Palo Verde Nuclear Generating Station
After Action Report/ Improvement Plan

Exercise Dates - March 01-03, 2011, March 15, 2011
Radiological Emergency Preparedness (REP) Program

Published September 6, 2011

FEMA

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EXECUTIVE SUMMARY

The U.S. Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Region IX evaluated an Ingestion Pathway Exercise on March 1-3, 2011 and March 15, 2011 for the 10-mile emergency planning zone (EPZ) and the 50-mile ingestion pathway planning zone 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 was held in accordance with 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 was conducted on March 4-5, 2009. 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 of all the participants were evident 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. There was one Area Requiring Corrective Action (ARCA) identified and corrected by redemonstration as a result of this exercise. Two ARCAs from previous exercises were corrected. Four planning issues were identified as areas for improvement.

No ARCAs from previous exercises remain uncorrected.

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name
Palo Verde Nuclear Generating Station
Type of Exercise
Plume, Ingestion and Evacuee Monitoring and Decontamination
Exercise Dates
March 01-03, 2011, March 15, 2011
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
Jan Lindner, State Exercise Officer
Bill Wolfe, Radiological Emergency Preparedness Program Coordinator
Arizona Radiation Regulatory Agency
Toby Morales, Emergency Response Program Manager
Rich Baker, Waste Isolation Pilot Plant Coordinator
Brian Goretzki, Emergency Response Coordinator
Department of Economic Security
Alcira Angulo, Emergency Coordinator
Maricopa County Department of Emergency Management
John Padilla, Emergency Services Planner
Maricopa County Sheriff's Office
Scott Cunningham, Deputy
Maricopa County Animal Care and Control
John Reynolds, Lieutenant
Maricopa County Department of Public Health
Shawn Tennant, Pharmacy Programs Supervisor
City of Goodyear
Othell Newbill, Emergency Manager
Goodyear Police Department
Erik Webster
Town of Buckeye Fire Department
Travis Rand, Battalion Chief, Training
Grand Canyon Chapter, American Red Cross
Dan Curtiss, Emergency Services Director
Jerry Van Rennes, Mass Care Chair

Desert Edge High School
Dan Grumbling, Assistant Principal
Arizona Public Service, Palo Verde Nuclear Generating Station
David Crozier, Emergency Planning Consultant

1.3 Participating Organizations

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

State Jurisdictions
- Arizona Corporation Commission
- Arizona Department of Administration
- Arizona Department of Agriculture
- Arizona Department of Corrections
- Arizona Department of Economic Security
- Arizona Department of Environmental Quality
- Arizona Department of Health Services
- Arizona Department of Homeland Security
- Arizona Department of Public Safety
- Arizona Department of Transportation
- Arizona Department of Water Resources
- Arizona Division of Emergency and Military Affairs
- Arizona Division of Emergency Management
- Arizona Geological Survey
- Arizona National Guard
- Arizona Office of the Governor
- Arizona Radiation Regulatory Agency
- Arizona Wing, Civil Air Patrol

Risk Jurisdictions
- Arlington Elementary School District
- Maricopa County Air Quality Department
- Maricopa County Department of Emergency Management
- Maricopa County Department of Environmental Services
- Maricopa County Department of Public Health
- Maricopa County Department of Transportation
- Maricopa County Office of Enterprise Technology
- Maricopa County Planning and Development
- Maricopa County Probation Department
- Maricopa County Regional Development Services Agency
- Maricopa County Sherriff’s Office
- Maricopa County Solid Waste Management
- Maricopa County Superior Court

Support Jurisdictions
- City of Surprise Fire Department
- Town of Buckeye Fire Department

Private Organizations
- Amateur Radio Emergency Services Operators
- American Red Cross, Grand Canyon Chapter
- American Nuclear Insurers
- Hickman's Family Farm
- Palo Verde Nuclear Generating Station
- Radio Station KTAR
- Triple G Dairy
- University of Arizona

Federal Jurisdictions
- National Oceanic and Atmospheric Administration, National Weather Service
- Department of Agriculture
- Department of Energy
- Federal Radiological Monitoring and Assessment Center
- Department of Energy, Idaho National Engineering Laboratory
- Department of Energy, National Nuclear Security Administration
- Department of Energy, Pantex Plant
- Department of Energy, Sandia National Laboratories
- Department of Health and Human Services
- Department of Homeland Security, Federal Emergency Management Agency
- Environmental Protection Agency
- Food and Drug Administration
- Nuclear Regulatory Commission

Tribal Nations
- Tohono O'odham Nation
- Gila River Indian Community

SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

FEMA Region IX evaluated the plume, ingestion pathway and evacuee monitoring and decontamination 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. Player 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. This was followed by relocation, re-entry and return decisions and protective action decision making to protect the public from contaminated food, water and milk. Evacuee monitoring and decontamination at a reception and care center was demonstrated out of sequence.

2.2 Exercise Objectives, Capabilities and Activities

The capabilities listed below have been selected by the 2011 PVNGS IPX exercise planning team based on a cross-walk with corresponding REP Program criteria. It should be noted that minor discrepancies between the Homeland Security Exercise and Evaluation Program (HSEEP) 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.

- Common Mission
    - Planning
    - Communications
    - Risk Management
- Prevent Mission
    - Chemical, Biological, Radiological and Nuclear Detection
    - Food and Agriculture Safety and Defense
    - Laboratory Testing
- Respond Mission
    - On-site Incident Management
    - Emergency Operations Center Management
    - Critical Resource Logistics and Distribution
    - Volunteer Management and Donations
    - Responder Safety and Health
    - Emergency Public Safety and Security Response
    - Environmental Health
    - Weapons of Mass Destruction and Hazardous Materials Response and Decontamination
    - Citizen Evacuation and Shelter-in-place
    - Emergency Public Information and Warning
    - Mass Prophylaxis
    - Mass Care
- Recover Mission

- Restoration of Lifelines
- Economic and Community Recovery

2.3 Scenario Summary

An Operating Basis Earthquake, defined as an earthquake within the plant's design to remain functional, as required by Title 10 of the Code of Federal Regulations, Part 50, registered on seismic monitors at PVNGS. It caused sufficient damage to prevent closing containment doors and outer doors. This condition required a plant shutdown. It also created the basis for the plant to declare the emergency classification level (ECL) of an Alert. PVNGS notified the OROs and the Nuclear Regulatory Commission (NRC) of the Alert ECL. An aftershock created a reactor coolant system leak in containment and an offsite radiological release to the atmosphere. This created the basis for PVNGS to declare a site area emergency (SAE). Subsequent fuel cladding failure required PVNGS to declare a General Emergency (GE), indicating that the public may be at risk.

The ECLs and deteriorating conditions at PVNGS were sufficient basis for the OROs to make Protective Action Decisions (PADs) including evacuating schools within the 10-mile EPZ, evacuating the public within the EPZ sectors downwind from the release and placing restrictions on food, water and milk within the 50-mile ingestion pathway zone around the nuclear power plant, that could have been contaminated by the release.

SECTION 3: ANALYSIS OF CAPABILITIES, PLUME PHASE

3.1 Exercise Evaluation and Results

Contained in this section are the results and findings of the evaluation of the OROs that participated in the plume phase of the PVNGS exercise on March 1, 2011, to test the offsite emergency response capabilities of state and local governments in the EPZ surrounding the PVNGS. The OROs were evaluated on the basis of their demonstration of criteria delineated in the exercise evaluation areas as outlined in the August 2002, Interim REP Program Manual. Detailed information on the extent of play agreement used for the plume phase, post-plume ingestion phase and evacuee monitoring and decontamination phases of this exercise is found in Appendix E 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 the plume phase of this exercise, by all 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 E, extent of play agreement)
P – Plan Issue

Table 3.1 – Summary of Exercise Evaluation, Plume Phase (2 pages)

DATE: 2011-03-01 SITE: Palo Verde Nuclear Generating Station, AZ M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		FMT A	FMT B	FMT C	ADACP	MCSO OSCP	PVNGS JIC	SEOC	TOC	MCEOC	NWS EAS
Emergency Operations Management											
Mobilization	1a1	M	M	M	M	M	M	M	M	M	
Facilities	1b1										
Direction and Control	1c1	M	M	M	M	M	M	M	M	M	
Communications Equipment	1d1	M	M	M	M	M	M	M	M	M	M
Equip & Supplies to support operations	1e1	M	M	M	M	M	M	M	M	M	
Protective Action Decision Making											
Emergency Worker Exposure Control	2a1								M	M	
Radiological Assessment and PARs	2b1								M		
Decisions for the Plume Phase -PADs	2b2							P	M	M	
PADs for protection of special populations	2c1							M		M	
Rad Assessment and Decision making for the Ingestion Exposure	2d1										
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1										
Protective Action Implementation											
Implementation of emergency worker exposure control	3a1	M	M	M		M		M		M	
Implementation of KI decision	3b1	M	M	M		M		M	M	M	
Implementation of protective actions for special populations - EOCs	3c1					M				M	
Implementation of protective actions for Schools	3c2									M	
Implementation of traffic and access control	3d1					M		M		M	
Impediments to evacuation are identified and resolved	3d2					M		M		M	
Implementation of ingestion pathway decisions - availability/use of info	3e1										
Materials for Ingestion Pathway PADs are available	3e2										
Implementation of relocation, re-entry, and return decisions.	3f1										
Field Measurement and Analysis											
Adequate equipment for plume phase field measurements	4a1	M	M	M							
Field Teams obtain sufficient information	4a2	M	M	M					M		
Field Teams manage sample collection appropriately	4a3	M	M	M							
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									M	M
Activation of the prompt alert and notification system - Fast Breaker	5a2										
Activation of the prompt alert and notification system - Exception areas	5a3					M				M	
Emergency information and instructions for the public and the media	5b1						M	M		M	M
Support Operations/Facilities											
Mon / decon of evacuees and EWs, and registration of evacuees	6a1										
Mon / decon of emergency worker equipment	6b1										
Temporary care of evacuees	6c1										
Transportation and treatment of contaminated injured individuals	6d1										

Table 3.1 – Summary of Exercise Evaluation, Plume Phase (Continued, page 2 of 2)

DATE: 2011-03-01 SITE: Palo Verde Nuclear Generating Station, AZ M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		KTAR EAS	MCSOWC	Arlington School	Back-up Route-alerting	Special-needs Population Evacuation	REAT-Forward	MCSO Roadblock
Emergency Operations Management								
Mobilization	1a1		M				M	
Facilities	1b1							
Direction and Control	1c1		M				M	
Communications Equipment	1d1	M	M				M	
Equip & Supplies to support operations	1e1		M	M	M	M	M	M
Protective Action Decision Making								
Emergency Worker Exposure Control	2a1							
Radiological Assessment and PARs	2b1							
Decisions for the Plume Phase -PADs	2b2							
PADs for protection of special populations	2c1			M				
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1							
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1							
Protective Action Implementation								
Implementation of emergency worker exposure control	3a1			M	M	M	M	M
Implementation of KI decision	3b1			M	M	M	M	M
Implementation of protective actions for special populations - EOCs	3c1					M		
Implementation of protective actions for Schools	3c2			M				
Implementation of traffic and access control	3d1							M
Impediments to evacuation are identified and resolved	3d2							
Implementation of ingestion pathway decisions - availability/use of info	3e1							
Materials for Ingestion Pathway PADs are available	3e2							
Implementation of relocation, re-entry, and return decisions.	3f1							
Field Measurement and Analysis								
Adequate equipment for plume phase field measurements	4a1							
Field Teams obtain sufficient information	4a2						M	
Field Teams manage sample collection appropriately	4a3						M	
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	P						
Activation of the prompt alert and notification system - Fast Breaker	5a2							
Activation of the prompt alert and notification system - Exception areas	5a3				M			
Emergency information and instructions for the public and the media	5b1	M						
Support Operations/Facilities								
Mon / decon of evacuees and EWs, and registration of evacuees	6a1						M	
Mon / decon of emergency worker equipment	6b1						M	
Temporary care of evacuees	6c1							
Transportation and treatment of contaminated injured individuals	6d1							

3.3 Criteria Evaluation Summaries

3.3.1 Arizona Jurisdictions

3.3.1.1 Field Monitoring Team-Alpha

Field Monitoring Team Alpha (FMT-A) demonstrated their capability to mobilize and effectively communicate with the field team coordinator at Radiological Emergency Assistance Team-Forward (REAT-F). FMT-A was adequately equipped with dosimetry, procedures, protective clothing, and radiation survey instruments necessary to perform their task in monitoring radiological conditions around PVNGS.

In accordance with the extent of play, members were prepositioned at REAT-F. This four member team comprised of personnel from the Maricopa County Air Quality Department, Arizona Department of Environmental Quality, the Arizona Radiation Regulatory Agency (ARRA), and the Department of Energy Radiological Assistance Program (RAP). Proper equipment check out was completed, assignment, plant status, and a radiological and safety briefing was received prior to deployment. Members ensured their thermoluminescent dosimeters (TLD) and direct reading dosimeters (DRD) were current and survey instruments were operational and within calibration.

DRDs were read and reported back to REAT-F every fifteen minutes, via radio, computer data transmission or cellular telephone. The team was aware of the notification level of 200 mrem as read on their DRDs, as well as the turn-back level of 1000 mrem/hr as read on their survey instrument. They understood their mission limit was 500 mrem and could be authorized to receive higher levels if conditions warranted. Potassium Iodide (KI) risks, benefits and appropriate use as a radioprotective drug was demonstrated by interview, and simulated to be ingested when an order was communicated to REAT-F.

FMT-A demonstrated the capability to perform survey activities to measure direct radiation exposure and to sample airborne radioiodine and particulates. In accordance with their plans and procedures, the state field teams had the responsibility to track and to characterize the plume offsite, while the PVNGS field teams remained on site property. Field survey data was communicated back to REAT-F by radio, computer data transmission, or by cellular telephone. With the potential for a release of radioactivity from PVNGS, FMT-A was deployed from REAT-F during the SAE ECL. FMT-A was positioned along the PVNGS fence line, within the projected plume pathway to perform surveys to identify any increase in radiation levels. FMT-A reported increases in radiation levels as they traversed their route, verifying a release was in progress; validating the GE ECL declaration. Movement through the plume was minimized and only one air sample was directed for this team. Proper contamination controls were observed when handling and packaging potentially contaminated items. A chain-of-custody process was utilized for the sample generated and transported to the mobile laboratory at REAT-F. The team was well managed to aid in the characterization of the plume to support the adequacy of implemented protective actions.

