the exercise scenario.

Environmental Response, Health and Safety, REP Criteria 3.a.1, 6.a.1

- **Mission Area:** Response
- **Description:** Ensure the availability of guidance and resources to address all hazards including hazardous materials, acts of terrorism, and natural disasters in support of the responder operations and the affected communities.

Mass Care Services, REP Criterion 6.c.1

- **Mission Area:** Response
- **Description:** Provide life-sustaining services to the affected population with a focus on hydration, feeding, and sheltering to those who have the most need, as well as support for reunifying families.

On-Scene Security and Protection, REP Criteria 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 6.a.1, 6.c.1.

- **Mission Area:** Response
- **Description:** Ensure a safe and secure environment through law enforcement and related security and protection operations for people and communities located within affected areas and also for all traditional and atypical response personnel engaged in lifesaving and life-sustaining operations.

Public Health and Medical Services, REP Criteria 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1.

- **Mission Area:** Response
- **Description:** Provide lifesaving medical treatment via emergency medical services and related operations and avoid additional disease and injury by providing targeted public health and medical support and products to all people in need within the affected area.

2.3 Scenario Summary

The 2013 PVNGS RCC Exercise demonstrated evacuee monitoring, decontamination and temporary care for evacuees that were a result of response activities initiated in the Plume Phase Full Scale Exercise on March 6, 2013. This exercise scenario involved both onsite and offsite response to a release of radiological materials from PVNGS.

A summary of the PVNGS scenario is as follows:

At 0730, a SEISMIC EVENT occurred. Unit 1 control room staff felt ground motion and received a Seismic Alarm which by procedure directs the control room staff to 'validate' the alarm. The control room staff contacted the U.S. Geological Survey for further information. Following validation, at approximately 0736 an Unusual Event was declared. There was no release in progress and no Protective Action Recommendations or Decisions were made. Offsite notifications were initiated. The State and county received the notification but no further actions were taken.

At 0758, an aftershock shock occurred resulting in a steam generator tube rupture and an unisolatable leak of radioactive materials to the environment was initiated. There was a loss of offsite power and a subsequent reactor trip. At approximately 0828, a Site Area Emergency was declared. This event initiated a minor release of radioactive materials that exceeded federally approved limits but did not exceed protective action guides. The utility initiated notifications to the offsite response organizations and made an initial Protective Action Recommendation to Shelter to a 2-mile radius. The State, in response to the declaration of a Site Area Emergency, alerted, notified and mobilized their emergency response organizations and activated all the offsite emergency response facilities. The State concurred with the utility's protective action recommendation but also added shelter from two to ten miles in downwind sectors E, F and G and evacuate Arlington School to the reception and congregate care center at Wickenburg High School.

A series of events occurred onsite further degrading plant conditions and increasing the release rate. At approximately 1030, a second aftershock occurred. The release rate increased. Dose projections indicated Protective Action Guides were exceeded. A dose assessment revealed that doses greater than 5,000 mrem Thyroid CDE were at or beyond the site boundary. The utility made a recommendation to evacuate 2-mile radius and 2-5 miles in Sectors E, F & G. The State made a Protective Action Decision to evacuate the 2-mile radius and Sectors E, F & G to 10 miles.

The 2013 PVNGS RCC Exercise demonstrated evacuee monitoring, decontamination and temporary care for evacuees as a result of the Protective Action Decision to evacuate Arlington School and the public that was at risk.

SECTION 3: ANALYSIS OF CAPABILITIES

3.1 Exercise Evaluation and Results

This section contains the results and findings of the evaluation of the OROs that participated in the PVNGS RCC Exercise on May 7, 2013. This exercise tested the offsite emergency response capabilities of state and local governments in the EPZ surrounding PVNGS. The OROs were evaluated on their demonstration of criteria delineated in the exercise evaluation areas in the April 2012, REP Program Manual. The Extent of Play agreement used for this exercise is referenced in Appendix C of this report.

3.2 Summary Results of Exercise Evaluation

The matrix presented in Table 3.1, presents the status of all exercise evaluation area criteria which were scheduled for demonstration during this exercise by the participating jurisdictions and functional entities. Exercise evaluation area criteria are listed by number and the demonstration status of those evaluation area criteria is indicated by the use of the following letters:

M – Met (No deficiencies or ARCAs assessed and no unresolved ARCAs from prior exercises)

D – Deficiency assessed

A – ARCA(s) assessed or unresolved ARCA(s) from prior exercise(s)

N – Not Demonstrated (Reason explained in Appendix C, Extent of Play agreement)

P – Plan Issue

Presented below are definitions of the terms used in this section relative to criteria demonstration status.

a. Met – Listing of the demonstrated exercise evaluation area criteria under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.

