Palo Verde Generating Station
Biennial Plume Phase Exercise
After Action Report

Exercise Date: March 7, and 16, 2023

Radiological Emergency Preparedness Program

FEMA

Publication Date: June 2023

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EXECUTIVE SUMMARY

The United States (U.S.) Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) evaluated a biennial Plume Phase Exercise (PPX) for the Emergency Planning Zone (EPZ) surrounding the Palo Verde Generating Station (PVGS) on March 7, 2023. A separate out of sequence evaluation was conducted with Maricopa County on March 16, 2023.

During the PVGS PPX, FEMA assessed the ability of state and local offsite response organizations (ORO) to implement plans and procedures to protect the public in the event of a radiological incident at PVGS.

This biennial PPX is part of the FEMA Radiological Emergency Preparedness Program (REPP) to ensure that adequate capabilities exist to prevent, protect against, mitigate the effects of, respond to, and recover from incidents involving commercial nuclear power plants. The biennial PPX was held in accordance with FEMA's policies and guidance for the implementation of state and local ORO radiological emergency response plans and procedures. This exercise was evaluated using NUREG 0654/FEMA REP 1 Rev 1 document and the REPP Manual (January2016).

The Extent of Play (EOP) agreements were reviewed and approved by the FEMA Region 9 Regional Assistance Committee (RAC) Chair on February 23, 2023. The EOP agreements were based on the assessment areas and sub-elements outlined in the REPP Manual (January 2016).

The evaluation was held in accordance with FEMA's policies and guidance for the implementation of state and local ORO radiological emergency response plans and procedures. There were no Level 1 Findings, but there were six Level 2 Findings regarding Emergency Operations Management (1.a.1), Precautionary and/or Protective Action Decision-Making (2.a.1) and (2.b.1), Implementation of Emergency Worker Exposure Control (3.a.1), Plume Phase Field Measurements and Analyses (4.a.2), and Monitoring and Decontamination of Emergency Workers and their Equipment and Vehicles (6.b.1). These Level 2 Findings require redemonstration by September 30, 2023, to ensure additional training and other corrective actions have occurred to sufficiently address them. No Planning Issues were identified.

In summary, the OROs did not adequately demonstrate their ability to implement plans and procedures during the exercise, and must redemonstrate their capabilities in several areas later this year following the implementation of necessary corrective actions.

SECTION 1: EXERCISE OVERVIEW

Exercise Name	2023 Palo Verde Generating Station Biennial Plume Phase Exercise
Exercise Dates	March 7 and 16, 2023
Scope	This exercise is a full-scale exercise at designated offsite response organization locations
Assessment Areas Area(s)	Emergency Operations Management Precautionary and/or Protective Action Decision-Making Protective Action Implementation Field Measurements and Analysis Emergency Notification and Public Information Support Operation Facilities
Sub-Elements	Mobilization Facilities Direction and Control Communication Equipment Equipment and Supplies to Support Operations Emergency Worker Exposure Control Radiological Assessment, Protective Action Recommendations, and Precautionary and/or Protective Action Decisions for the Plume Phase of the Emergency. Precautionary and/or Protective Action Decision Consideration for the Protection of Persons with Disabilities and Access/Functional Needs. Implementation of Emergency Worker Exposure Control Implementation of KI Decision for Institutionalized Individuals and the General Public. Implementation of Precautionary and/or Protective Actions for Persons with Disabilities and Access/Functional Needs. Implementation of Emergency Worker Exposure Control. Implementation of KI Decision for Institutionalized Individuals and the General Public. Implementation of Precautionary and/or Protective Actions for Persons with Disabilities and Access/Functional Needs. Implementation of Traffic and Access Control. Plume Phase Field Measurements and Analyses. Activation of the Prompt Alert and Notification System Subsequent Emergency Information and Instructions for the Public and the Media. Monitoring and Decontamination of Emergency Workers and their Equipment and Vehicles.
Objectives	N/A
Threat or Hazard	Release of radiological materials from a licensed commercial nuclear power plant

Exercise Name	2023 Palo Verde Generating Station Biennial Plume Phase Exercise
Scenario	This exercise required offsite response organizations (OROs) to coordinate their decisions on how to address a radiological hazard from an emergency at Palo Verde Generating Station. OROs demonstrated the implementation of protective actions to preserve health and safety of the public due to a potential or actual offsite release of radioactive materials from Palo Verde Generation Station.
Sponsor	Maricopa County Department of Emergency Management Arizona Department of Emergency and Military Affairs Palo Verde Generating Station
Participating Organizations	Local, county, state, and federal governmental agencies and non-governmental organizations. A complete list of participating agencies and organizations is attached in Appendix B.

SECTION 2: ANALYSIS OF ASSESSMENT AREAS

2.1 Summary Results of Exercise Evaluation

Table 1 below includes the exercise objectives, assessment areas, and the status of each assessment area and related sub-elements evaluated during the 2023 Palo Verde Generating Station biennial Plume Phase Exercise.

Each jurisdiction and functional entity were evaluated based on their demonstrated ability to execute core capabilities and meet associated capability targets using the following terms:

- **Met (M):** The jurisdiction or functional entity performed all activities under the objective/capability target to the level required per the work plan and/or the extent-of-play agreement, with no Level 1 or Level 2 Findings evaluated under that objective/capability target during the current activity and no unresolved prior Level 2 Finding(s).
- **Level 1 Finding (L1):** An observed or identified inadequacy of organizational performance during an assessment activity 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 an NPP.
- **Level 2 Finding (L2):** An observed or identified inadequacy of organizational performance during an assessment activity that is not considered, by itself, to adversely impact public health and safety.
- **Plan Issue (P):** An observed or identified inadequacy in the ORO's emergency plan/implementing procedures, rather than in that of the ORO's performance.
- **Not Demonstrated (N):** For a justifiable reason, the jurisdiction or functional entity did not perform assessment activities under the objective/capability target as specified in the extent-of-play agreement.
- **Not Applicable (N/A):** The objective/capability target does not apply to the jurisdiction.