All activities were completed in accordance with plans and procedures as they would have been in an actual emergency, except as noted in the extent of play agreement.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 3.b.1, 4.a.1, 4.a.2, 4.a.3.
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: 3.a.1.

ISSUE NO.: 45-09-3a1-A-1

ISSUE: An expired TLD was issued to one FMT member. After discussion among the team, it was decided that the FMT member with the expired TLD should wear one of the group mini-Radiacs to monitor his exposure. The team radioed the FMT Communicator at REAT-F to let them know that one team member had an expired TLD, and that they had given him the mini-Radiac to monitor his radiation exposure. The REAT-F, FMT Communicator acknowledged receipt of the message; the FMT was not directed to return to REAT-F to obtain a replacement TLD, nor was a replacement TLD delivered.

CORRECTIVE ACTION DEMONSTRATED: Team members were issued permanent record TLDs. All of the TLDs issued were marked with two red dots indicating they were the current TLDs. The red dot TLD expiration date of 06/30/2012 was marked on the TLDs. As part of their pre-deployment briefing the team members were briefed to check and verify the presence of the two red dots on their TLDs to ensure each member was wearing a current TLD. The TLDs issued to each team member were current and each team member was aware of the need to ensure that the TLD they were issued was current as directed in their pre-deployment briefing. There were no expired dosimeters observed during this exercise.

g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.2 Field Monitoring Team-Beta

FMT-B demonstrated their capability to mobilize and effectively communicate with the field team coordinator at REAT-F. FMT-B was adequately equipped with dosimetry, procedures, protective clothing, and radiation survey instruments necessary to perform their task in monitoring radiological conditions around PVNGS.

In accordance with the extent of play, members were prepositioned at REAT-F. This four member team comprised of personnel from ARRA, and a U.S. Environmental Protection Agency (EPA) observer. Proper equipment check out was completed, assignment, plant status, and a radiological and safety briefing was received prior to deployment. A back up air sampler was used for the exercise after the first two air

samplers in their kit failed operational checks. Members ensured their TLDs and DRDs were current and survey instruments were operational and within calibration.

DRDs were read and reported back to REAT-F every fifteen minutes, via radio or cellular telephone. The team was aware of the notification level of 200 mrem as read on their DRDs, as well as the turnback level of 1000 mrem/hr as read on their survey instrument. They understood their mission limit was 500 mrem and could be authorized to receive higher levels if conditions warranted. KI risks, benefits and appropriate use as a radioprotective drug was demonstrated by interview, and simulated to be ingested when an order was communicated to REAT-F.

FMT-B demonstrated the capability to perform survey activities to measure direct radiation exposure and to sample airborne radioiodine and particulates. Planned computer data transmission did not function during the exercise, and surveys were documented on paper and communicated back to REAT-F through radio and cellular telephones. FMT-B was directed to identify the outer edges of the plume and centerline. Two air samples were taken and packaged for analysis. Proper contamination controls were observed when handling and packaging potentially contaminated items. A chain-of-custody process was utilized for all samples generated and transported to the mobile laboratory at REAT-F. The team was well managed to aid in the characterization of the plume to support the adequacy of implemented protective actions.

All activities were completed in accordance with plans and procedures as they would have been in an actual emergency, except as noted in the extent of play agreement.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 4.a.1, 4.a.2, 4.a.3.
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

3.3.1.3 Field Monitoring Team-Charlie

FMT-C demonstrated their capability to mobilize and effectively communicate with the field team coordinator at REAT-F. FMT-A was adequately equipped with dosimetry, procedures, protective clothing, and radiation survey instruments necessary to perform their task in monitoring radiological conditions around PVNGS.

In accordance with the extent of play, members were prepositioned at REAT-F. Proper equipment check out was completed, assignment, plant status, and a radiological and safety briefing was received prior to deployment. Members ensured their TLDs and DRDs were current and survey instruments were operational and within calibration.

DRDs were read and reported back to REAT-F every fifteen minutes, via radio or cellular telephone. The team was aware of the notification level of 200 mrem as read on their DRDs, as well as the turn back level of 1000 mrem/hr as read on their survey instrument. They understood their mission limit was 500 mrem and could be authorized to receive higher levels if conditions warranted. KI risks, benefits and appropriate use as a radioprotective drug was demonstrated by interview, and simulated to be ingested when an order was communicated to REAT-F.

FMT-C demonstrated the capability to perform survey activities to measure direct radiation exposure and to sample airborne radioiodine and particulates. Planned computer data transmission did not function during the exercise, and surveys were documented on paper and communicated back to REAT-F through radio and cellular telephones. With the potential for a release of radioactivity from PVNGS, FMT-C was deployed from REAT-F during the SAE ECL. FMT-C was positioned within the projected plume pathway to perform surveys to identify any increase in radiation levels. FMT-C reported increases in radiation levels as they traversed their route, verifying a release was in progress; validating the GE ECL declaration. FMT-C was then redirected to characterize the extent of the plume. One air sample was taken and packaged for analysis. Proper contamination controls were observed when handling and packaging potentially contaminated items. A chain-of-custody process was utilized for all samples generated and transported to the mobile laboratory at REAT-F. The team was well managed to aid in the characterization of the plume to support the adequacy of implemented protective actions.

All activities were completed in accordance with plans and procedures as they would have been in an actual emergency, except as noted in the extent of play agreement.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 4.a.1, 4.a.2, 4.a.3.
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

3.3.1.4 Arizona Department of Agriculture Command Post

Arizona Department of Agriculture (ADA) Command Post (CP) personnel demonstrated effective procedures to alert, notify, and mobilize emergency staff, and to activate the CP in a timely manner. Key personnel provided direction and control. The ADA CP demonstrated communications capability in addition to commercial telephone service. The ADA CP had adequate equipment to fulfill its responsibilities.

The ADA CP was activated at the direction of the Assistant State Veterinarian by the Director of Animal Services and another staff member. In addition, the Animal Services Administrative Specialist and the ADA dispatcher provided support. An emergency call list was used to determine which staff members to mobilize. All ADA CP personnel were staffed in accordance with the ADA Fixed Nuclear Facility

Emergency Response Plan.

The ADA CP provided detailed information on agricultural activities in and around the Emergency Planning Zone and specifically in the affected area of the plume path. The ADA CP reviewed and analyzed data and projected agricultural response activities based on the impact of the release. Additionally, the ADA CP provided specific guidance to the ADA Public Information Officer (PIO) for the production of media releases and briefings. The ADA CP had appropriate equipment, maps, displays and other supplies sufficient to support emergency operations during day one of the PVNGS plume and ingestion exercise. During the exercise, ADA CP used 800 megahertz radio, cell phones, land line and email to conduct emergency operations and to coordinate resources.

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.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.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

3.3.1.5 Palo Verde Nuclear Generating Station Joint Information Center

The State of Arizona, Maricopa County, and PVNGS used established procedures to alert, notify, and mobilize emergency personnel and activate the Joint Information Center (JIC) in a timely manner. Direction and control was implemented through multiagency coordination. Communications systems included dedicated as well as commercial telephone lines. All communication systems were thoroughly checked and tested by appropriate JIC staff upon arrival at the JIC and functioned as designed during the exercise. Maps, displays, computers and communication equipment supported operations.

Plans and procedures were available for all staff. The new draft plan (which was not used during this exercise) contains a JIC organization chart which depicts an incorrect command and reporting relationship. The correct organizational chart was identified as a lesson learned.

The emergency response in the JIC was organized using the National Incident Management System (NIMS) framework. The Research and Writing Unit consisted of seven staff members who utilized a bank of boiler–plate media statement templates. The unit produced media statements on behalf of all JIC agencies. JIC procedures required that all the agencies represented in the JIC approve media statements before distribution. Staff from the Arizona Division of Emergency Management (ADEM), the Maricopa County Department of Emergency Management (MCDEM), the ADA who was also serving as the State Health Department PIO, ARRA, the American Red Cross (ARC), FEMA and PVNGS coordinated on content of messages. They all coordinated with their respective home-offices

throughout the exercise. The Research and Writing Unit coordinated with JIC agency liaisons and spokespersons to produce nine news releases.

Emergency information and instructions for the public included news releases, media briefings, Emergency Alert System (EAS) messages, EAS supplemental information, booklets, and calendars. The information was consistent with PADs. Evacuation routes and Reception and Care Center (RCC) locations were described using familiar landmarks and road names. Instructions and guidance on what to take when evacuating, information on pets and schools, and PI telephone numbers were also complete and current. Additional printed sources of information (including Spanish) were referenced.

The JIC successfully demonstrated its ability to effectively disseminate emergency information quickly during a radiological emergency. All key information was captured on status boards in the JIC and the Media Briefing Room. Nine media statements were prepared and distributed. Three EAS messages were received and distributed. Six media briefings were conducted.

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.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 5.b.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

3.3.1.6 State of Arizona Emergency Operations Center

ADEM demonstrated effective procedures to alert, notify, and mobilize emergency personnel, activate facilities in a timely manner and successfully demonstrate that key personnel with leadership roles could successfully provide direction and control. Multiple communications systems in addition to commercial phone lines were demonstrated. There were adequate equipment, maps and displays to support operations. The Policy Chief demonstrated PAD making for the general public as well as for persons who are confined or need additional assistance. Emergency worker (EW) radiological exposure control and EW need for KI was carefully monitored. There was good coordination for traffic and access control in the affected area to identify traffic impediments to implement evacuation requirements. Public information dissemination was facilitated by a rumor control hotline cell that identified areas of public interest for the JIC.

The State of Arizona Emergency Operations Center (SEOC) followed NIMS with an Operations Section, Plans Section, Technical Operations Center, Public Information Section, and Logistics Section. When the SEOC received ECL changes or updates, the Policy Chief assembled the Policy Group consisting of himself, the Operations Chief, Plans Chief, Technical Operations Center Chief, Department of Agriculture Liaison, National Weather Service Representative, and other designated personnel to discuss and analyze the implications of the Notification and Alert Network (NAN) message. After he received advice and

formulated a plan of action, he discussed its implementation with the Director of MCDEM and others, such as the Maricopa County Director of Health and obtained concurrence on his PAD. These decisions were relayed to SEOC personnel immediately after the policy meeting. In addition, frequent situation update briefings were conducted by the Plans Section Chief to keep SEOC staff informed about what activities were being coordinated by the different sections and branches. Input was solicited by key members of the SEOC staff.

During the plume phase, the Policy Chief and ARRA Director demonstrated the ability to make PADs for the general public, including the recommendation for the use of KI. Arizona Department of Health Services representatives stationed in the SEOC, working as part of the Operations Branch, contacted Maricopa County officials by telephone to assure that the ARRA Director's decision for EWs to take KI was being implemented.

It was noted that the Director's PAD Checklist form, line #6 says, "ARRA Director directs EWS to take KI" with checkboxes for yes and no. There is no blank line or specific descriptor of which EWs should take KI. At REAT-F, they received more than one communication regarding the KI directive EWs; all EWs in the EPZ vs EWs in specific sectors and ages.

The ADA worked with their representatives at their Emergency Operations Center (EOC), ARRA and the US Department of Agriculture to determine what the agricultural impact would likely be. They determined that dairies already had cows on stored feed and water, the alfalfa crop was destroyed due to frost and the current crop was baby carrots. They discussed the plume path and how far out they should embargo milk, crops and foodstuffs. Media release number 7 was issued at 1455 saying that licensed agriculture samplers would begin taking additional samples for radiological analysis. They said it was a precautionary measure for milk tankers and diary farmer's within the 50-mile ingestion pathway zone of PVNGS. At 1540 the Policy Group met to discuss a temporary agricultural embargo. After discussion with ARRA and the Policy Chief, the Director of the ADA decided to issue an embargo of milk, crops and foodstuffs within the evacuated areas and northeast areas surrounding the plant out to about 32 miles. A media release with descriptive roadways and a map of the affected area was drafted for dissemination from the JIC. The plume phase of the exercise terminated prior to a media release on the agricultural embargo being issued from the JIC.

The Policy Chief appropriately demonstrated his ability to make PADs for the special population groups, including the recommendation for the use of KI during day one of the PVNGS plume and ingestion exercise.

The SEOC Operations Branch, Public Safety Section managed traffic and access control. This section coordinated with the Arizona Department of Transportation (ADOT), the Arizona Department of Public Safety (DPS), the Arizona National Guard (ANG), the Civil Air Patrol (CAP), the Maricopa County Sheriff's Office (MCSO) and MCDEM to clear traffic impediments and facilitate the evacuation PADs.

During day one of the PVNGS plume and ingestion exercise, Public Information and Public Inquiry staff at the Arizona SEOC demonstrated the capability to work with the JIC in providing accurate emergency information and instructions to the public and the news media in a timely manner.

Public Inquiry (PI) operations were conducted adequately and professionally. PI Staff demonstrated the ability to direct and coordinate response actions essential to the successful operation of the PI function. During exercise play, two trends were identified. One trend concerned children being evacuated from schools outside of the evacuation sectors and the other pertained to road closures. One rumor surfaced and was quickly addressed. It concerned someone with a Citizens Band (CB) radio who had broadcast a message for everyone backed up on the highway to take KI. Both trends were addressed by the JIC and the rumor was addressed by DPS.

The SEOC demonstrated that it had a primary and a back-up communication system available. Communication links were established and maintained with appropriate locations.

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.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.c.1, 3.a.1, 3.b.1, 3.d.1, 3.d.2, 5.b.1.
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: 2.b.2.

ISSUE NO.: 45-11-2b2-P-2

CRITERION: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make PADs for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654, J.9; J.10.f, m)

CONDITION: Inconsistent direction regarding implementation of the directive for EWs to ingest KI was provided to REAT-F.