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

c. Area Requiring Corrective Action – Listing of the demonstrated exercise evaluation area criteria under which one or more ARCAs were assessed during the current exercise. Included is a description of the ARCAs assessed during this exercise and the recommended corrective actions to be demonstrated before or during the next biennial plume phase exercise.

d. Not Demonstrated – Listing of the exercise evaluation area criteria that were scheduled to be demonstrated during this exercise, but were not demonstrated and the reason they were not demonstrated.

e. Plan – Listing of the exercise evaluation area criteria under which one or more Plan issues were assessed during this exercise. Included is a description of each Plan issue and recommended corrective actions.

The following are classifications of the types of issues that are discussed in this report:

A Deficiency is defined in the FEMA April 2012, REP Program Manual as “An observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant.”

An ARCA is defined in the FEMA April 2012, REP Program Manual as “An observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety.”

A Plan Issue is defined in the FEMA April 2012, REP Program Manual as “An observed or identified inadequacy in the ORO’s emergency plan/procedures, rather than in the ORO’s performance.”

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

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

- a. Plant Site Identifier – A two-digit number corresponding to the Utility Billable Plant Site Codes.
- b. Exercise Year – The last two digits of the year the exercise was conducted.
- c. Evaluation Area Criterion – A letter and number corresponding to the criteria in the FEMA REP Exercise Evaluation Methodology.
- d. Issue Classification Identifier – (D = Deficiency, A = ARCA, P = Plan)
- e. Exercise Issue Identification Number – A separate two digit indexing number assigned to each issue identified in the exercise.

Table 3.1 – Summary of Exercise Evaluation, Plume Phase

DATE: 2013-05-07 SITE: Palo Verde Nuclear Generating Station, AZ M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		Wknburg HS RCC
Emergency Operations Management		
Mobilization	1a1	M
Facilities	1b1	
Direction and Control	1c1	
Communications Equipment	1d1	M
Equipment and Supplies to Support Operations	1e1	M
Protective Action Decision Making		
Emergency Worker Exposure Control	2a1	
Dose Assessment PARs for the Emergency Event	2b1	
Dose Assessment PADs for the Emergency Event	2b2	
PADs for Protection of persons with access/functional needs	2c1	
Radiological Assessment and Decision making - Ingestion	2d1	
Radiological Assessment and Decision making concerning Post-Plume Phase Relocation, Reentry, and Return	2e1	
Protective Action Implementation		
Implementation of emergency worker exposure control	3a1	M
Implementation of KI decision for institutionalized & Public	3b1	M
Implementation of protective actions for access/functional needs	3c1	
Implementation of protective actions for Schools	3c2	
Implementation of traffic and access control	3d1	
Impediments to evacuation are identified and resolved	3d2	
Implementation of ingestion pathway decisions	3e1	
Materials for Ingestion Pathway PADs are available	3e2	
Implementation of relocation, re-entry, and return decisions	3f1	
Field Measurement and Analysis		
RESERVED	4a1	
Field Teams managed to obtain sufficient information	4a2	
Field Teams manage sample collection appropriately	4a3	
Post plume phase field measurements and sampling	4b1	
Laboratory operations	4c1	
Emergency Notification and Public Info		
Activation of the prompt alert and notification system	5a1	
RESERVED	5a2	
Backup alert and notification	5a3	
Activation of the prompt alert and notification system - Exception areas	5a4	
Emergency information and instructions for the public and the media	5b1	
Support Operations/Facilities		
Mon / decon of evacuees, and registration of evacuees	6a1	M
Mon / decon of emergency workers and equipment	6b1	
Temporary care of evacuees	6c1	M
Transportation and treatment of contaminated injured individuals	6d1	