2.1.1 Summary of Assessment areas evaluated

Location	Criteria	Assessment Areas	Status
State Emergency Operations Center (EOC), Technical Operations Center (TOC)	2.a.1 2.b.1	Precautionary and/or Protective Action Decision-Making	**Level 2 Findings (L2)**
	1.a.1 1.c.1 1.d.1 4.a.2	Emergency Operations Management Field Measurements and Analyses	M
State EOC, Policy	1.a.1 1.d.1 3.b.1 3.c.2	Emergency Operations Management, Protective Action Implementation	M
State EOC, General	1.b.1 1.c.1 2.c.1 3.c.1 5.b.1	Emergency Operations Management, Precautionary and/or Protective Action Decision Consideration for the Protection of Persons with Disabilities and access/Functional Needs Protective Action Implementation Emergency Notification and Public Information	M
Emergency Operations Facility (EOF)	1.a.1 1.d.1 2.b.1	Emergency Operations Management, Precautionary and/or Protective Action Decision Consideration for the Protection of Persons with Disabilities and access/Functional Needs	M

Location	Criteria	Assessment Areas	Status
Radiological Emergency Assistance Team-Forward (REAT-F)	3.a.1 4.a.2 6.b.1	Protective Action Implementation Field Measurements and Analyses Support Operations/Facilities	**Level 2 Findings (L2)**
	1.b.1 1.c.1 2.a.1	Emergency Operations Management, Precautionary and/or Protective Action Decision - Making	M
Field Monitoring Teams			
	1.a.1	Emergency Operations Management	**Level 2 Finding (L2)**
	1.d.1 1.e.1 3.a.1 4.a.3	Emergency Operations Management, Protective Action Implementation Field Measurements and Analyses	
MCDEM EOC	1.a.1 1.b.1 1.c.1 1.d.1 2.b.1 2.b.2 3.b.1 3.c.1 3.c.2 5.a.3 5.b.1	Emergency Operations Management, Precautionary and/or Protective Action Decision Consideration for the Protection of Persons with Disabilities and access/Functional Needs Protective Action Implementation Emergency Notification and Public Information	M

Location	Criteria	Assessment Areas	Status
Maricopa County Sherriff Office (MCSO)	1.a.1 1.b.1 1.c.1 1.d.1 1.e.1 3.b.1 3.c.1 3.d.1 3.d.2 5.a.1	Emergency Operations Management Protective Action Implementation Emergency Notification and Public Information	M
Arizona Department of Agriculture Command Center	1.a.1 1.b.1 2.b.2	Emergency Operations Management, Precautionary and/or Protective Action Decision Consideration for the Protection of Persons with Disabilities and access/Functional Needs	M
Schools, Ruth Fisher Middle School	3.b.1 3.c.2	Protective Action Implementation	M
Desert Edge High School, Reception Care Center	3.b.1	Protective Action Implementation	M

2.2 Detailed Results of Exercise Evaluation

2.2.1 State Emergency Operations Center/ Technical Operations Center

Assessment Area 1: Emergency Operations Management

Sub-Elements 1a, 1b, 1c, 1d – Mobilization, Facilities, Direction and Control, Communications Equipment

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; G.3.a; H.3, 4)

Criterion: 1.b.1 Facilities are sufficient to support the emergency response. (NUREG 0654/FEMA-REP-1, G.3.a; H.3; J.10.h; J.12; K.5.b)

Criterion: 1.c.1 Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654/FEMA-REP-1, A.1.d; A.2.a, b; A.3; C.4, 6)

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)

All relevant critical tasks were adequately demonstrated.

Assessment Area 2: Precautionary and/or Protective Action Decision-Making

Sub-Elements 2a, 2b – Emergency Worker Exposure Control, Radiological Assessment, Protective Action Recommendations (PARs), and Precautionary and/or Protective Action Decisions (PADs)for the Plume Phase of the Emergency.

Criterion: 2.a.1 OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers, including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654/FEMA-REP-1, C.6; f; K.3.a; K.4)

Criterion: 2.b.1 Appropriate protective action recommendations (PARs) are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654/FEMA-REP-1, I.10 and Supplement 3)

All relevant critical tasks were NOT adequately demonstrated.

Assessment Area 4: Field Measurements and Analyses

Sub-element 4.a – Plume Phase Field Measurements and Analyses

Criterion: 4.a.2 Field teams (2 or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654/FEMA-REP-1, C.1; H.12; I.7, 8, 11; J.10.a)

All relevant critical tasks were adequately demonstrated.

2.2.2 State EOC, Policy

Assessment Area 1: Emergency Operations Management

Sub-Elements 1a, 1d – Mobilization, Communications Equipment

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; G.3.a; 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)

All relevant critical tasks were adequately demonstrated.

Assessment Area 3: Protective Action Implementation

Sub-elements 3b, 3c – Implementation of KI Decision for Institutionalized Individuals and the General Public, Implementation of Precautionary and/or Protective Actions for Persons with Disabilities and Access/Functional Needs

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: 3.c.2 OROs/School officials implement precautionary and/or protective actions for schools. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g)

All relevant critical tasks were adequately demonstrated.

2.2.3 State EOC, General

Assessment Area 1: Emergency Operations Management

Sub-Elements 1b, 1c – Facilities, Direction, and Control

Criterion: 1.b.1 Facilities are sufficient to support the emergency response. (NUREG-0654/FEMA-REP-1, G.3.a; H.3; J.10.h; J.12; K.5.b)

Criterion: 1.c.1: Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654/FEMA-REP-1, A.1.d; A.2.a, b; A.3; C.4, 6)

All relevant critical tasks were adequately demonstrated.