POSSIBLE CAUSE: The “Director’s Protective Action Checklist” step #6, says, “ARRA Director directs EWs to take KI” with a check box for “yes” or “no”. There is no space for amplifying information. After the KI decision for EWs was made at 1216, REAT-F received a phone call from the Technical Operations Center (TOC) at 1222 with the direction for EWs to ingest KI. A fax immediately followed with the same message. Two minutes later, a second call received from the TOC attempted to clarify the KI order to apply to any EW in B, C, and D sectors within five miles of the plant. Four minutes following the initial call, a second update limited ingestion of KI to EWs within two miles of the plant. At approximately 1332 a fax was received to extend the evacuation areas to the 10-mile radius in A, B, C, D, and E sectors. With that evacuation decision, another KI ingestion order was communicated by phone and fax to the REAT Forward for all EW under the age of 40 in those affected sectors to take KI.

REFERENCE: NUREG 0654, J.10.m; State Emergency Operations Center, Policy Section, Standard Operating Procedures, PVNGS Policy Section Decision Checklist

EFFECT: If the intent of the KI decision is not clearly communicated to EWs in the field an EW may not take KI as was intended by the ARRA Director. This could lead to unwarranted internal radiation exposure to the EW's thyroid.

RECOMMENDATION: Modify the "Protective Action Decision Checklist" form and any applicable ARRA procedures to require a clear directive stating which EWs must take KI.

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

3.3.1.7 Technical Operations Center

The TOC demonstrated effective procedures to alert, notify, and mobilize emergency personnel, activate facilities in a timely manner and successfully demonstrate that key personnel with leadership roles could successfully provide direction and control. The TOC activated to support the SEOC when the dedicated phone system NAN informed ARRA that PVNGS had declared an Alert ECL at the plant. The ARRA Director assumed leadership as TOC Technical Director (TD). The TOC had several means of communication available including dedicated lines to the PVNGS and the PVNGS Emergence Operations Facility (EOF). Equipment in the TOC supported their need to characterize the threat and to advise the IC. The staff in the TOC demonstrated a decision process to monitor and limit EW exposure and implement an order for EWs to ingest KI. Throughout the exercise, the TOC formulated protective action recommendations (PARs) for the Policy Chief. The TOC does not make PADs for the public. During the plume phase, the TOC implemented the TD decision for EWs to ingest KI. As part of its responsibility to formulate PARs, the TOC maintained communication with REAT-F to consider field information about the extent and character of the release.

The TD advised the Policy Chief of TOC PARs. He briefed the JIC and REAT-F on TOC activities using radio, email and phone communications. The TOC developed PARs from computer modeling, mapping software, FMT data transmitted through REAT-F and PVNGS recommendations.

The TD was responsible for the safety and performance of EWs at REAT-F and the FMTs. He directed that EWs working in the evacuated area ingest KI to protect against uptake of radioactive iodine in the plume. Although the TOC had the authority to direct field teams, it did not interfere with REAT-F management of the field teams. The TOC maintained a management role ensuring EW exposure protection while tasking the REAT-F to provide support information for PARs. Throughout the exercise, the TD monitored FMT findings that were reported through REAT-F, tracked the locations of the FMTs and directed that FMTs be deployed to gather air samples of radioactive iodine isotopes as confirmation of the plume location and intensity. The TD used this field information to validate plume modeling data and nuclear power plant recommendations in forming his PARs for the Policy Chief.

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.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 2.b.2, 3.b.1, 4.a.2.
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

3.3.1.8 Radiological Emergency Assessment Team-Forward

REAT –F demonstrated the capability to effectively manage the field sampling teams to assess the adequacy of protective actions that had been implemented. REAT-F is a staging area for the field monitoring and sampling teams, and is the site for EW and equipment monitoring and decontamination. In accordance with the extent of play agreement, personnel assigned to REAT-F were pre-positioned at the Buckeye Airport.

The REAT-F Captain ensured that the facility was operational, briefed staff on the plant status, and conducted a radiological and safety briefing. FMTs were briefed on exposure and contamination control, including reporting frequencies, turn back values and mission limits. County personnel, State agency personnel and volunteers supported the activities at REAT-F. Most volunteer response personnel maintain an ARRA issued wallet card TLD. ARRA provides on annual exposure records for these volunteers. TLDs were issued at check in to all those who did not already have one. REAT-F tracked EW exposure on a 15 minute reporting schedule through radio communication with FMTs.

REAT-F management enabled the teams to obtain information that could be used to identify and characterize the plume and to monitor the radiation exposure of FMT and REAT-F personnel. With the potential for a radioactive release, FMTs were deployed during the SAE ECL to monitor downwind areas of PVNGS for any increase in radiation levels. Field measurements and dosimetry readings were reported to REAT-F by email, radio or by cellular phone, and tracked using geographical information systems software. When increased levels of radiation were detected, verifying the radiological release and subsequent GE declaration, the FMTs were redirected to the projected plume areas to identify centerline and extent of the release.

FMTs returned to the hotline set up at REAT-F to turn over samples and equipment. EW then proceeded to the monitoring station. All EW returning from field activities were required to pass through a portal monitor to be screened for contamination. Through interview, any EW with identified contamination would be decontaminated onsite in the decontamination tent. Equipment and vehicles would be monitored for contamination and be decontaminated as resources were available.

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.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 4.a.2, 4.a.3, 6.a.1, 6.b.1.
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: None. NOT DEMONSTRATED: None
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

3.3.2 Risk Jurisdictions

3.3.2.1 Maricopa County Sheriff's Office On-scene Command Post

The Maricopa County Sheriff's Office On-Scene Command Post (MCSO OSCP) effectively used their plans and procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. They successfully demonstrated the capability to direct and control emergency operations, had at least two communications systems available and managed communications in support of emergency operations. The MCSO OSCP had equipment, maps, displays, dosimetry, KI and other supplies to support emergency operations. The MCSO OSCP also successfully demonstrated the ability to issue appropriate dosimetry and procedures, manage radiological exposure to EWs, issue KI and appropriate instructions to EWs and to maintain appropriate record keeping of the administration of KI. They successfully demonstrated the capability to implement protective actions for special population groups, establish appropriate traffic and access control and to identify and resolve impediments to evacuation. The MCSO OSCP successfully demonstrated the ability to perform backup alert and notification to warn the public.

The MCSO OSCP was initially notified of an Alert ECL at the PVNGS by the MCSO Warning Center (WC). All other changes in the ECL came from the Maricopa County Emergency Operations Center (MCEOC) and were verified via the MCSO WC through supervisors and the appropriate chain of command. ECL changes to a SAE and to a GE were both received from the MCEOC. Once notified, the Mobile On-Scene Communications/ Dispatch Vehicle verified and notified all posts and patrols via radio.

When deputies arrived, they signed in, were issued dosimetry, KI, and the MCSO plan for Emergency Response to PVNGS. A series of briefings on use of dosimetry, KI, and situational updates were given. These briefings were then held on an hourly basis. When the MCEOC notified the MCSO OSCP of its decision for EWs to ingest KI the MCSO OSCP immediately disseminated the KI decision to those units who were in the applicable areas of the EPZ. KI is not distributed to the public at the MCSO OSCP.

The MCSO IC made the decisions to dispatch EWs. He dispatched EWs for traffic and access control points, for back-up route alerting due to simulated siren failures and to demonstrate by interview the transportation of special needs individuals in accordance with the extent of play.

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.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2, 5.a.3.
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

3.3.2.2 Maricopa County Emergency Operations Center

The Maricopa County Emergency Operations Center (MCEOC) successfully demonstrated procedures to alert, notify, and mobilize emergency personnel and activate the facility as well as the capability to provide trained key personnel to direct and control activities. The MCEOC had sufficient primary and alternate communications capabilities and supplies to maintain operations in the event of an emergency at the PVNGS. The MCEOC demonstrated the capability to work within the established decision making process to ensure that an exposure system for EWs was effective. MCDEM demonstrated the necessary coordination through the MCEOC with ADEM to make PADs for the public. MCDEM demonstrated effective coordination and implementation of PADs for Special Populations and Schools within the 10-mile EPZ for PVNGS as well as the implementation of KI decisions for EWs and the general public. The implementation of Traffic and Access Control Points (T/ACPs) as well as the ability to identify and resolve impediments to evacuations was also successfully demonstrated. Activities associated with primary alerting and notification of the public, identification and reporting of simulated siren failures to the MCSO OSCP and provision of accurate information and instructions to the public and news media were successfully completed in a timely manner. The MCEOC is located outside the 50-mile PVNGS Ingestion Pathway Zone and is not responsible for issuing dosimetry to EWs nor is it required for MCEOC staff.

Current plans and procedures are available to all staff at the MCEOC. Hard copies of the State of Arizona/Maricopa County Offsite Emergency Response for PVNGS were available. Position specific checklists in three ring binders were also available to each MCEOC staff member.

Notification was received from PVNGS via the NAN phone and answered in the front reception area. PVNGS had declared an Alert ECL at the plant. MCEOC gave verbal confirmation of message receipt.

The Director was in charge at the MCEOC. He provided technical and professional input to the EOC Manager concerning planning, response and recovery activities during the emergency event. He also provided updates to the Chairman of the Maricopa County Board of Supervisors, the elected official responsible for decision making at the county level. The EOC Manager assisted the Director in the operation and coordination of activities occurring in the MCEOC.

The EOC Manager ensured that appropriate EOC staff was available and that the necessary equipment was

operational prior to declaring the EOC operational. Facility briefings were conducted by the EOC Manager and/or the Director. The briefings occurred as the situation changed or additional staff arrived.

ADEM requested that MCEOC report on damage to roads and bridges in the ten mile EPZ from the seismic event. MCEOC reported that there was no damage to roads or bridges. The EOC Manager directed the Operation Section and the American Red Cross to make a recommendation on which RCC would be appropriate based on current meteorological data. Desert Edge School was determined to be the best choice. The staff was directed to make necessary arrangements and completed arrangements in time for the evacuation PAD.

The MCEOC Planning Section Chief has the responsibility to notify the schools and to obtain individual school census. The four schools in the EPZ were notified that an Alert had been declared at the PVNGS. The Planning Section Chief contacted the JIC immediately after notifying the schools of the Alert ECL at PVNGS and provided the attendance numbers for each school. The Planning Section Chief informed the schools they would be advised of any further required actions. PAD information was sent out on the Emergency Alert System (EAS) messages that were issued after each PAD was made. Schools outside the EPZ, that had students who live inside the EPZ, were also notified. The schools were also notified by the Planning Section Chief at the SAE and GE ECLs.

Through controller inject the main dispatch center for MCSO received a report of a motor vehicle accident. The report was transferred to the MCSO OSCP to provide a responding unit to investigate. MSCO Deputies located at MCEOC asked for a status update from the district dispatch on how this would impact evacuation routes. At that time district dispatch informed them that the accident had been cleared and the situation had been resolved.

The initial impediment inject was put into exercise play prior to any evacuation PADS. Through discussion with the controller and the evaluator at the MCEOC it was agreed that the inject was cleared prior to players having to demonstrate any decisions regarding alternate routes or impact on evacuation efforts. The controller contacted the lead controller and it was agreed that a second inject would be provided at a later time to drive discussion and provide the players to demonstrate the ability to identify and resolve impediments to evacuations.

A second inject was received in the same manner as the first. A second motor vehicle accident had occurred. The report was transferred to the MCSO OSCP to dispatch a unit to investigate. The responding unit reported that it was a minor accident and the vehicle had been pushed off the road by the Deputy. MCSO notified the Maricopa County Department of Transportation (MCDOT) of the progress and reported that no additional resources were needed at the time.

During the response period, MCDOT looked at alternate routes for evacuation and had a plan in place to re-route traffic, depending on the severity of the accident and how it was impeding evacuations. MCDOT and MCSO stated that they had sufficient equipment to resolve different types of impediments including fallen trees, road damage due to the seismic activity and other possible impediments. They also had a supply of barricades and signs they can utilize to alter evacuation routes. If routes were to be altered, they could also ask the JIC to provide the necessary information to the public. Resources from the Buckeye Fire

Department and Arizona Department of Public Safety could be utilized to assist with impediments.

When notification of ECL change to SAE was received, the Director participated in a conference call with the SEOC Policy Chief and the ARRA Director to discuss the PAD for the 10-mile EPZ. A decision was made to evacuate out to a two mile radius from PVNGS, sectors A, B, and C out to ten miles, to evacuate Tonopah High School and Winters Well School, restrict airspace out to a ten miles radius and up to 10,000 feet above the EPZ. No KI was approved for EWs at this time. This decision was based on the plant's PAR, the population density of the affected area and ARRA's recommendation. At this time the SEOC did not recommend that the public take KI. After the PAD discussion, the Director directed the EOC staff to implement the PAD. This included alert and notification of the public, notification of County agencies, notification of schools, and planning for opening a Reception Center and Care Center.

Following the sounding of the sirens, Maricopa County issued EAS messages and follow-up messages. Additional information would be issued at the JIC in coordination with the State, Maricopa County, Federal resources and PVNGS. Upon activation of the siren system, the MCEOC Communicator identified that siren # 11 failed (simulated). This was immediately reported to the MCSO EOC representative and the MCEOC Manager. The MCSO EOC representative notified the MCSO OSCP. The MCSO OSCP dispatched officers to perform backup route alerting for the area covered by the failed siren. Completion of route alerting was reported back to the MCEOC. The process of the route alerting in the field was slowed by exercise artificialities. Because of this, the process was performed again with another simulated failed siren event. The process of notifying the OSCP was performed again. The MCSO again dispatched a team to perform back-up Route Alerting. The MCSO reported to the MCEOC that this activity was completed within 45 minutes.

Additional siren soundings, EAS messages, and follow-up messages were initiated when the PADs were updated. In accordance with the extent of play, radio station KTAR and the National Weather Service (NWS) radio station were alternated for EAS broadcast. KTAR broadcast the first and third EAS messages and NWS broadcasted the second. The information presented to the public was accurate and in accordance with the plan.