3.3 Criteria Evaluation Summaries

3.3.1 Risk Jurisdictions

3.3.1.1 Wickenburg High School Reception & Care Center

The offsite response organizations at the Wickenburg High School Reception and Care Center demonstrated the National Preparedness Goal Core Capabilities for Environmental Response Health and Safety, Mass Care Services, On-Scene Security and Protection and Public Health and Medical Services. Environmental Response Health and Safety was demonstrated by controlling the emergency worker's radiological exposure and by monitoring radiological contamination on evacuees. Decontamination procedures for evacuees and emergency workers also supported this Core Capability. Mass Care Service was demonstrated at the First Southern Baptist Church, an American Red Cross shelter, in coordination with Maricopa County agencies. On-Scene Security and Protection was demonstrated by an orderly process for evacuee monitoring, decontamination and temporary care of evacuee needs for shelter and other emergency resources. Areas for contaminated evacuees were clearly separated from the areas for evacuees who had been surveyed as not contaminated. Contamination was strictly controlled. At the mass care shelter, evacuees were required to show that they had been surveyed as not contaminated or had been successfully decontaminated prior to entry into the shelter. The offsite response organizations demonstrated the capability to track contaminated vehicles and identify vehicle owners, closing the previous plan issue 45-11-6a1-P-3. Tent shelters were set up for evacuees and portal monitors to prevent heat stroke and facilitate the monitoring operation, closing the previous plan issue 45-11-6a1-P-4.

All activities were based on the plans and procedures and completed as they would have been in an actual emergency, except as noted in the Extent of Play agreement.

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

- a. MET: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 6.a.1, 6.c.1
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

SECTION 4: CONCLUSION

FEMA evaluated an RCC Exercise for the affected jurisdictions on May 7, 2013 in the 10-mile EPZ around the PVNGS. The purpose of the exercise was to assess the level of state and local preparedness in response to a radiological emergency. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of state and local RERPs and procedures.

The exercise participants demonstrated knowledge of their emergency response plans and procedures and adequately demonstrated the ability to follow those plans to protect the health and safety of the public. Two plan issues were corrected during this exercise. There were no Deficiencies, uncorrected ARCAs or Plan issues identified during the course of the exercise.

Based on our evaluation of the May 7, 2013, RCC Exercise, the offsite radiological emergency response plans for the State of Arizona and the affected local jurisdictions, site-specific to PVNGS, 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 PVNGS.

APPENDIX A: EXERCISE EVALUATORS AND TEAM LEADERS

DATE: 2013-05-07, SITE: Palo Verde Nuclear Generating Station, AZ

LOCATION	EVALUATOR	AGENCY
Wickenburg High School Reception & Care Center	*Johanna Berkey	FEMA RIX
	Heather Duschell	FEMA RIX
	Elena Joyner	FEMA RIX
	Jill Leatherman	ICFI
	Dr. Kate McCarthy-Barnett	FEMA RI
	Alberto Sifuentes	FEMA RIX
	Roy Smith	ICFI
	Daryl Thome	ICFI
	Ken Wierman	FEMA HQ
	Dennis Wilford	ICFI
* Team Leader		

APPENDIX B: ACRONYMS

ARC	American Red Cross
ARCA	Areas Requiring Corrective Action
CDE	Committed Dose Equivalent
DES	Arizona Department of Economic Security
DHS	U.S. Department of Homeland Security
EPZ	Emergency Planning Zone
ER	Emergency Response
FEMA	Federal Emergency Management Agency
MCDPH- OPR, SNS	Maricopa County Department of Public Health, Office of Preparedness Response, Strategic National Stockpile
ORO	Offsite Response Organizations
PVNGS	Palo Verde Nuclear Generating Station
RCC	Reception and Care Center
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
RPTA	Valley Metro-Regional Public Transportation Authority

APPENDIX C: EXTENT OF PLAY

The Extent-of-Play (EOP) agreement for the PVNGS Evacuee Monitoring and Decontamination Reception and Care Center Exercise held May 7, 2013, was submitted to the Federal Emergency Management Agency (FEMA) by the Arizona Division of Emergency Management on October 24, 2012. The FEMA Region IX, Technological Hazards Branch approved the EOP agreement on January 14, 2013.

A copy of the EOP is maintained by FEMA Region IX and the Arizona Division of Emergency Management, and is herein incorporated by reference. The EOP is available by written request to FEMA Region IX, National Preparedness Division, Technological Hazards Branch, 1111 Broadway, Suite 1200, Oakland, CA 94607-4052 or the Arizona Division of Emergency Management, 5636 East McDowell Road, Phoenix, AZ 85008.

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