Assessment Area 2: Precautionary and/or Protective Action Decision-Making

Sub-Elements 2c – Precautionary and/or Protective Action Decision Consideration for the Protection of Persons with Disabilities and Access/Functional Needs.

Criterion: 2.c.1 Precautionary and/or protective action decisions are made, as appropriate, for groups of persons with disabilities and access/functional needs. (NUREG-0654/ FEMA-REP-1, D.4; J.9; J.10.d, e)

All relevant critical tasks were adequately demonstrated.

Assessment Area 3: Protective Action Implementation

Sub-elements 3c – Implementation of Precautionary and/or Protective Actions for Persons with Disabilities and Access/Functional Needs.

Criterion: 3.c.1 Precautionary and/or protective action decisions are implemented for persons with disabilities and access/ functional needs other than schools within areas subject to protective actions. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g)

All relevant critical tasks were adequately demonstrated.

Assessment Area 5: Emergency Notification and Public Information

Sub-elements 5b – Subsequent Emergency Information and Instructions for the Public and the Media.

Criterion: 5.b.1 OROs provide accurate subsequent emergency information and instructions to the public and the news media in a timely manner. (NUREG-0654/FEMA-REP-1, E.5, 7; G.3.a, G.4.a, c)

All relevant critical tasks were adequately demonstrated.

2.2.4 Emergency Operations Facility (EOF)

Assessment Area 1: Emergency Operations Management

Sub-elements 1a,1d – Mobilization, Communications Equipment

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; G.3.a; 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)

All relevant critical tasks were adequately demonstrated.

Assessment Area 2: Precautionary and/or Protective Action Decision-Making

Sub-elements 2b – Radiological Assessment, Protective Action Recommendations, and Precautionary and/or Protective Action Decisions for the Plume Phase of the Emergency.

Criterion: 2.b.1 Appropriate protective action recommendations (PARs) are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654/FEMA-REP-1, I.10 and Supplement 3)

All relevant critical tasks were adequately demonstrated.

2.2.5 Radiological Emergency Assistance Team-Forward (REAT-F)

Assessment Area 1: Emergency Operations Management

Sub-elements 1b, 1c – Facilities, Direction and Control

Criterion: 1.b.1 Facilities are sufficient to support the emergency response. (NUREG-0654/FEMA-REP-1, G.3.a; H.3; J.10.h; J.12; K.5.b)

Criterion: 1.c.1: Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654/FEMA-REP-1, A.1.d; A.2.a, b; A.3; C.4, 6)

All relevant critical tasks were adequately demonstrated.

Assessment Area 2: Precautionary and/or Protective Action Decision-Makin

Sub-Elements 2a – Emergency Worker Exposure Control and Radiological Assessment.

Criterion: 2.a.1: OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers, including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654/FEMA-REP-1, C.6; f; K.3.a; K.4)

All relevant critical tasks were adequately demonstrated.

Assessment Area 3: Protective Action Implementation

Sub-element 3.a – Implementation of Emergency Worker Exposure Control

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, K.3.a, b; K.4)

All relevant critical tasks were **NOT** adequately demonstrated.

Assessment Area 4: Field Measurements and Analyses

Sub-element 4.a – Plume Phase Field Measurements and Analyses

Criterion: 4.a.2: Field teams (2 or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654/FEMA-REP-1, C.1; H.12; I.7, 8, 11; J.10.a)

All relevant critical tasks were NOT adequately demonstrated.

Assessment Area 6: Support Operations/Facilities

Sub-element 6.b – Monitoring, Decontamination, and Registration of Evacuees
Criterion: 6.b.1 The facility/ORO has adequate procedures and resources to accomplish monitoring and decontamination of emergency workers and their equipment and vehicles. (NUREG-0654/FEMA-REP-1, K.5.a, b)

All relevant critical tasks were NOT adequately demonstrated.

2.2.6 Field Monitoring Teams

Assessment Area 1: Emergency Operations Management

Sub-elements 1a, 1d, 1e– Mobilization, Communications Equipment, Equipment and Supplies to Support Operations

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; G.3.a; H.3, 4)

All relevant critical tasks were NOT adequately demonstrated.

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, monitoring instruments, 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)

All relevant critical tasks were adequately demonstrated.

Assessment Area 3: Protective Action Implementation

Sub-element 3.a – Implementation of Emergency Worker Exposure Control

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, K.3.a, b; K.4)

All relevant critical tasks were adequately demonstrated.

Assessment Area 4: Field Measurements and Analyses

Sub-element 4.a – Plume Phase Field Measurements and Analyses

Criterion: 4.a.3 Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams will move to an appropriate low background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media. (NUREG-0654/FEMA-REP-1, C.1; H.12: I.8, 9; J.10.a)

All relevant critical tasks were adequately demonstrated.

2.2.6 MCDEM EOC

Assessment Area 1: Emergency Operations Management

Sub-Elements 1a, 1b, 1c, 1d– Mobilization, Facilities, Direction and Control, Communications Equipment

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; G.3.a; H.3, 4)

Criterion: 1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654/FEMA-REP-1, G.3.a; H.3; J.10.h; J.12; K.5.b)

Criterion: 1.c.1: Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654/FEMA-REP-1, A.1.d; A.2.a, b; A.3; C.4, 6)

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).

All relevant critical tasks were adequately demonstrated.

Assessment Area 2: Precautionary and/or Protective Action Decision-Making

Sub-Element 2b – Radiological Assessment, Protective Action Recommendations (PARs), and Precautionary and/or Protective Action Decisions (PADs) for the Plume Phase of the Emergency.

Criterion: 2.b.1 Appropriate protective action recommendations (PARs) are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654/FEMA-REP-1, I.10 and Supplement 3)

Criterion: 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make precautionary and/or protective action decisions for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654/FEMA-REP-1, A.3; C.4, 6; D.4; J.9; J.10.e, f; m)

All relevant critical tasks were adequately demonstrated.