An MCSO Deputy stated that they would be responsible for coordinating notification and evacuating those individuals with special needs and that the responding units would be dispatched from the On-scene Command Post. Additional resources available to evacuate persons who needed additional assistance were available from the Maricopa County Public Health Department and Buckeye Fire Department. Vehicles, ambulances, and special needs transport vehicles for the exercise were provided by the American Red Cross.

Immediately after the PAD to evacuate, MCDOT and MCSO coordinated on the required T/ACPs that were predetermined in the plans and procedures. MCSO and MCDOT demonstrated the ability to implement T/ACPs in the same procedure for addition PADs as required. Through interview it was stated that additional resources could be obtained from the State if necessary, including a request for the Arizona National Guard to assist with T/ACPs.

When the SAE was declared, the MCSO EOC representative verified that dosimetry and KI were being issued to MSCO and MCDOT EWs prior to their being dispatched from the OSCP.

When notification of ECL change to a GE was received in the EOC, a conference call process was used for each of the PADs. The second PAD was to evacuate two mile radius 360 degrees and sectors A, B, C out to ten miles and sectors D and E out to five miles, evacuate Tonopah High School and Winters Well School, and for EWs to ingest KI. KI for the public was not recommended by the SEOC. The third PAD was to evacuate a two mile radius, sectors A, B, C, D, E out to ten miles, evacuate Tonopah High School, Palo Verde School and Winters Well School, and for EWs to ingest KI. Procedures for implementing PADs for special populations were followed in the same manner as the previous PADs and successfully demonstrated in accordance with the plans and procedures.

Following each PAD the Director activated the alert system including sirens, tone alert radios and direct phone calls. Following the alert, pre-scripted EAS messages and follow up messages were broadcast on either the local primary radio station or the NWS. These messages all accurately described the PADs and provided additional information on the actions that evacuees should take. Following each EAS broadcast and follow-up message, the messages were transmitted to the JIC so that the JIC could continue to provide timely and accurate information through the news media. Copies of the news releases issued at the JIC were distributed in the EOC and checked for accuracy.

The Maricopa County Department of Public Health (MCDPH), the MCEOC Director, the SEOC Policy Chief, the ARRA Director and a State Public Health representative participated in a conference call to discuss public ingestion of KI. The participants noted that KI was already ordered for EWs within two miles of PVNGS. Public evacuation was complete within the two mile radius of the plant. The Policy Chief recommended to the MCDPH that KI for the public should not be implemented at this time. Based on the projected doses and that the evacuation out to two miles was complete, the MCDPH decided to not issue an order for the public to ingest KI at this time. MCSO contacted dispatch for notification immediately following the decision. MCSO was also directed to transport KI to the designated Reception Center at Desert Edge High School. MCDPH staff would be dispatched to the Reception Center to administer the KI to the general public if a PAD were to be made for ingestion of KI by the general public. The Maricopa County Health Department maintains all ingestion records and documentation for KI issued to the general public.

An Advance Party Meeting was conducted at the SEOC. The Federal Radiological Monitoring and Assessment Center (FRMAC) was the lead Federal agency. They stated that they had an Assessment Scientist, Health and Safety Team, and a fixed wing aircraft available to assist with any requirements. The EPA, FDA and FEMA were in attendance as additional resources. FRMAC asked what the State required needs were at this time. The State of Arizona Director of Emergency Management provided the needs assessment. The primary concerns were public return and re-entry, determining if any contamination was on Interstate 10 and Salome Highway followed by decontamination to reopen major highways. The representative from ARRA requested assistance with the agricultural embargo in place, additional staffing requirements at the Buckeye Airport for occupational control measures, additional staffing requirements at the Buckeye Airport for Re-entry measures, additional ground troops to assist with monitoring, and plume model verification. FRMAC acknowledged the requested needs and agreed to provide assistance with those requests. They stated that they would have maps of the contaminated area available the next day.

All activities were performed based on the plans and procedures and completed as they would have been in an actual emergency.

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.c.2, 3.d.1, 3.d.2, 5.a.1, 5.a.3, 5.b.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

3.3.2.3 Maricopa County Sheriff's Office Warning Center

The staff at the MCSO WC demonstrated the ability to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner following notification of an incident at PVNGS. Equipment and other supplies were sufficient to support emergency operations. Key personnel demonstrated the ability to provide direction and control in response to an incident at PVNGS. The MCSO WC demonstrated that at least two communications systems were available and at least one worked properly. Communications links were established and maintained with appropriate locations. Equipment and supplies were sufficient to support emergency operations.

Notification of an Alert ECL at the PVNGS came into the MCSO WC from the PVNGS Communicator via the dedicated NAN phone. The Communication Supervisor logged the information on the PVNGS NAN Emergency Message Form, verified the information that an Alert was declared and faxed the form back to PVNGS.

Using the Group Alpha Paging System at her station, the Communication Supervisor entered the information from the NAN call and broadcast the information to all individuals in a predestinated group to be notified of an event at PVNGS. Any 911 calls received involving the PVNGS event are redirected to the dispatch operators at the MCSO OSCP.

The Communications Supervisor at the MCSO WC continued to receive notifications of ECL changes via the NAN phone until event termination and reported them to the MCSO Emergency Operations Center and the On-Scene Command Post in accordance with the MCSO PVNGS Plan. The Communication Supervisor maintained a log of incoming and outgoing messages and calls, noting ECL changes and instructions.

All activities were performed based on the plans and procedures and completed as they would have been in an actual emergency.

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.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

3.3.2.4 Arlington School

The school had sufficient equipment, maps, displays, dosimetry, KI, and other supplies to support emergency operations. All decision-making and implementation activities associated with protective actions for special population groups were based on plans and procedures including consideration of available resources. The school has the capability to issue appropriate dosimetry and procedures and managed radiological exposure to EWs. The school has the capability to issue KI with appropriate instructions should a decision be made for EWs to use KI, as well as appropriate record keeping of the administration of KI for EWs and institutionalized individuals. School officials demonstrated how they would implement protective actions by interview.

An out of sequence interview was conducted at the Arlington Elementary School on February 28, 2011. The school superintendent, business manager, assistant business manager and a bus driver attended. The principal, who was substituting for a teacher, did not attend the interview.

The school administrative staff are notified by the MCEOC via telephone at the Alert ECL and at each subsequent ECL. The MCEOC contacts the school and advises them of the PAD to be implemented: early dismissal, precautionary transfer of students, sheltering, or evacuation to one of the designated RCCs. The school also has a Tone Alert Radio and AM/FM radio in the administrative office to monitor EAS messages.

At the beginning of the school year, they send KI permission slips to all parents. These permission slips allow the school to administer KI to students. They have permission slips available in both English and Spanish. The slips contain information explaining what happens to the thyroid gland, why iodine is important to the thyroid gland, what KI is, how exposure can occur, who is at risk, why KI treatment is important in the event of a radioactive exposure, who should not take KI and who should take KI. The school fields any additional questions that parents may have at meetings and conferences to ensure parents are comfortable with the process.

The school had current copies of the Arlington Elementary School Plan available. Upon notification to evacuate the school, all students and staff return to their home classrooms for further instruction. Two staff members are designated to retrieve each one of the eight color coded bus kits.

Staff and students proceed to their designated bus. Other staff members are identified to stay behind to clear the school. They evacuate in school owned vans to the designated reception and care center once they determine all staff, students and visitors are accounted for. For a mobility impaired student at the school, a staff member would provide transportation in a privately owned, specially equipped vehicle in the case of evacuation. It would follow the school buses to the RCC. Sufficient quantities of KI are available for individuals not evacuating on buses. The buses are located at the school at all times when not on bus routes. Drivers work at the school, or live nearby and are on call, so they are available during the school day. Drivers use personal cellular telephones to communicate. School bus drivers assigned to evacuate children from the 10-mile EPZ are considered to be "one-way" drivers. They will drive children from the school but will not return to the school. The bus driver interviewed was knowledgeable on how to wear the TLD and understood that they would not be able to determine their exposure immediately. The bus drivers would wear the TLD to the reception center and give them to ARRA at the end of their shift.

The school would administer KI to students only when informed by MCDEM that Public Health issued the order. Each bus is equipped with ample KI in the distribution container. The containers also include an updated roster of students in each class that are allowed to ingest KI. For record keeping, when the teacher dispenses KI to a student, he or she would mark it on the roster.

Once the students arrive at the RCC, the teachers remain responsible for their students until released to a parent or guardian. The school uses "School Reach", a push down call system to notify parents of the evacuation information. School Reach provides notification information in English and Spanish. They also leave a recorded message on the answering system for parents who call the school directly. Cellular telephones and call trees are available as back up communication systems. The school also has megaphones available if needed.

All activities were performed based on the plans and procedures and completed as they would have been in an actual emergency.

a. MET: 1.e.1, 2.c.1, 3.a.1, 3.b.1, 3.c.2.
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

3.3.2.5 Back-up Route-alerting

The Maricopa County Sheriff's Office On-scene Command Post (MCSO OSCP) successfully demonstrated the ability to perform backup alert and notification of the public within 45 minutes following the failure of the primary alert and notification system. Sirens and tone alert radios cover the EPZ. They demonstrated the ability to issue dosimetry, monitor EW exposure and implement KI ingestion and record keeping for EWs.

The MCSO deputies who responded to the simulated siren failures had sufficient equipment, maps, dosimetry, KI and other supplies to support emergency operations.

During the exercise, MCSO deputies with vehicles provided response to siren failures. The MCSO siren failure procedure, in its emergency response plan for PVNGS, contains the exact message to be transmitted to the public within one mile of a failed siren. The message told the public that an incident had occurred at PVNGS and to monitor radio and TV for information and instructions.

MCEOC notified OSCP that a siren had failed at pole number 11. In consultation with his staff and consulting the siren location map, the IC determined where the failure had occurred, and chose a unit with regular patrol duties in that area to respond. The unit was at the OSCP, and the dispatcher notified the unit to respond. The actual response time measured by the evaluator during the exercise was longer than expected.

Two artificialities contributed to the extended length of time required to get to the siren area. In a real situation, the deputies would use sirens and flashing lights and travel at high speed. Also the presence of the evaluator and the controller in a separate vehicle meant that time was taken to interact with the players that would not occur in a real situation. Therefore, a real response would take considerably less time than the time measured during the exercise.

The MCEOC requested a second demonstration involving a failed siren at pole number 15 for which there was a unit in the field in the vicinity of the siren. A different evaluator, already with this unit, observed this demonstration. The demonstration resulted in an acceptable time from identification of siren failure to completion of the route.

The deputies involved in the demonstrations knew their responsibilities well, knew the route very well, and demonstrated that the PA system on their vehicle was in working order.

A planning issue from a previous exercise noted the lack of a detailed map of the siren area during the route alerting demonstration. For this demonstration, the MCSO OSCP supplied the deputy with a copy of a detailed map of the failed siren area. Also, maps are available on the computer aided dispatch computers in the patrol vehicles. A second recommendation, that a reference to the 45 minute requirement be added to the MCSO OSCP procedures, had not been done. Since sirens provide primary public alert notification, there is no regulatory requirement that plans contain a specific reference to accomplish backup route alerting within 45 minutes.

All activities were performed based on the plans and procedures and completed as they would have been in an actual emergency.

a. MET: 1.e.1, 3.a.1, 3.b.1, 5.a.3.
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

3.3.2.6 Special-needs Population Evacuation

The MCSO OSCP demonstrated the capability to implement protective actions for special population groups. They have access to sufficient equipment, dosimetry and exposure control procedures, KI implementation record keeping and the special population information and implementation procedures to carry out this responsibility. There are no hospitals, correctional facilities or nursing homes in the 10-mile EPZ. Schools are handled through the MCEOC. The MCSO OSCP maintains a current data base of pre-registered special needs individuals at the MCSO OSCP. This data base is also accessible to the patrol units via laptops located in each deputies patrol car. In the exercise, MCSO EWs were provided a detailed briefing on the emergency evacuation procedures for special populations.

MCSO is responsible for coordinating notification and evacuation of the special needs residents. Maricopa County has a Special Transportation System ready to be rolled out when the evacuation order is issued.

The MCSO OSCP received a request to evacuate the following special needs persons: 4 adults, 2 children, and 2 small dogs whose vehicle was disabled on Old Highway 80. Two sheriff's deputies arrived at the scene, in all wheel drive vehicles, to take the adults, children and animals to the RCC located at Desert Edge High School.

When interviewed, the responding deputy described resources that he could call upon in these situations, to transport special needs persons to a Reception Center. These resources included a number of large (2 ½ ton) trucks with canopies over the rear beds. Special needs evacuees with medical problems can be accommodated in these trucks by the use of ramps for wheel chairs and gurneys. The deputy knew the location of the designated RCC.

All activates 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.

a. MET: 1.e.1, 3.a.1, 3.b.1, 3.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

3.3.2.7 MCSO Roadblock

The MCSO demonstrated the capability to establish appropriate traffic and access control. The MSCO OSCP had sufficient equipment and provided copies of procedures, checklists, and maps to EWs. The MCSO demonstrated the ability to issue dosimetry, track EW exposure, and implement KI decisions with appropriate record keeping. During the exercise, the MSCO OSCP dispatched officers to a simulated roadblock with radio support and accurate instructions to implement the traffic and access control.

The capability to identify and resolve impediments to evacuation was demonstrated through interview of MCSO and MCDOT personnel. MCSO sheriff deputies and MCDOT EWs would be dispatched to the scene to identify resources necessary to remove the impediment in a timely manner. In the event that MCSO and MCDOT equipment could not clear the roadway the Arizona National Guard or contract equipment would be mobilized to remove the impediment.

The IC at the MCSO OSCP makes the decision to dispatch EWs to a roadblock. The IC may dispatch workers from MCDOT to establish roadblocks. The MCSO OSCP requested that the following Emergency Barricade Locations be established.

- 411 Avenue and Salome Highway
- 339th Avenue and Salome Highway

The deputies were very familiar with the area, the locations of the RCCs, the REAT-F and PVNGS. They were up to date on the current ECL, weather and plume data. They were aware that they could call on MCDOT for barricades and additional traffic control equipment. The MCSO emergency response to PVNGS also includes a list of EWs authorized entry in the area.