Assessment Area 3: Protective Action Implementation

Sub-elements 3b, 3c – Implementation of KI Decision for Institutionalized Individuals and the General Public, Implementation of Precautionary and/or Protective Actions for Persons with Disabilities and Access/Functional Needs.

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.

Criterion: 3.c.1: Precautionary and/or protective action decisions are implemented for persons with disabilities and access/ functional needs other than schools within areas subject to protective actions. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g), 3.c.2: OROs/School officials implement precautionary and/or protective actions for schools. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g)

All relevant critical tasks were adequately demonstrated.

Assessment Area 5: Emergency Notification and Public Information

Sub-elements 5a, 5b: Activation of the Prompt Alert and Notification System, Subsequent Emergency Information and Instructions for the Public and the Media, Subsequent Emergency Information and Instructions for the Public and the Media.

Criterion: 5.a.3: Backup alert and notification of the public is completed within a reasonable time following the detection by the ORO of a failure of the primary alert and notification system. (NUREG-0654/FEMA-REP-1, E.6, Appendix 3.B.2.c)

Criterion: 5.b.1: OROs provide accurate subsequent emergency information and instructions to the public and the news media in a timely manner. (NUREG-0654/FEMA-REP-1, E.5, 7; G.3.a, G.4.a, c).

All relevant critical tasks were adequately demonstrated.

2.2.7 Maricopa County Sherriff Office (MCSO)

Assessment Area 1: Emergency Operations Management

Sub-Elements 1a, 1b, 1c, 1e – Mobilization, Facilities, Direction and Control, Communications Equipment, Equipment and Supplies to Support Operations

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; G.3.a; H.3, 4)

Criterion: 1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654/FEMA-REP-1, G.3.a; H.3; J.10.h; J.12; K.5.b) Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654/FEMA-REP-1, A.1.d; A.2.a, b; A.3; C.4, 6)

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, monitoring instruments, 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)

All relevant critical tasks were adequately demonstrated.

Assessment Area 3: Protective Action Implementation

Sub-elements 3b, 3c, 3d – Implementation of KI Decision for Institutionalized Individuals and the General Public, Implementation of Precautionary and/or Protective Actions for Persons with Disabilities and Access/Functional Needs, Implementation of Traffic and Access Control

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

Criterion: 3.c.1: Precautionary and/or protective action decisions are implemented for persons with disabilities and access/ functional needs other than schools within areas subject to protective actions. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g)

Criterion: 3.c.2: OROs/School officials implement precautionary and/or protective actions for schools. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g)

Criterion: 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654/FEMA-REP-1, A.3; C.1,4; J.10.g, j), 3.d.2: Impediments to evacuation are identified and resolved. (NUREG-0654/FEMA-REP-1, J.10.k)

All relevant critical tasks were adequately demonstrated.

Assessment Area 5: Emergency Notification and Public Information

Sub-element 5a: Activation of the Prompt Alert and Notification System

Criterion 5.a.1: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include as a minimum the elements required by current REP guidance. (NUREG-0654/FEMA-REP-1, E.5, 6, 7).

All relevant critical tasks were adequately demonstrated.

2.2.8 Arizona Department of Agriculture Command Center

Assessment Area 1: Emergency Operations Management

Sub-Elements 1a, 1b – Mobilization, Facilities

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; G.3.a; H.3, 4)

Criterion:1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654/FEMA-REP-1, G.3.a; H.3; J.10.h; J.12; K.5.b)

All relevant critical tasks were adequately demonstrated.

Assessment Area 2: Precautionary and/or Protective Action Decision-Making

Sub-Element 2b – Radiological Assessment, Protective Action Recommendations (PARs), and Precautionary and/or Protective Action Decisions (PADs) for the Plume Phase of the Emergency.

Criterion: 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make precautionary and/or protective action decisions for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654/FEMA-REP-1, A.3; C.4, 6; D.4; J.9; J.10.e, f; m)

All relevant critical tasks were adequately demonstrated.

2.2.9 Schools, Ruth Fisher middle school

Assessment Area 3: Protective Action Implementation

Sub-elements 3b, 3c – Implementation of KI Decision for Institutionalized Individuals and the General Public, Implementation of Precautionary and/or Protective Actions for Persons with Disabilities and Access/Functional Needs.

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: 3.c.2: OROs/school officials implement precautionary and/or protective actions for schools. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g)

All relevant critical tasks were adequately demonstrated.

2.2.10 Desert Edge High School, Reception Care Center

Assessment Area 3: Protective Action Implementation

Sub-element 3b– Implementation of KI Decision for Institutionalized Individuals and the General Public.

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.

All relevant critical tasks were adequately demonstrated.

2.3 Level 2 Findings

A. Criterion 2.a.1- Technical Operations Center (TOC) in the State Emergency Operations Center (SEOC), Assessment Area 2; Precautionary and/or Protective Action Decision-Making, Sub-Element; 2.a; Emergency Worker Exposure Control.

Issue Number: 45-23-2.a.1-L2-01; Precautionary and/or Protective Action Decision-Making	
ISSUE: The required inject as stated within the approved extent of play agreement for a state emergency worker to exceed administrative dose limits and seek approval was not demonstrated. Additionally, the Civil Support Team (CST) Liaison did not demonstrate the capability to understand emergency worker exposure control to an extent adequate to make decisions that would protect workers. Emergency worker doses were reported to the CST Liaison approximately every 15 minutes; however, the "doses" were actually dose rates (in units of micro Gray per hour) and not actual doses. The CST Liaison did not realize that worker cumulative doses were the important parameter, and they were unfamiliar with the use of a correction factor that would allow an estimate of the Total Effective Dose Equivalent from these measurements.	
RECOMMENDATION: Additional radiation protection training and experience should help considerably. Consider adding planning considerations such as usable dose rates and accumulative doses to the scenario package to fully support opportunities to demonstrate capabilities in this area.	
CORRECTIVE ACTION DESCRIPTION: Retrain selected staff to fully understand differences between dose and dose rates. Additionally, ensure the selected staff have the foundation for understanding basic radiation principles which include emergency worker dose limits, exposure control, and the differences and capability to convert between SI (International System of Units) units and traditional radiation units. The Radiological Core Concepts (RCCC) course and its pre-req classes may help provide a better foundation of the REP program requirements.	
PRIMARY RESPONSIBLE AGENCY:	
AZDEMA	START DATE:
AGENCY POC: Carpena, Sonia	ESTIMATED COMPLETION DATE:09/30/23

DEMONSTRATION CRITERION
Criterion 2.a.1 "Emergency Worker Exposure Control" – OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of potassium iodide (KI), is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides.

CONDITION
During the March 7, 2023 biennial exercise for the Palo Verde Generating Station (PVGS), the CST Liaison was able to control the movement of CST teams through their counterpart that was located at the REAT-F. However, they demonstrated little knowledge of radiation protection principles which could be used to direct field monitoring team activities. Specifically, emergency worker doses were reported to the CST Liaison approximately every 15 minutes; however, the

"doses" were reported dose rates (in units of microGray per hour). Through an interview, it was learned that the CST Liaison did not realize that worker accumulative doses were the important parameter, and therefore did not request accumulative doses from the field monitoring teams, and they were not provided as a result. Additionally, the CST liaisons were unfamiliar with the use of a dose correction factor that would allow an estimate of the Total Effective Dose Equivalent from these measurements.

PLANNING REFERENCE
The FEMA RPM (2016), Criterion K.3.a, requires that "Each organization shall make provision for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any nuclear accident, including volunteers. Each organization shall make provisions for distribution of dosimeters, both self-reading and permanent record devices."

EFFECT
The failure of submission of the accumulative doses, understanding of dose correction factors and TEDE could adversely impact emergency workers, allowing them to receive doses that exceed administrative limits without approval and or exceed emergency worker limits as defined within the EPA protective action guide (PAG) manual. The impacts crossed over between REAT-F and the TOC.

B. Criterion 2.b.1-Technical Operations Center (TOC) in the State Emergency Operations Center (SEOC): Assessment Area 2; Precautionary and/or Protective Action Decision-Making, Sub-element 2.b; Radiological Assessment, Protective Action Recommendations, and Precautionary and/or Protective Action Decisions for the Plume Phase of the Emergency.

Issue Number: 45-23-2.b.1-L2-02; Precautionary and/or Protective Action Decision-Making	
ISSUE: During the March 7, 2023 biennial PPX exercise for PVGS, the TOC did not utilize approved plans and procedures to conduct dose assessments using the Radiological Assessment System for Consequence Analysis for Radiological Emergencies (RASCAL) software, nor develop and document Protective Action Recommendations to support the SEOC Policy Group.	
RECOMMENDATION: TOC staff should receive additional training on base dose assessment activities and use of RASCAL, including a reinforced expectation related to the use of approved plans and procedures. Following the training, the TOC should redemonstrate the dose assessment and PAR development capabilities to support SEOC Policy Group decision making during a subsequent drill/exercise.	
CORRECTIVE ACTION DESCRIPTION: Selected staff will receive standard FEMA training, including the RAAC (Radiological Accident Assessment Concepts) course and its pre-requisite classes, if not previously taken. Selected staff will receive a RASCAL academic and hands on training course prior to a scheduled re-demonstration. The redemonstration of this finding is scheduled for September 19, 2023.	
PRIMARY RESPONSIBLE AGENCY:	
AZDEMA	START DATE:
AGENCY POC: Carpena, Sonia	ESTIMATED COMPLETION DATE:09/30/23

DEMONSTRATION CRITERION
Criterion 2.b.1 - Appropriate PARs are based on available information on plant condition, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions.

CONDITION
During the March 7, 2023 biennial PPX exercise for PVGS, the TOC did not utilize approved plans and procedures to conduct dose assessments using the RASCAL software, nor develop and document PARs to support the SEOC Policy Group. Specifically, the TOC Dose Assessor struggled with the technical development of appropriate source term and release path modeling using the RASCAL software in consideration of the available radiological data from the plant and field monitoring teams. As such, the TOC was unable to consistently compare and analyze TOC dose assessment data results with PVGS dose assessments (to be within a factor of 10 between the two [PVGS and TOC]). This was exacerbated by the fact that they were never observed reviewing the approved procedures/job action sheets for conduct of dose assessment by the TOC. Additionally, because of the challenges the Dose Assessor experienced in completing assessments using RASCAL, the TOC did not produce any PAR for the Policy Group, using the associated form described in the approved plan. Any recommendations provided to the Policy Group via the TOC Director were completed verbally during discussions in developing the State Protective Action Decisions (PADs).

PLANNING REFERENCE
The FEMA RPM, Part II, NUREG Criterion I.10 requires in part that "Each organization shall establish means for relating the various measured parameters (e.g., contamination levels, water, and air activity levels) to dose rates for key isotopes and gross radioactivity measurements. Provisions shall be made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. The detailed provisions shall be described in separate procedures."

The Arizona Department of Emergency and Military Affairs (ADEMA) Technical Operations Center Annex, dated July 2021, Section "FMT Field Monitoring Responsibilities) – NUREG Standard I," states in part that: "Dose assessment tools used to complete modeling and assessments are the RASCAL (Radiology Assessment System for Consequence Analysis) and Turbo-FRMAC software programs". and "Consistently compare and analyze PVGS dose assessment with TOC; dose assessment data results must be within a factor of 10 between the two (PVGS and TOC)."

Appendix J of the TOC Annex, dated July 2021, states in part that, the TOC Dose Assessor shall: "Follow instructions if needed from the RASCAL workbook and/or from the DEMA Dose Assessment SOP. Review RASCAL Dose Assessment results with the TOC Director or [subject matter expert]. Compare with the Palo Verde Dose Assessment Team. The final product results must be within a factor of 10 with PVGS results.