Appropriate traffic and access control was carried out in accordance with the plan, procedures, and extent of play agreement.

a. MET: 1.e.1, 3.a.1, 3.b.1, 3.d.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

3.3.3 Support Jurisdictions

3.3.3.1 National Weather Service Radio

The National Weather Service (NWS) demonstrated that it had communications capability in addition to commercial telephone service to establish and maintain contact with the MCEOC in support of emergency operations. They successfully demonstrated the ability to provide primary alert and notification to the public and to provide accurate emergency information and instructions in a timely manner.

The NWS serves as a back-up to radio station KTAR (92.3 FM/620 AM) which is designated as the Local Primary 1 (LP1) EAS broadcast point for providing EAS messages for accidents at PVNGS. Maricopa County has the overall responsibility to ensure that accurate and timely information is provided to NWS for re-transmission over their NWS Radio System. As such, NWS is simply a provider of information furnished by the county.

The NWS received a call from MCEOC requesting that pre-scripted EAS Message Form C - Evacuation be completed for possible broadcast in a few minutes. The duty officer verified that the caller was authorized by name and code (from the plan), and continued to document the relayed information on the form. The NWS operator then read back to the MCEOC caller the exact message that was to be broadcast in order to confirm that information was recorded correctly.

The MCEOC Assistant EOC Manager called and (after verification) authorized the broadcast of EAS Message Form C – Evacuation. The NWS Console Replacement System Voice Annunciator Processor was activated with a tone-alert signal and the evacuation message was read. This demonstration was all simulated. No messages were broadcast. No repeat of this initial EAS message 2 was requested.

The MCEOC called again and requested that EAS Message Form C - Evacuation be rebroadcast along with Follow-up Message for EAS Message Form C - Evacuation; and that they be repeated every 15 minutes for 90 minutes. The messages were broadcast and taped for automatic replay as requested. No other messages were requested during this demonstration. The documentation of the pre-scripted messages and each of the broadcasts were completed in a timely manner without any delay.

The pre-scripted EAS and follow-up messages from Maricopa County were clear and accurate. The EAS Message contained the authority that issued the message, date and time of incident, the ECL at PVNGS, who was affected by it, and that there was a radioactive release. FEMA requires that each of these elements be addressed in an EAS message. Additionally, follow-up messages provided detailed information that evacuees needed to know to protect themselves, their families, their pets, their livestock and their property. The information provided the details that the public needed to implement their family emergency plan and to arrive safely at the designated reception center for registration and monitoring.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

a. MET: 1.d.1, 5.a.1, 5.b.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

3.3.4 Private Organizations

3.3.4.1 KTAR EAS Radio Station

The KTAR radio station had at least two communication systems available. It established and maintained communication links with MCDEM during this exercise. KTAR demonstrated primary alert and notification to the public and provision of accurate emergency information and instructions in a timely manner through simulation.

KTAR 92.3 FM is designated as the Local Primary 1 EAS broadcast point for providing EAS messages for accidents at PVNGS.

MCDEM called the KTAR Command Center on its dedicated line to notify them of an emergency situation at PVNGS. They informed KTAR to be ready to broadcast EAS messages, should the event escalate. KTAR did a communications check of the dedicated line and the EAS system to ensure both were functioning. EAS messages could also be broadcast by NWS, KJZZ or KFYI.

MCDEM called KTAR to notify them to run an EAS message. The KTAR Command Center Operator took out the appropriate EAS Message Form C, Evacuation, as instructed, and filled out the relevant information as MCDEM provided it. After the Operator recorded all the information, he read the entire EAS message back to MCDEM to ensure it was accurate. MCDEM informed him that the message should be made ready for broadcast transmittal, and that MCDEM would call back in a few minutes to tell KTAR the exact time to broadcast. The Command Center Operator followed the KTAR checklist for Palo Verde EAS messages as best he could when preparing for the EAS broadcast. While following the checklist, he realized that one of

the steps was out of order, so he adjusted accordingly and made a suggestion that the checklist needed to follow the correct process.

The KTAR Command Center Operator took the EAS Message Form C to the Technical Operator, who simulated setting up the broadcast. MCDEM called back to tell KTAR to run the message. The Technical Operator simulated interrupting the normal broadcast and playing the header tones of the EAS message. The EAS Message would then be read live over the air. At the end of message, the Technical Operator set the machine to replay the message every ten minutes until MCDEM called again. KTAR has the capability to interrupt all programming across the state Arizona to relay the EAS message.

MCDEM called KTAR again with instructions to broadcast the Follow-Up Message for EAS Form C, Evacuation. MCDEM instructed KTAR to broadcast every ten minutes until 1210.

Later, MCDEM called KTAR on the dedicated line to inform them of a new EAS message. The Command Center Operator, who was new because of a shift change, gathered the appropriate EAS Message Form C, Evacuation, as instructed, and filled out the relevant information that MCDEM provided. He recorded the relevant information on the Form, and then read it back to MCDEM for accuracy. MCDEM explained they would call back when they wanted the message aired. The Command Center Operator took the form to the Technical Operator to ready the message for broadcast, as was done for the first message. MCDEM called back and told KTAR to run the message. During the call, MCDEM instructed KTAR to run the same follow-up message after broadcasting the EAS message. KTAR programmed the EAS broadcast and follow-up message to run once every ten minutes for an hour.

EAS Message Form C, Evacuation, detailed the person in authority who issued the message, the date and time of incident, the ECL at PVNGS, who was affected by it, and that there was a radioactive release. Additionally, it detailed which areas the Governor ordered to evacuate, where to find evacuation routes, the designated reception center, and which schools were being evacuated. Lastly, it gave a telephone number for public inquiry, and directed listeners to stay tuned for further information. KTAR updated to this same form when it sent out the third EAS message.

The Follow-Up Message for EAS Form C, Evacuation gave additional instructions on evacuation including a reference to the Palo Verde Safety Calendar or local phone book, how residents could close up their house and what supplies to bring to the reception center. It explained the reasons to not bring extra items, to report to the reception center for registration and monitoring, to bring pets for temporary accommodations and how to shelter livestock. It concluded by explaining how to drive safely to the reception center, that law enforcement will patrol evacuated areas and asked listeners to implement their family emergency plan. KTAR sent this same information out after the third EAS message. KTAR demonstrated actions to disseminate the appropriate information and instructions with a sense of urgency and without undue delay when asked by MCDEM to send out EAS messages.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

a. MET: 1.d.1, 5.b.1.
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: 5.a.1.

ISSUE NO.: 45-11-5a1-P-1

CRITERION: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite officials to notify the public of an emergency situation. (NUREG-0654, E.1., 4., 5.,6.,7.)

CONDITION: The KTAR Checklist for Palo Verde EAS Messages lists a procedure that is out of order pertaining to how the message is developed at KTAR.

POSSIBLE CAUSE: MCDEM developed the procedure and gave it to KTAR to implement. MCDEM does not have intimate knowledge of KTAR's EAS message process.

EFFECT: If KTAR taped the EAS Message and Follow-Up message prior to MCDEM telling them which form to use and what information to add, then the EAS message would be inaccurate.

RECOMMENDATION: Move the second step “Tape the EAS Message and Follow-Up Message” down on the checklist to after step five “MCDEM will request a HOLD on the message until you are contacted again”.

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

SECTION 4: ANALYSIS OF CAPABILITIES, POST-PLUME PHASE

4.1 Exercise Evaluation and Results

Contained in this section are the results and findings of the evaluation of the OROs that participated in the post-plume ingestion phase of the PVNGS exercise on March 2-3, 2011. This exercise tested the offsite emergency response capabilities of state and local governments in the EPZ surrounding PVNGS. The OROs were evaluated on the basis of their demonstration of criteria delineated in the exercise evaluation areas as outlined in the August 2002, Interim REP Program Manual. Detailed information on the extent of play agreement used for the plume phase, post-plume ingestion phase and evacuee monitoring and decontamination phases of this exercise is found in Appendix E of this report.

4.2 Summary Results of Exercise Evaluation

The matrix presented in Table 4.1, shows the status of all exercise evaluation area criteria which were scheduled for demonstration, during the ingestion phase of 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 3, extent of play agreement)
P – Plan Issue

Table 4.1 – Summary of Exercise Evaluation, Ingestion Phase (2 pages)

DATE: 2011-03-01 SITE: Palo Verde Nuclear Generating Station, AZ M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		FST-A	FST-B	FST-C	FCP	Lab	Re-Entry	ADEM-R	MC EM-R	REAT-FR	TOC R
Emergency Operations Management											
Mobilization	1a1										
Facilities	1b1										
Direction and Control	1c1	M	M	M				M	M	M	
Communications Equipment	1d1										
Equip & Supplies to support operations	1e1	M	M	M	M	M	M			M	
Protective Action Decision Making											
Emergency Worker Exposure Control	2a1							M	M		M
Radiological Assessment and PARs	2b1										
Decisions for the Plume Phase -PADs	2b2										
PADs for protection of special populations	2c1							M	M		
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1							M	M		M
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1							M	M		M
Protective Action Implementation											
Implementation of emergency worker exposure control	3a1	M	M	M	M	M	M			M	
Implementation of KI decision	3b1	M	M	M						M	
Implementation of protective actions for special populations - EOCs	3c1								M		
Implementation of protective actions for Schools	3c2										
Implementation of traffic and access control	3d1								M		
Impediments to evacuation are identified and resolved	3d2										
Implementation of ingestion pathway decisions - availability/use of info	3e1				M			M	M		
Materials for Ingestion Pathway PADs are available	3e2				M			M	M		
Implementation of relocation, re-entry, and return decisions.	3f1						M	M	M		
Field Measurement and Analysis											
Adequate equipment for plume phase field measurements	4a1										
Field Teams obtain sufficient information	4a2										
Field Teams manage sample collection appropriately	4a3										
Post plume phase field measurements and sampling	4b1	M	M	M						M	
Laboratory operations	4c1					M					
Emergency Notification and Public Info											
Activation of the prompt alert and notification system	5a1										
Activation of the prompt alert and notification system - Fast Breaker	5a2										
Activation of the prompt alert and notification system - Exception areas	5a3										
Emergency information and instructions for the public and the media	5b1							M			
Support Operations/Facilities											
Mon / decon of evacuees and EWs, and registration of evacuees	6a1										
Mon / decon of emergency worker equipment	6b1										
Temporary care of evacuees	6c1										
Transportation and treatment of contaminated injured individuals	6d1										

Table 4.1 – Summary of Exercise Evaluation, Ingestion Phase, (Continued, page 2 of 2)

DATE: 2011-03-01 SITE: Palo Verde Nuclear Generating Station, AZ M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		JIC-R	La Paz	Pinal	YC	Yuma
Emergency Operations Management						
Mobilization	1a1					
Facilities	1b1					
Direction and Control	1c1					
Communications Equipment	1d1					
Equip & Supplies to support operations	1e1					
Protective Action Decision Making						
Emergency Worker Exposure Control	2a1					
Radiological Assessment and PARs	2b1					
Decisions for the Plume Phase -PADs	2b2					
PADs for protection of special populations	2c1					
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1		N	N	N	N
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1		N	N	N	N
Protective Action Implementation						
Implementation of emergency worker exposure control	3a1					
Implementation of KI decision	3b1					
Implementation of protective actions for special populations - EOCs	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 - availability/use of info	3e1		N	N	N	N
Materials for Ingestion Pathway PADs are available	3e2		N	N	N	N
Implementation of relocation, re-entry, and return decisions.	3f1		N	N	N	N
Field Measurement and Analysis						
Adequate equipment for plume phase field measurements	4a1					
Field Teams 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					
Activation of the prompt alert and notification system - Fast Breaker	5a2					
Activation of the prompt alert and notification system - Exception areas	5a3					
Emergency information and instructions for the public and the media	5b1	M				
Support Operations/Facilities						
Mon / decon of evacuees and EWs, and registration of evacuees	6a1					
Mon / decon of emergency worker equipment	6b1					
Temporary care of evacuees	6c1					
Transportation and treatment of contaminated injured individuals	6d1					

4.3 Criteria Evaluation Summaries

4.3.1 Arizona Jurisdictions

4.3.1.1 Radiological Technical Operations Laboratory

ARRA's Radiation Measurement Laboratory (RML) at the Radiological Emergency Assistance Team Center had the necessary equipment to safely receive, handle and prepare potentially contaminated samples with proper attention to contamination control. The RML had an array of computer assisted analytical equipment available for performing various types of radioisotope and gross radioactivity analyses to support PADs. RML demonstrated a newly acquired mobile computerized system which uses bar coding to track samples and personnel entering restricted areas. RML staff wore Optically Stimulated Luminescence (OSL) dosimeters and Thermoluminescent Dosimeters (TLDs). OSLs are changed monthly. TLDs are changed annually or, if radioactive material is handled, after each incident. All laboratory instrument calibrations were current and verified to the standards provided by the National Institute of Standards and Technology.

The staff demonstrated receipt and logging of 2 samples that were representative of samples collected as a result of a reactor incident at PVNGS. Proper contamination control and laboratory procedures were followed. RML established 250 micro-Roentgen per hour (µR/hr) as the maximum surface reading allowed for samples admitted directly into RML for analysis. Samples exceeding this maximum would be identified, the exposure rate recorded and isolated in the radiation source storage room. The ARRA Director must approve analysis of samples over the 250 µR/hr threshold. When the lab analyzed samples, the gamma analysis system's computer produced a Gamma Spectrum Analysis Report that would be transmitted to the TOC Director. If RML needed assistance either because of workload or an unusual sample request, RML would look to federal agencies for assistance.

All activates 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.

a. MET: 1.e.1, 3.a.1, 4.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

4.3.1.2 State Emergency Management, Post-Plume Phase

During the post-plume phase, State agencies worked together to provide direction and control over the recovery process. They established an exposure control system, including KI if needed, to ensure that EWs did not exceed administrative limits unless specifically authorized. They made PADs for confined populations and persons in need of additional assistance. They demonstrated PADs that restricted potential

ingestion of contaminated food, water and milk and provided public information on these decisions, including written material for reference. State agencies coordinated on relocation, re-entry and return decisions for the population at risk. These agencies demonstrated controlled re-entry for EWs and coordinated implementation for public relocation and return. State agencies provided accurate, timely public information and instructions. Exercise Day 2 simulated the day after the incident and Day 3 simulated the seventh day after the incident.