The TOC Annex dated July 2021, Section "Emergency Facilities and Equipment (Direction, Control, and Coordination) – NUREG Standard H," also states in part that the TOC Director

manages overall TOC Operations, including the management of PAR creation/review (with other state, county, and subject matter experts), analyzing available data, and providing recommendations. Additionally, the same part of the TOC Annex states that the PAR decision maker is the DEMA Director or Designee, but the TOC Director is responsible for timely PAR development and delivery as requested by the SEOC Policy Group.

EFFECT
Because of the challenges the TOC Dose Assessor experienced in completing assessments using RASCAL in accordance with approved plan and procedures, the TOC did not produce any PAR for the Policy Group, using the associated form described in the approved plan. These challenges further resulted in extended SEOC Policy Group discussion in developing PADs, which could have delayed appropriate protection for emergency workers and the general public in the areas affected by the radiological plume.

C. Criterion 1.a.1-Field Monitoring Teams at REAT-F. OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. Assessment Area 1; Emergency Operations Management, Sub-element 1.a; Mobilization.

Issue Number: 45-23-1.a.1-L2-03; Emergency Operations Management, Mobilization	
ISSUE: During the March 7, 2023 biennial PPX exercise for PVGS, the Field Monitoring CSTs did not activate and respond in a timely manner.	
RECOMMENDATION: Additional radiation protection training including FEMA standard REP classes and experience should help considerably. A redemonstration of Field Team Mobilization, use of the Arizona State approved procedures with the TOC dose assessment. Activate Field Monitoring Teams (FMTs) in accordance with the extent of play agreement and or activate in accordance with the plans and procedures.	
CORRECTIVE ACTION DESCRIPTION: Selected staff will receive standard FEMA REP program training courses to include the Radiological Core Concepts (RCCC) course and its pre-requisite classes prior to the redemonstration scheduled for September 19, 2023.	
PRIMARY RESPONSIBLE AGENCY:	
AZDEMA, CSTs	START DATE:
AGENCY POC: Carpena, Sonia	ESTIMATED COMPLETION DATE:09/30/23

DEMONSTRATION CRITERION
Criterion 1.a.1 OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner.

CONDITION
During the March 7, 2023 biennial PPX exercise for PVGS, the Field Monitoring CSTs did not demonstrate effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. During the observations, deficiencies were noted which could have impeded response operations and protective actions by other OROs. REAT-F documented receipt of the ECL Alert at 0942.

The CST did not arrive at the Buckeye airport REAT-F location until 1050 hours. In accordance with the Arizona Department of Emergency and Military Affairs Radiological Emergency Assistance Team Annex, dated July 2021, the FMTs are directed to mobilize at the Alert Emergency Classification Level (ECL), which occurred at approximately 0900 hours. Due to the late arrival of the CST at 1050 hours to the REAT-F facility, the performance of the CST in the PVGS biennial PPX was degraded. The extent of play agreement also directed the prepositioning of FMTs to fully support exercise participation.

Additionally, prior to FMTs being dispatched, their leadership directed the team members to eat lunch, which further delayed their deployment to the field for conducting radiological surveys and sample collection. In an actual radiological release from the PVGS, this performance could have resulted in degraded protection of the public health and safety due to the FMTs not providing critical radiological data to decision-makers within the Arizona Department of Emergency Management and Military Affairs. The CST did not successfully demonstrate the management of FMTs to obtain sufficient information to help characterize the release and to control radiation exposure.

PLANNING REFERENCE
This Sub-element is derived from NUREG-0654/FEMAREP-1, which requires that OROs have the capability to alert, notify, and mobilize emergency personnel, and activate and staff emergency facilities. (NUREG-0654/FEMA-REP-1, A.1.a, e; A.3, 4; C.1,4, 6; D.4; E.1, 2; G.3.a; H.3, 4)

EFFECT
FMT data was not available for use by the TOC in dose assessment due to the late deployment of FMTs. Additionally, different turn back values and threshold doses could have resulted in exceeding state administrative exposures. FMT radiological data was not obtained soon enough to help characterize the release and to control radiation exposure.

D. Criterion 3.a.1- Radiological Emergency Assistance Team Forward

The OROs issue appropriate dosimetry, KI, and procedures, and manage radiological exposure to emergency workers in accordance with the plans/procedures.
Assessment Area 3; Protective Action Implementation, Sub-element 3.a; Implementation of Emergency Worker Exposure Control.

Issue Number: 45-23-3.a.1-L2-04; Protective Action Implementation
ISSUE: The REAT-F Captain did not conduct a situational briefing. SI units were used and not converted to traditional units. There was a lack of awareness on how to convert or of a need to convert. The REAT-F Captain did not have a good understanding or knowledge of the turn back values or administrative limits and did not effectively provide this information.
RECOMMENDATION: Additional radiation protection training including FEMA standard REP classes and experience should help considerably. A redemonstration of FMT mobilization using approved procedures in coordination with the Technical Operations Center.
CORRECTIVE ACTION DESCRIPTION: Have the CST follow either the procedures in the Radiological Emergency Assistance Team Annex, dated July 2021, or CST specific

procedures. Identify which procedures will be used and ensure FEMA Region 9 has reviewed and approved the procedures.	
PRIMARY RESPONSIBLE AGENCY:	
AZDEMA, Civil Support Teams	START DATE:
AGENCY POC: Carpena, Sonia	ESTIMATED COMPLETION DATE:09/30/23

DEMONSTRATION CRITERION
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.