Day 2, which started the post-plume phase of the exercise, began with a briefing that re-capped events from the plume phase. The briefing included events that took place during a simulated overnight shift. It included information obtained from sampling milk, crops, eggs and other farm produce. The ARRA Director briefed participants about the plume measuring system and the data received from a U.S. Department of Energy (DOE) Aerial Measuring System (AMS) fly over. He addressed ARRA plans to sample some areas outside the area of the plume model. This additional sampling was designed to verify or discount any possible additional contamination concerns in areas outside the area defined by the plume model. Field team sampling would provide a better defined plume footprint.

Following the recap and ARRA briefing, each Section Chief provided a status update and answered questions from SEOC staff. Participants also discussed when limited return to restricted areas might be anticipated. The Policy Chief stated that one of the priorities would be to reduce the pressure on the mass care facility by allowing selected populations to return to the affected areas in a controlled sequence, possibly after four days. It was decided that subsequent policy meetings would focus on addressing and prioritizing essential functions to support returning the evacuated population to their homes. Immediate recovery priorities in the post-plume phase included integrating the efforts of the responding agencies, monitoring the risk as the contamination footprint changed with time, ensuring that the food supply was safe and restoration of roadways, facilities and services to support the returning population.

The recovery organization was based on a unified command structure that included the responsible State agencies. The SEOC took steps to incorporate Federal agency support. FRMAC supported hazard analysis by advising ARRA and providing staff to assist the FMTs. The Advisory Team for food, health and water, including HHS, EPA, FDA and U.S. Department of Agriculture (USDA) worked with their State agency counterparts. For example, with assistance from USDA, ARRA and FRMAC, ADA developed a sampling plan for food, water and milk. The NRC and FEMA were similarly incorporated into the unified command response structure to support the responding State agencies. The Policy Chief proposed a "Long-Term Recovery Task Force" that would coordinate Department of Housing efforts, assistance from American Nuclear Insurers (ANI), the nuclear power plant insurance company and FEMA Public Assistance to State and local government.

Recovery planning was based on accurately defining the contaminated areas. Initial decisions were based on the FRMAC AMS flyover plume model. FMTs provided sampling data to better define the areas and levels of contamination. This information assisted the SEOC in establishing the boundaries of the areas where access would be restricted. Restricted areas were defined based on EPA guidelines for exposure over one year, two years or over a 50 year period. As the maps of the plume footprint were refined and updated, the most recent versions were posted in the SEOC. Only EWs were allowed in the evacuated areas on Day 2. EWs entered the evacuated areas to sample areas of contamination. Other individuals could be allowed in

for a limited time if there was a demonstrated need. All persons entering the evacuated area were processed through REAT-F in order to control and measure their exposure to radiation.

Contaminated agricultural products were identified based on their origin from the restricted areas and by the ADA sampling plan. A well and drinking water sampling plan was developed also. The ADA Command Post developed GIS maps enhanced with data showing farms, agricultural ditches where runoff may be contaminated, crops, dairies and food processing plants. As the plume deposition maps were refined by data from field sampling, the agricultural embargo areas were adjusted in accordance with the redefined restricted areas that continued to show significant levels of radiological contamination. Harvested produce was inspected when trucks stopped at Food Control Points (FCPs). Produce from an embargoed area or that had transited through an embargoed area, was tagged for testing at the FCP. Tagged produce cargos were sealed and held for either clearance or notice of rejection.

Returning the evacuated population to areas approved by the Policy Chief, when the confirmed exposure levels were below EPA guidelines, required decontamination of roads and restoration of support services. The Policy Group decided that Interstate 10 and other affected roads would be washed. Washing down the roads reduced the level of deposited contamination. These roads could be reopened to through traffic even if the surrounding area was restricted to limited reentry. Public support services would be reestablished before residents could return to areas that were determined to have low enough levels of background radiation. Students at Winters Well School would be required to attend other schools. Winters Well was located in the 50-year restricted zone. Utilities would be restored before residents were allowed to return. Public safety resources were prioritized for occupied areas. Restricted areas would be posted. Law enforcement response in restricted areas would be controlled and very limited. For a limited time, the Arizona National Guard would supplement law enforcement responsibilities.

Day 3 activities were conducted as a modified tabletop exercise with approximately 140 individuals participating at the Sheraton Phoenix Airport Hotel. Activities began with a briefing to ensure that all participants were aware of what had occurred on Day 1 (plume phase), Day 2 (transition to post-plume phase) and Days 3-6 leading up to the day of the tabletop which was simulated as the seventh day after the incident. The Policy Chief reiterated the priority to return residents to those areas with minimal contamination where the background radiation was well below EPA guidelines. Clearing areas for residents to return was based on field sampling and updated contamination mapping. Area boundaries were based on the radiation control levels that were set to limit public exposure. In the restricted areas, the agricultural embargo remained in place. ADA posted complete agricultural information on its website. ANI coordinated insurance reimbursement with State recovery efforts. Individual assistance centers provided housing assistance and other needs assistance to the relocated residents.

ARRA established exposure controls for residents who needed to reenter restricted areas for short term tasks. The Policy Group allowed members of the public to reenter to retrieve personal items, medications, medical supplies, important documents, clothing and for critical tasks such as to care for farm animals. Public reentry was controlled through REAT-F. At REAT-F, residents would be briefed on exposure control and be given the maximum time they could be in the restricted area. Reentering public would not be given dosimetry, however their exposure would be estimated based on the area they entered and the time they stayed. Exposure records would be based on the levels of radiological contamination found by field team

surveys of the area. The public would only be allowed in the one year restricted area based on a demonstrated need. MCSO would maintain road check points to inspect documents that REAT-F provided to the reentering public.

Evacuated areas, with low enough background radiation levels to be considered safe, were cleared for the public to return to re-occupancy their homes when services and utilities had been restored. Most utility services remained functional, however electricity generation from PVNGS would remain shut down until a FEMA Disaster Initiated Review (DIR) determined that it was safe to restart the reactors. A DIR ensures that the public can be protected in a radiological emergency. Community services were required for the public to return. Emergency services and public safety must be in place. Transportation corridors must be open and available. Winters Well students were reassigned to safe schools. Businesses would require assistance to reestablish service in reoccupied areas.

While plans were made for public return where possible, the Policy Group was also concerned about residents in the restricted areas who could not return and businesses that were closed because they were located in the restricted areas. The Policy Group considered the need to recommend legislation that might assist transferring ownership of residential and commercial property in those restricted areas were return would not be allowed for the foreseeable future. The intent in transferring ownership was to facilitate individual and business financial recovery and to expedite government containment and cleanup projects.

The ADA website had the latest news on agricultural restrictions. Milk and agricultural producers were informed of the embargo area by media releases. Agricultural producers were advised to leave contaminated crops in the ground and to dispose of low level contaminated milk at the farms where it originated. FCP road blocks & barriers enforced ADA inspections. Produce from outside the area was confirmed by the truck's bill of lading. Public messages also informed backyard gardeners of contamination risks. The Arizona Game and Fish Department used public information messages to warn the public about hunting and fishing as sources of contaminated food.

Over several breakout sessions that comprised the day's activities, topics were presented for discussion and problem solving. As in prior days, the Policy Chief led the State response through engagement with the Policy Group for incident response decisions other than agriculture. The Section Chiefs led their respective group discussions and reported actions to the Policy Chief. An exercise artificiality was noted. During the hotel tabletop, the group updates and discussions were facilitated by a controller and were not fully representative of how the organization would function in an actual emergency.

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.

a. MET: 1.c.1, 2.a.1, 2.c.1, 2.d.1, 2.e.1, 3.e.1, 3.e.2, 3.f.1, 5.b.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

4.3.1.3 Radiological Emergency Assistance Team Forward, Post-Plume Phase

The REAT-F Captain effectively demonstrated the capability to provide direction and control to the overall response effort at REAT-F. The REAT-F Captain was in charge of the activities at the facility, which included the Field Sampling Team (FST) assignments, personnel and equipment monitoring and decontamination, sample receipt and RCC assignments. Federal members representing the U.S. DOE and U.S. EPA were integrated into the FSTs. REAT-F had sufficient equipment and supplies to support its operational requirements. REAT-F demonstrated the capability to issue dosimetry and to monitor EW exposure. Personnel monitoring and decontamination activities were observed during the plume-phase of the exercise.

A portion of the sampling plan developed overnight was provided to the REAT-F Captain. This plan was developed to support the ingestion pathway assessment for relocation, reentry and return decisions. The Captain briefed the REAT-F members on strategy. An ICS Form 204, with work assignments, was generated while the FSTs were preparing for activities in the field. FSTs were deployed to their assigned locations after completing equipment checks. Three teams were dispatched to pre-identified locations to perform soil sampling. The other teams were directed to the Triple G Dairy to perform milk samples. All teams were instructed to follow FRMAC sampling procedures.

A mobile laboratory was located at REAT-F to receive samples from the FSTs. The U.S. EPA mobile laboratory was also present to provide additional assistance. FRMAC generated sample control chain-of-custody forms with unique barcodes specific to PVNGS. With the new accountability system set up to track assets, these barcodes and forms were also scanned into the database. The system recorded the status and location of the samples that were received. This allowed for easier tracking of any sample that was sent out to other laboratories for analysis.

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.

a. MET: 1.c.1, 1.e.1, 3.a.1, 3.b.1, 4.b.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

4.3.1.4 Technical Operations Center Post-Plume Phase

In the post-plume phase, the TOC demonstrated the ability to analyze radiological information. This included information from sampling milk, crops, eggs and other farm produce. The TOC implemented an exposure control system for the FSTs who were collecting samples. The TD made recommendations to the ADA, which has the authority to make PADs for commercial food production facilities.

FRMAC provided the TOC with flyover results, field sample analysis and mapped the projected population relocation area. Soil sample analytical results were entered into the EPA Relocation PAG Worksheet to calculate the first-year, second-year and fifty-year doses due to ground shine. The EPA Relocation PAG Worksheet was based on the EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents. The samples confirmed the validity of the relocation area map. Based on the projected doses from the soil sample results, the FRMAC map was recommended to be the template for the relocation area. The TD further recommended that reentry be restricted to a case-by-case basis and return would be appropriate outside the area designated on the map.

TOC Dose Assessors were provided with analytical isotopic results from samples of produce that was simulated to have been grown in the 50-mile ingestion pathway zone. These results were compared to the FDA derived intervention level (DIL) for food ready to eat. Any concentration measured above the DIL was not acceptable for consumption. While the Dose Assessors processed simulated produce sample laboratory results, FRMAC produced a map which showed the location where the FDA PAGs were projected to be exceeded. Dose Assessors from FRMA analyzed the analytical data along with the TOC Dose Assessors and arrived at the same conclusions about the edibility of the produce. These samples confirmed the validity of the FRMAC projected food control areas.

Based on this data analysis, the TD made recommendations to the Policy Chief for consideration in implementing protective actions for relocation, controlled reentry for essential tasks and return to areas where contamination levels were below EPA guidelines.

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.

a. MET: 2.a.1, 2.d.1, 2.e.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

4.3.1.5 AZ Joint Information Center, Post-Plume Phase

During the PVNGS Radiological Emergency Preparedness Post Plume Phase of the exercise, the State of Arizona and Maricopa County successfully demonstrated the ability to provide accurate emergency information and instructions to the public in a timely manner. The JIC was physically located in the SEOC on Day 2. The media spokesperson and media briefings elements were not demonstrated in this phase of the exercise. Four Media Statements were prepared for dissemination. The organizations represented in the JIC on Day 2 were the ADEM, ARRA, ADA, MCDEM, MC Department of Public Health, and PVNGS.

The State PIO was an active participant during a policy group meeting. There was no Public Inquiry function, nor did a control cell activate or generate calls; however, the PIO simulated a response to an inject call from the owner of a Wolf Preserve, who was concerned for her animals.

On Day 3, the JIC was located at the Sheraton-Phoenix Airport Hotel. Within the modified tabletop exercise involving approximately 140 individuals; the JIC function was staffed by 10 persons. Organizations represented in the JIC on Day 3 included ADEM, ADA, MCDEM, MC Department of Public Health and PVNGS.

The PIO and JIC staff effectively coordinated the dissemination of information to the public and the media concerning Return, Re-entry, and Relocation. This information was prepared for media briefings, media statements, the ADEM Web site, AzDIN.gov, and Social Media such as Twitter, Widget, and Face Book.

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.

a. MET: 5.b.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

4.3.2 Risk Jurisdictions

4.3.2.1 Off-Site Field Sampling Team, Alpha

REAT-F provided direction and control for Field Sampling Team Alpha (FST-A). Team members checked in at REAT-F, received badges, inventoried monitoring, safety and sample collection equipment. Members ensured their TLDs and DRDs were current and survey instruments were operational and within calibration. Proper equipment check out was completed, assignments and a radiological and safety briefing was received prior to deployment. The team maintained exposure control monitoring with DRD readings recorded at 30 minute intervals, but did not require KI for post plume field work.

Sample collection was completed at specific locations, according to the ICS Form 204 assignments, to support the ingestion pathway PADs. Milk samples were collected at a nearby dairy. FST-A verified that exposure rates at these pre-identified locations was less than 250 µR/hr prior to performing sampling activities. Radiation readings were measured directly on the packaging to verify radiation levels had not increased over 250µR/hr after sample collection. Samples exceeding 250µR/hr were marked with a colored sticker, to notify the receiving laboratory of the higher levels. Collection procedures were meticulously followed to assure the integrity of the sample, maintain chain of custody and avoid cross-contamination. FST-A maintained radio contact with REAT-F throughout its operations. A FRMAC van with a satellite link followed FST-A to support communication with REAT-F. FST-A completed assignments to collect soil samples, vegetation samples and milk samples at designated locations.