CONDITION
The REAT-F Captain did not conduct a situational briefing of events indicating that PVGS declared a GENERAL EMERGENCY Classification Level (ECL) with an associated radiological release. There was not a briefing from the REAT-F Captain involving checking the direct-reading dosimeters periodically during an emergency response, (e.g., every 15 to 30 minutes), recording the readings of the direct-reading dosimeters on exposure record(s), reporting radiation exposure limits and turn-back values, workers undertaking life-saving missions or protecting valuable property or large populations may face increased risk from radiation, proper use of permanent record dosimeters, dosing and documentation of potassium iodide (KI) ingestion, why KI is administered and any adverse effects, where to report for monitoring and decontamination, and where and to whom to return their dosimetry at the conclusion of the emergency or mission. FMTs had different turnback values regarding dose rates and accumulated dose.

Arizona Department of Emergency and Military affairs has a 1000 mR/h turnback value, with a reporting value of 200mR and administrative dose limit of 500mR. The Direct Reading dosimeters (DRDs), RADIAC Model RGU-100-GO, were labeled with dose rate limit of 1cGy/h (PV) 5cGy/h (CST) and a dose limit of 2.5cGy. (5cGy/h= 5R/h, 2.5cGy=2.5R).

During briefings prior to deployment to the field for measurements, the Survey Team Leader did not address the administrative dose limits, turn-back limit, or instruct the field monitoring teams to check their dosimetry readings every 15 minutes. The DRD displays dose and dose rates in Grays (Gy) and Grays per hour (GY/hr), however the dose limits for Emergency workers in the AZDEMA REAT Annex are detailed in rem and millirem/hr.

PLANNING REFERENCE
(NUREG-0654/FEMA-REP-1, J.10.e; K.3.a, b; K.4) and Radiological Emergency Assistance Team Annex, dated July 2021.

EFFECT
Not providing a complete radiological and situational brief could cause emergency workers (EWs) to have exposure control, safety, and KI allergy reactions.

E. Criterion 4.a.2- Radiological Emergency Assistance Team Forward

Field teams (2 or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure.
Assessment Area 4; Field Measurements and Analyses, Sub-element 4.a; Plume Phase Field Measurements and Analyses.

Issue Number: 45-23-4.a.2-L2-05; Field Measurements and Analyses	
ISSUE: The REAT-F Captain did not provide effective direction to the FMTs regarding updates of the plant status for PVGS. The FMTs were not notified of the declared a GENERAL EMERGENCY Classification Level (ECL) with an associated radiological release in a timely manner, and were not directed to collect exposure rates, samples, and other field data in a timely and effective manner.	
RECOMMENDATION: Additional radiation protection training including FEMA standard REP classes and experience should help considerably. A redemonstration of Field Team mobilization, use of the Arizona State approved procedures with the Technical Operations Center dose assessment. Training RAAC (Radiological Accident Assessment) course and its pre-requisite classes and Radiological Core Concepts (RCCC) course and its pre-req classes prior to a scheduled re-demonstration.	
CORRECTIVE ACTION DESCRIPTION: Selected staff should attend standard FEMA REP program training courses and receive additional hands-on training.	
PRIMARY RESPONSIBLE AGENCY:	
AZDEMA, Civil Support Teams	START DATE:
AGENCY POC: Carpena, Sonia	ESTIMATED COMPLETION DATE:09/30/23

DEMONSTRATION CRITERION
Criterion: 4.a.2: Field teams (2 or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure.

CONDITION
The REAT-F Captain did not conduct a situational briefing of events indicating that PVGS declared a GENERAL EMERGENCY Classification Level (ECL) with an associated radiological release. There was not a briefing from the REAT-F Captain involving checking the direct-reading dosimeters periodically during an emergency response, (e.g., every 15 to 30 minutes), recording the readings of the direct-reading dosimeters on exposure record(s), reporting radiation exposure limits and turn-back values, workers undertaking life-saving missions or protecting valuable property or large populations may face increased risk from radiation, proper use of permanent record dosimeters, dosing and documentation of potassium iodide (KI) ingestion, why KI is administered and any adverse effects, where to report for monitoring and decontamination, and where and to whom to return their dosimetry at the conclusion of the emergency or mission.

PLANNING REFERENCE

(NUREG-0654/FEMA-REP-1, C.1; H.12; I.7, 8, 11; J.10.a) and Radiological Emergency Assistance Team Annex, dated July 2021.

EFFECT
Not providing a complete radiological and situational brief could cause emergency workers (EWs) to have exposure control, safety, and KI allergy reactions.

F. Criterion 6.b.1- Radiological Emergency Assistance Team at REAT-F. Assessment Area 6; Support Operations/Facilities, Sub-element 6.b; Monitoring and Decontamination of Emergency Workers and their Equipment and Vehicles.

Issue Number: 45-23-6.b.1-L2-06; Support Operations/Facilities	
ISSUE: REAT Forward staff did not demonstrate the ability to decontaminate equipment and vehicles per the extent of play agreement or approved plans and procedures.	
RECOMMENDATION: Have the Civil Support Team (CST) staff follow Radiological Emergency Assistance Team Annex, dated July 2021 or CST Procedures. Identify which procedures will be used and ensure FEMA Region 9 has reviewed and approved the procedures. If the CST will not decontaminate equipment and or vehicles, AZDEMA must designate other staff that is responsible for decontaminating equipment and vehicles.	
CORRECTIVE ACTION DESCRIPTION: Selected staff should attend standard FEMA REP program training courses when possible and receive additional hands-on training. AZDEMA and CST will review AZDEMA procedures and brief CST personnel on AZDEMA procedures and their use when responding to PVGS tasks.	
PRIMARY RESPONSIBLE AGENCY:	
AZDEMA, Civil Support Teams	START DATE:
AGENCY POC: Carpena, Sonia	ESTIMATED COMPLETION DATE:09/30/23

DEMONSTRATION CRITERIA
Criterion: 6.b.1: The facility/ORO has adequate procedures and resources to accomplish monitoring and decontamination of emergency workers and their equipment and vehicles.

CONDITION
The CST staff did not demonstrate all the requirements of Criterion 6.b.1.