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.

a. MET: 1.c.1, 1.e.1, 3.a.1, 3.b.1, 4.b.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

4.3.2.2 Off-Site Field Sampling Team, Beta

REAT-F provided direction and control for FST-B. Team members checked in at REAT-F, received badges, inventoried monitoring, safety and sample collection equipment. Members ensured their TLDs and DRDs were current and survey instruments were operational and within calibration. Proper equipment check out was completed, assignments and a radiological and safety briefing was received prior to deployment. The team maintained exposure control monitoring with DRD readings recorded at 30 minute intervals, but did not require KI for post plume field work. FST-B was instructed to use FRMAC sample collection procedures for soil and vegetation and to notify REAT-F if any sample exceeded 250 µR/hr. The FSTs were instructed to use ARRA procedures for milk sampling.

Sample collection was completed at specific locations, according to the ICS Form 204 assignments, to support the ingestion pathway PADs. Milk samples were collected at a nearby dairy. FST-B verified that exposure rates at these pre-identified locations was less than 250 µR/hr prior to performing sampling activities. Radiation readings were measured directly on the packaging to verify radiation levels had not increased over 250µR/hr after sample collection. Samples exceeding 250µR/hr were marked with a colored sticker, to notify the receiving laboratory of the higher levels. Collection procedures were meticulously followed to assure the integrity of the sample, maintain chain of custody and avoid cross-contamination.

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.

a. MET: 1.c.1, 1.e.1, 3.a.1, 3.b.1, 4.b.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

4.3.2.3 Off-Site Field Sampling Team, Charlie

REAT-F provided direction and control for FST-C. Team members checked in at REAT-F, received badges, inventoried monitoring, safety and sample collection equipment. Members ensured their TLDs and DRDs were current and survey instruments were operational and within calibration. Proper equipment check out was completed, assignments and a radiological and safety briefing was received prior to deployment. The team maintained exposure control monitoring with DRD readings recorded at 30 minute intervals, but did not require KI for post plume field work. FST-C was instructed to use FRMAC sample collection procedures for soil and vegetation and to notify REAT-F if any sample exceeded 250 µR/hr. The FSTs were instructed to use ARRA procedures for milk sampling.

Sample collection was completed at specific locations, according to the ICS Form 204 assignments, to support the ingestion pathway PADs. Milk samples were collected at a nearby dairy. FST-C verified that exposure rates at these pre-identified locations was less than 250 µR/hr prior to performing sampling activities. Radiation readings were measured directly on the packaging to verify radiation levels had not increased over 250µR/hr after sample collection. Samples exceeding 250µR/hr were marked with a colored sticker, to notify the receiving laboratory of the higher levels. Collection procedures were meticulously followed to assure the integrity of the sample, maintain chain of custody and avoid cross-contamination. FST-C completed assignments to collect two soil samples, two vegetation samples and a milk sample at designated locations.

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.

a. MET: 1.c.1, 1.e.1, 3.a.1, 3.b.1, 4.b.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

4.3.2.4 Food Control Point

The ADA demonstrated the capability to establish a Food Control Point (FCP) to restrict movement of contaminated agricultural products. The ADA was well equipped to perform inspections and enforce agricultural restrictions. ADA staff demonstrated knowledge of exposure control procedures. The ADA demonstrated printed information at the table top exercise on Day 3. An ADA Livestock Officer directed vehicle traffic transporting agriculture products to the FCP.

Several REAT Forward monitoring team members are also employees of the ADA. They were familiar with both processes and would also be able to assist the Livestock Officer, if an ADA inspector was not present.

A truck from Hickman's Family Farms was directed to the FCP for contamination monitoring. The monitors greeted the driver and explained that the vehicle and contents would need to be surveyed for contamination. The ADA Inspector indicated that 1% of the product in the truck would be sampled for their purposes.

The ADA Inspector correctly simulated actions that would be taken and demonstrated the completion of the Inspection Record form to quarantine the truck and eggs. The ADA Inspector completed the processing of the truck by the simulation of a red quarantine tie-strap over the lock to the storage area of the truck signifying that the contents were under ADA control. The Inspector provided a carbon copy of the inspection record to the driver and stated that the seal should not be removed without authorization by an authorized ADA employee.

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.

a. MET: 1.e.1, 3.a.1, 3.e.1, 3.e.2.
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

4.3.2.5 Re-Entry Point

On Day 2 of the Ingestion Pathway Exercise, ARRA and MCSO successfully demonstrated the capability to implement decisions to allow EWs to re-enter the affected area. The Re-Entry Point was established at REAT-F with adequate equipment for this task. There were adequate supplies of dosimetry, protective clothing and a tracking system to monitor EW exposure. EWs re-entering restricted areas were briefed on requirements to monitor and record their exposure. Through interview, the REAT-F Commander demonstrated how ARRA and MCSO would coordinate implementing controlled re-entry.

The MSCO Deputy established a re-entry control point at the entrance to REAT Forward to simulate a typical roadblock location. The Deputy questioned the dairy farmers as they approached the control point for their reasons for entering the area. The Deputy checked and scanned the farmers re-entry pass with a handheld scanner that is synchronized to the Accountability System Station, and ensured proper documentation (the deputy gave a yellow copy to ARRA). The deputy directed the farmers to exit the area through the same check point to ensure accountability.

The MCSO deputies carry basic roadblock equipment in their patrol cars (flares, cones, etc.). In the event that more equipment is needed (signs, barricades, etc.) the MCSO EOC and the MCSO OSCP would both be contacted, and in turn they would contact MCDOT with the request.

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.

a. MET: 1.e.1, 3.a.1, 3.f.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

4.3.2.6 Maricopa County Emergency Management, Post-Plume Phase

Maricopa County Emergency Management effectively demonstrated the capability to provide trained key personnel to direct and control activities in support of the PVNGS Ingestion Pathway Exercise in the Post-Plume phase. Exercise Day 2 was conducted at the SEOC and exercise Day 3 was conducted as a table top exercise at the Sheraton Hotel. MCDEM demonstrated the capability to work within the established decision making process to ensure that the exposure control system for EWs was effective. MCDEM demonstrated effective coordination and implementation of PADs for Special Populations as well as schools within the area subject to the PADs. The radiological consequences for the ingestion pathway were assessed and appropriate PADs were made. As a member of the Policy Group, MCDEM supported the assessment process and PADs that were made as a result of that assessment. MCDEM maintained close coordination with ADEM during the PAD making process, developing strategies and obtaining necessary materials based

on the county and state plans and procedures. In coordination with ADA, MCDEM demonstrated knowledge of the locations and types of agricultural facilities and provided public information that was disseminated on food, water and milk restrictions. The representatives from the Maricopa County agencies were very knowledgeable of controlled re-entry of EWs, the return of residents and the relocation process and worked very well with other agencies to ensure the health and safety of the public.

MCDEM supported the Ingestion Phase activities at the SEOC on day 2. Direction and control during this phase lies primarily with the State. The MCDEM Director provided county personnel to fill working group positions. Working group support was provided by County personnel from the MCDPH, MCDEM, MCSO, MCDOT, Department of Environmental Services, Department of Air Quality, Buckeye Fire Department, and clerical staff.

The Maricopa County staff supported the State in defining the problems and in providing information that would be helpful for recovery. This support included status updates of county activities. The MCDPH advised the State of the need to start considering long term care, tracking of health issues (both short term and long term), setting up an Individual Assistance Service Center and control of water and food consumption. MCSO, MCDOT, and MCDEM participated in discussions with the Policy Chief and the State Operations Section on setting up T/ACPs for return and re-entry. Once the Policy Chief made his decision, County personnel from MCSO and MCDOT were tasked with developing a plan to set up T/ACPs. This plan was completed and ready for Day 3 activities.

Access to the evacuated area was still controlled at this phase. Between two and four days after the incident, an inner restricted area boundary would have been established based on radiation survey and sample results. After the inner restricted area boundary was established, the outer evacuation access control boundaries would be removed. The only individuals allowed into the evacuated areas would be EWs, primarily monitoring and sampling teams, and emergency services personnel. MCSO was prepared to help implement this re-entry using established procedures.

After the inner restricted area boundary was established, the outer evacuation access control boundaries would be removed. Tonopah Valley High School and Palo Verde School would be allowed to re-open four days after the incident. Winter's Well School was within the restricted area and the policy group anticipated that it could not be utilized for a significant amount of time.

After initial ingestion product sampling and analysis was completed, the MCDEM Director participated in PAD discussions. The ADA decided to extend the agricultural embargo out to the 10-mile EPZ radius in Sectors B and C and out to the 50-mile ingestion pathway radius in sector D. The restricted area was defined by landmarks.

The activities for Day 3, held in a large conference room at the Phoenix Sheraton Hotel, were divided into functional areas. Several break-out rooms were utilized for functional discussions. Maricopa County staff were located at various tables and rooms to perform their duties and then were brought together for post break-out briefings. All public return decisions and locations were established and accomplished during day two of the exercise. The agricultural embargo remained in effect out to fifty miles in the affected zones from Day 1 and Day 2 exercise play.

Throughout the exercise, the Policy Group maintained close communication with ADA, ARRA, EPA, PVNGS, ANI, and NRC ensuring that the most current information and maps were provided for sampling plan development and decision making. Discussions on prioritizing radiological sampling of water supplies were identified with private water wells assigned a lower priority. The ADA implemented an embargo on Day 1 and coordinated with ADEM and Maricopa County for media releases and updates via the JIC for the farmers, commercial market and the public. No contaminated water supplies were identified during the exercise.

The Policy Group maintained communication and coordination with state and federal agencies responsible for enforcing food controls throughout the table top exercise. Close coordination between ADA, ADEM, ARRA, DOE, and MCDEM occurred prior to implementation of ingestion pathway decisions. These included processes to implement embargos, condemnations, notification and delivery of pre-printed materials, legal notices to agribusiness and public information. Commercial agricultural goods from the embargoed area would be removed from the market and taken to a designated point for proper disposal. FCPs would be set-up as needed for spot checks and radiological monitoring to determine if these agricultural products were safe for consumption.

Maricopa County Department of Environmental Services coordinates with Arizona Department of Health to implement protective actions regarding fresh fruits and vegetables at the retail level and coordinates with other state agencies in contamination control measures. ADA is the lead agency in embargos of dairy, milk, and crops and coordinates with Maricopa County. Maricopa County worked closely with ADEM to develop information on embargoes, condemnations and disposition of condemned food products. MCSO stated they would assist the other law enforcement agencies with any FCPs established. Both the state and county were informed by ADA when the embargo was implemented. The Policy Group coordinated with the JIC and released “Agricultural Embargo” messages and updates that informed agribusiness and the public.

Simulated News briefings were conducted throughout the exercise, on an as needed basis, with participation of the Policy Group agency representatives. These briefings dispelled rumors and kept the farmers, the public and business owners informed on embargo, food safety and water supply concerns. Pre-printed instructions and materials that would be available in an actual response were not demonstrated in the table top portion of the exercise. MCDEM representatives participated in continued discussions regarding the ingestion pathway and what agricultural controls should be established. The Policy Group also discussed what information should be disseminated to private agricultural growers (private gardens, road side stands). These products are not regulated by the ADA. The Arizona Department of Health Services has responsibility for these products. For these non-regulated products the Policy Group decided to issue a News Media statement describing actions the public should take with these products.

MCDEM, MCSO, and MCDOT staff participated in situational briefings. ARRA established radiation exposure controls appropriate for the general public. ARRA had a DOE flyover map and had field radiation survey results. The ARRA Director indicated that exposure limits would remain in place for EWs. MCSO continued to support re-entry activities in accordance with EW guidelines. The ARRA Director made the decision to allow the general public to re-enter restricted areas in the areas that exceeded the 2-year and 50-year PAG with the following conditions: they would process through REAT-F, be briefed

on exposure control and given a stay time based on the area they needed to access. Access into the 50-year restricted area was limited to 12 hours per day within a seven day period. Access into the 2-year restricted area was limited to six hours per day within a seven day period. Radiation dose limitations would be assigned and tracked based on radiation survey results for the areas accessed. No dosimetry would be issued to the general public. Radiation exposure reports could be given to individuals, if requested. If an individual required access inside the 1-year restricted area, it would be approved on a case by case basis and additional controls would be established based on the area. The MCSO would continue to provide support by controlling access in accordance with the MCSO procedure. Since the plume phase had ended, the ARRA Director stated that KI would no longer be utilized as there was no longer a risk of significant radioactive iodine exposure. A media statement, Media Statement 17, was issued to convey this information to the public.

Policy Group meetings discussed the status of Winter's Well School with support from MCEMD, MCDPH and the MCEOC Manager. The Policy Group determined that the school was located within the 50-year restricted area and it was possible that the school could eventually be decontaminated and re-opened, but for the near term, the school district would have to find another location for students. The MCDEM Director stated that the school district had contingency plans when school buildings become uninhabitable. Maricopa County would be responsible for communicating the long term school closure information to the school district.

Special needs individuals would be allowed to return to the same areas as the general public (Sectors A, B, D, and E). Mass Care representatives stated that special needs individuals would only be allowed to return to their homes if they were safe. If their needs could not be met in their homes, then Mass Care would coordinate support on a case by case basis.

The SEOC Planning Chief discussed relocation of evacuees from the mass care center and shelters. The plan proposed that the State would assist Maricopa County in developing a "Long-Term Recovery Task Force", supported by multiple committees, to address both the long and short term needs of the whole community, including special needs individuals. The Department of Housing participated. The Department of Housing had resources to aid in the relocation of affected residents. Public Assistance would work with the ANI to assist in disseminating reimbursement eligibility criteria to responding jurisdictions.

All areas determined clear for return had been established during exercise play on Day 2. Return to evacuated areas outside of the restricted area would have been allowed as soon as four days after the incident after controls such as road blocks and access control points, had been established around the restricted area. Then the outer evacuation access control points would be removed and residents, including special needs individuals, with homes inside the evacuated area, but outside of the restricted area, would be allowed to return to their homes. MCDPH provides information and support to the surrounding medical facilities. Maricopa County would also be able to provide equipment for contaminated debris removal efforts if requested. MCEOC confirmed that the re-entry zones had utility services, emergency and public safety services restored and available. Maricopa County would assist in transporting the special needs individuals back to their homes in sectors A, B, D, and E.