PLANNING REFERENCE
(NUREG-0654/FEMA-REP-1, K.5.a, b) and Radiological Emergency Assistance Team Annex, dated July 2021.

EFFECT
The Civil Support Team (CST) staff do not meet the requirements of detailed in NUREG-0654/FEMA-REP-1, K.5.a, b and Radiological Emergency Assistance Team Annex, dated July 2021.

SECTION 3 CONCLUSION

FEMA evaluated a biennial PPX for the EPZ surrounding PVGS on March 7, 2023. The purpose of this biennial PPX was to assess the readiness of OROs to perform specific functions in response to a simulated radiological incident occurring at or within the vicinity of the PVGS. The biennial exercise and related assessment areas were conducted in accordance with FEMA policies and guidance concerning emergency response plans and procedures. Additionally, some criteria were demonstrated and evaluated out of sequence from the main portion of the biennial exercise on March 16, 2023.

Copies of the approved EOP agreements are maintained by the Technological Hazards Branch of FEMA Region 9's National Preparedness Division.

Based on the evaluation of the biennial PPX, most of the offsite plans, and procedures for jurisdictions site specific to PVGS can be implemented and are adequate to provide continued reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological incident occurring at or within the vicinity of PVGS.

Therefore, Title 44 Code of Federal Regulations § 350 (October 2021), approval of the offsite plans and procedures and preparedness for the State of Arizona site-specific to PVGS will remain in effect.

However, there were six Level 2 Findings as defined in the REP manual. These findings necessitate the redemonstration and evaluation of related capabilities by September 30, 2023. FEMA recommended that several corrective actions, including additional training, be completed prior to the redemonstration.

APPENDIX A: EXERCISE TIMELINE

Palo Verde Generating Station Biennial Exercise Timeline summary March 7, 2023

ECL classifications declared	Times	Action
UE	0813	
MSCO received, MCEOC received	0829	
REAT FWD received	0939	
SEOC	0825	
ALERT	0915	
MCSO received	0926	
MCEOC received	0926	
REAT FWD received	0942	
SEOC	0925	
SAE	1043	
MCSO received	1058	
MCEOC received	1058	
SEOC	1056	
GE	1137	
MCEOC received	1150	
REAT FWD received	1152	
SEOC	1149	

Call received at SEOC		
NAN #1	0822	
MCEOC operational	0855	
NAN #2	0922	
SEOC operational	0934	
MCSO command post operational	0948	85/85
JIC Operational		
NAN #3	1044	
NAN #5	1149	Evac 2 mi radius and 2-5 miles DEF
NAN #4	1052	
Early Precautionary Actions	1117	School evacuations (6 ea.)
Early Precautionary Actions	1129	Mobilize RCC, Move KI to RCC
REAT FWD Operational	1130	
Reunification Center open	1135	
1st Utility PAR	1150	Evac 2 miles and 2.5 miles DEF
Emergency Declaration, County	1155	
1st State PAD	1226	Evac 2 miles and 2.5 miles DEF KI to EW and Gen public
1st EAS Message	1235	

2nd Utility PAR	1247	Evac 2-5, sectors D, E, F, G & 5-10 miles DEF KI to EW and Gen public
Reception Center staffed	1400	
2nd state PAD	1401	Evac 2-5, sectors D, E, F, G & 5-10 miles DEF KI to EW and Gen public
2nd EAS message	1406	
Emergency Declaration, State	1430	
End of Exercise		
State EOC	1504	
REAT FWD	1519	

APPENDIX B: ADDITIONAL INFORMATION

Participating Organizations

STATE
AZ Department of Emergency & Military Affairs, Division of Emergency Management
AZ Department of Public Safety
AZ Department of Health Services
AZ Department of Agriculture
AZ Corporation of Commission
AZ Department of Economic Security
AZ Department of Homeland Security
AZ Department of Transportation
AZ Department of Administration
AZ Department of Environmental Quality
AZ Department of Corrections
AZ Department of Water Resources
AZ National Guard Civil Support Team

COUNTY
MC Department of Emergency Management
MC Sheriff's Office
MC Department of Transportation
MC Department of Public Health
MC Department of Environmental Services
MC Animal Care and Control
Pinal County OEM
Yavapai County OEM
Yuma County OEM
La Paz County OEM

LOCAL
City of Buckeye Police Department
City of Buckeye Fire Department

TRIBAL NATION
Ak-Chin Indian Community
Tohono O'odham Nation
Gila River Indian Community

NGOs
American Red Cross, Greater Phoenix Chapter
Radio Amateurs Civil Emergency Services
Arizona Humane Society

FEDERAL FAMILY
Federal Emergency Management Agency
National Weather Service

INDUSTRY
Palo Verde Nuclear Generating Station

APPENDIX C: ACRONYMS AND ABBREVIATIONS

ACRONYM	DESCRIPTION
AAR	**After Action Report**
DCPP	**Diablo Canyon Power Plant**
DHS	**Department of Homeland Security**
EAS	**Emergency Alert System**
ENDEX	**End Exercise**
EOC	**Emergency Operations Center**
EOP	**Extent of Play**
EPZ	**Emergency Planning Zone**
FEMA	**Federal Emergency Management Agency**
GE	**General Emergency**
IP	**Improvement Plan**
JIC	**Joint Information Center**
KI	**Potassium Iodide**
ORO	**Offsite Response Organization**
L1	**Level 1**
L2	**Level 2**
LE	**Law Enforcement**
M	**Met**
N	**Not Demonstrated**
N/A	**Not Applicable**
NPD	**National Preparedness Division**
NPP	**Nuclear Power Plant**
P	**Plan Issue**
PAD	**Protective Action Decision**
PAG	**Protective Action Guide**
PAR	**Protective Action Recommendation**
PPX	**Plume Phase Exercise**
REPP	**Radiological Emergency Preparedness Program**
SOC	**State Operations Center**
THB	**Technological Hazards Branch**
U.S.	**United States**