T/ACPs were previously identified and established in exercise play. MCSO supported the T/ACPs with two

Sheriff Deputies at each location along with barricades and signage provided by MCDOT. A representative from MCDOT also participated in the Operations Section. MCSO had patrols taking place between the established T/ACPs to provide additional perimeter control.

ARRA and the Policy Group determined that the readings in the established zones did not warrant the issuing of dosimeters, however MCSO had the capability to issue dosimeters to those residents re-entering if required by ARRA and the Policy Group. MCSO offered to provide resources to maintain dosimetry records if the Policy Group determined that public dosimetry was a requirement.

Arizona does not have laws in place to enforce a mandatory evacuation. Re-entering residents waived the government's responsibility for their welfare. MCSO would provide the waiver at the REAT-F re-entry location to residents who chose to ignore restrictions.

The State of Arizona and ARRA provided the majority of decision making and coordination efforts. ADEM coordinated all financial requests with ANI and Arizona Public Service representatives in the Policy Section. The Recovery Section coordinated the short-term and long-term relocation needs for those affected by the restricted zones. MCDEM works very closely with the State in return, re-entry, and relocation efforts with the State of Arizona and ARRA. During the break-out discussions, the MCDEM representatives actively participated in discussions regarding return, re-entry, and relocation. The Maricopa County Director stated the county would have the authority for condemning facilities and residences of those individuals required to relocate.

All information for the public for return, re-entry, and relocation would be provided through the Joint Information Center through news releases. Multiple Media Statements were released during exercise play on Day 3, along with one News Briefing. During a break-out in the Policy Section, it was suggested that a brochure be published for those that were re-entering restricted areas to provide information on precautions to take while in the affected zones. The brochure would provide information about precautions to take with home-grown vegetables and allowing children to play outdoors.

All activities described in the demonstration criterion were carried out in accordance with the plan, procedures, and extent of play agreement.

a. MET: 1.c.1, 2.a.1, 2.c.1, 2.d.1, 2.e.1, 3.c.1, 3.d.1, 3.e.1, 3.e.2, 3.f.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

4.3.2.7 La Paz County

La Paz County did not participate in this exercise. Demonstration of its capability to coordinate on ingestion pathway PADs, including population relocation, re-entry and return, embargo of contaminated agricultural

products, provision of informational materials and coordination on controlled EW re-entry will be demonstrated at a later date.

a. MET: None
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: 2.d.1, 2.e.1, 3.e.1, 3.e.2, 3.f.1.
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

4.3.2.8 Pinal County

Pinal County did not participate in this exercise. Demonstration of its capability to coordinate on ingestion pathway PADs, including population relocation, re-entry and return, embargo of contaminated agricultural products, provision of informational materials and coordination on controlled EW re-entry will be demonstrated at a later date.

a. MET: None
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: 2.d.1, 2.e.1, 3.e.1, 3.e.2, 3.f.1.
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

4.3.2.9 Yavapai County

Yavapai County did not participate in this exercise. Demonstration of its capability to coordinate on ingestion pathway PADs, including population relocation, re-entry and return, embargo of contaminated agricultural products, provision of informational materials and coordination on controlled EW re-entry will be demonstrated at a later date.

a. MET: None
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: None e. NOT DEMONSTRATED: 2.d.1, 2.e.1, 3.e.1, 3.e.2, 3.f.1.
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

4.3.2.10 Yuma County

Yuma County did not participate in this exercise. Demonstration of its capability to coordinate on ingestion pathway PADs, including population relocation, re-entry and return, embargo of contaminated agricultural products, provision of informational materials and coordination on controlled EW re-entry will be demonstrated at a later date.

a. MET: None
b. AREAS REQUIRING CORRECTIVE ACTION: None
c. DEFICIENCY: None
d. PLAN ISSUES: None
e. NOT DEMONSTRATED: 2.d.1, 2.e.1, 3.e.1, 3.e.2, 3.f.1.
f. PRIOR ISSUES - RESOLVED: None
g. PRIOR ISSUES - UNRESOLVED: None

SECTION 5: ANALYSIS OF CAPABILITIES

5.1 Exercise Evaluation and Results

Contained in this section are the results and findings of the evaluation of the OROs that participated in the evacuee monitoring and decontamination phase of the PVNGS exercise at the reception and care center on March 15, 2011, to test the offsite emergency response capabilities of state and local governments in the EPZ surrounding the PVNGS. The OROs were evaluated on the basis of their demonstration of criteria delineated in the exercise evaluation areas as outlined in the August 2002, Interim REP Program Manual. Detailed information on the extent of play agreement used for the plume phase, ingestion phase and evacuee monitoring and decontamination phases of this exercise is found in Appendix E of this report.

5.2 Summary Results of Exercise Evaluation

The matrix presented in Table 5.1, presents the status of all exercise evaluation area criteria which were scheduled for demonstration, during the evacuee monitoring and decontamination phase of this exercise, by the Desert Edge High School Reception and Care Center, the only participating entity for the evacuee monitoring and decontamination phase of the exercise. 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 3, extent of play agreement)
P – Plan Issue

Table 5.1 – Summary of Exercise Evaluation

DATE: 2011-03-01 SITE: Palo Verde Nuclear Generating Station, AZ M: Met, A: ARCA, D: Deficiency, P: Plan Issue, N: Not Demonstrated		Desert Edge High School RCC
Emergency Operations Management		
Mobilization	1a1	
Facilities	1b1	
Direction and Control	1c1	
Communications Equipment	1d1	
Equip & Supplies to support operations	1e1	M
Protective Action Decision Making		
Emergency Worker Exposure Control	2a1	
Radiological Assessment and PARs	2b1	
Decisions for the Plume Phase -PADs	2b2	
PADs for protection of special populations	2c1	
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1	
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1	
Protective Action Implementation		
Implementation of emergency worker exposure control	3a1	M
Implementation of KI decision	3b1	M
Implementation of protective actions for special populations - EOCs	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 - availability/use of info	3e1	
Materials for Ingestion Pathway PADs are available	3e2	
Implementation of relocation, re-entry, and return decisions.	3f1	
Field Measurement and Analysis		
Adequate equipment for plume phase field measurements	4a1	
Field Teams 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	
Activation of the prompt alert and notification system - Fast Breaker	5a2	
Activation of the prompt alert and notification system - Exception areas	5a3	
Emergency information and instructions for the public and the media	5b1	
Support Operations/Facilities		
Mon / decon of evacuees and EWs, and registration of evacuees	6a1	P
Mon / decon of emergency worker equipment	6b1	
Temporary care of evacuees	6c1	M
Transportation and treatment of contaminated injured individuals	6d1	

5.3 Criteria Evaluation Summaries

5.3.1 Risk Jurisdictions

5.3.1.1 Desert Edge High School Reception & Care Center

The Reception and Care Center (RCC) at Desert Edge High School was demonstrated out of sequence on March 15, 2011, in support of emergency plans for public evacuation in response to a serious event at PVNGS. The State of Arizona, Maricopa County, ARRA and other organizations participating in this operation had equipment, maps, displays, dosimetry, KI and other supplies sufficient to support emergency operations. Personnel from ARRA successfully demonstrated appropriate dosimetry and procedures to manage radiological exposure. The State of Arizona and Maricopa County successfully demonstrated their ability to implement a decision to dispense KI to the general public. The dispensing and recordkeeping of KI was managed in accordance with the MCDPH Clinical Protocol. Appropriate space, adequate resources and trained personnel to provide monitoring, decontamination and registration of evacuees was successfully demonstrated as were reception and congregate care activities.

Evacuees were expected to arrive by automobile or public transportation. In accordance with the extent of play agreement, evacuee vehicle monitoring and decontamination was demonstrated by interview with the crew of the Goodyear Fire Department and REAT staff. The process for monitoring evacuee vehicles as they arrived was described by the RCC Captain in accordance with the ARRA standard operating procedure (SOP), “Radiation Survey Packet for Vehicles”. Survey sheets and orange decals were available to document each contaminated vehicle. The RC explained that as vehicles arrived, a quick “go-no-go” contamination monitoring would be performed. The RC went on to explain that REAT staff at the vehicle monitoring station would provide booties and gloves to those evacuees whose vehicles were found to have contamination. The driver would be directed to leave the vehicle unlocked with keys on the floorboard. Security would be provided by the Maricopa County Sheriff’s Office and the Goodyear Police Department (GPD). The soccer and football fields were identified as overflow parking areas.

Current plans and procedures were not clear as to how vehicle owners would be able to claim their keys and vehicles after decontamination. The ARRA survey sheets RCC VS 2 thru 5 in the ARRA SOPs document the owner, vehicle registration, address and contact number. The registration process, once cleared through initial monitoring, does not ask evacuees whether their vehicle has been surveyed as contaminated. If the registration process were able to capture this information with owner and vehicle information, this may be the location where acknowledgement of receipt could be obtained.

ARRA provided monitoring equipment and decontamination supplies for this facility. Radiation detection instruments for monitoring were operational, current and available in adequate quantities. Ludlum Model 2241-2 survey instruments, equipped with pancake probes, were available for monitoring. These instruments were utilized at personnel monitoring, pet monitoring, vehicle monitoring, male decontamination, female decontamination and pet decontamination. There was a supply of spare instruments. Four portal monitors were used for initial monitoring. Two were used to monitor the general population. One was used to monitor those with special needs, and the general population when not required for those with special needs. One was used to monitor those with pets.

In the initial monitoring area, all ARRA monitoring team members received and wore Mirion Technologies TLDs which were due for replacement on 6/30/12. There were adequate supplies of TLDs. Most team members also wore Canberra UltraRadiac electronic dosimeters which had a calibration due date of 5/28/11. Permanent record dosimeters were worn between the waist and chest and electronic dosimeters were worn on the waist.

Before evacuees were monitored for contamination, the REAT Captain briefed staff on monitoring procedures. Topics included the orientation and general use of the portal monitors. The briefing also included the general process of monitoring, using the 15 second scanning mode for initial monitoring and the 30 second scanning mode for secondary monitoring. He briefed on the process of surveying the rubber mat for contamination and checking background radiation levels if contamination was found. For monitoring animals, the REAT Captain stressed that if an animal is contaminated, the person with the animal is also likely to be contaminated. No animal should be separated from its owner. He emphasized the need for all monitoring personnel to read their electronic dosimeters every fifteen minutes to monitor personal exposure.

When monitoring of evacuees began, evacuees were directed to pass through the portal monitors. A line was established and evacuees were instructed not to touch the sides of the portal monitor. If the evacuee did not alarm the portal monitor, the evacuee was directed to the RCC registration area. If the evacuee alarmed the portal monitor, the evacuee was rescreened. If contamination was detected, the evacuee was directed to either the male or the female decontamination facilities. Water was provided to evacuees entering the line. No shade was provided at any of the locations, except at the pet decon station. Inadequate shade hampered the view of the portal monitor displays. With the sun overhead, it was difficult to read the portal monitor displays. This could affect the monitoring process because the display shows the radiological information about each evacuee passing through the initial survey.

MCSO and GPD provided security for the RCC. They were strategically stationed to direct evacuees to the registration area, KI distribution, shelter operations and other services. MCSO placed an “ok” stamp on the hands of evacuees who cleared contamination screening.

The December 2010 population survey referenced in the State of Arizona – Maricopa County Offsite Emergency Response Plan for PVNGS indicates there are 11, 565 individuals within the 10-mile EPZ. FEMA requires that the ORO be able to monitor 20% of the population within 12 hours. Twenty percent of the 11,565 population is 771 individuals. This requires the monitoring of an estimated 192 persons per hour. During the demonstration, a total of 152 persons were monitored in 38 minutes through 3 portal monitors. At this rate, over 230 evacuees would be monitored in an hour. Five persons were found to be contaminated. Two additional persons with animals were also found to be contaminated. One person in a wheelchair was found to be contaminated. This challenging mix of simulated contaminated persons and pets, required re-scans, and persons with functional needs provided a realistic demonstration of the reception center’s ability to monitor 20% of the population within the 12 hour requirement.

The female decontamination area was located in a large female locker room area. Prior to the start of the exercise, the survey meters used for monitoring were operationally checked by REAT. Survey equipment

consisted of two Ludlum 2241-2 survey meters with Model 44-9 pancake detectors. The "Arizona Radiation Regulatory Agency, Reception and Care Center Standard Operating Procedures, Instrument Operational Check" section states to ensure that the detector toggle switch is in the "DET 1" position for the pancake probe. This position correlates to the Model 44-9 pancake probe which displays units of counts per minute (cpm). The first survey meter was source checked in the "DET 2" position used for a Model 44-38 probe for exposure rate. At this point, instrument preparation activities were stopped. After the Controller referenced the applicable section of the procedure, the team member source checked the survey meter again with the toggle switch in the "DET 1" position. The source check results were within the range listed on a sticker on the side of the meter, which corresponded to 20% of the reference value. The second survey meter was successfully source checked within 20% of the reference value. The results were documented on the "Ludlum Check Source Sheet". Re-demonstration of the Ludlum 2241-2 survey meter source check was successful. The survey meter probes were not wrapped in plastic wrap for contamination control. When questioned about this, the RCC Captain stated that possible attenuation of radioactive material was more of a concern than possible contamination of the probe. The RCC Captain stated that additional probes were available if the probes became contaminated. An SAIC Model PPM-2000A portal monitor was used after decontamination for a final check.

Two female evacuees alarmed the portal monitor at the initial monitoring point and were escorted to the female decontamination area. The first evacuee was hand surveyed using the Ludlum 2241-2 with the Model 44-9 pancake probe. The first evacuee showed contamination on her right palm area, per controller inject. Her right hand was gloved during the remainder of the survey, then ungloved for decontamination. Decontamination using soap and water reduced the contamination to background levels per controller inject. All results were documented on the "Personnel Decontamination Log" and the "Post Decontamination Log". The evacuee was then monitored for contamination on her feet again and was "clean", per controller inject. She used the step-off pad to remove her booties and was escorted to the portal monitor, where no contamination was detected. Another escort was waiting for her and led her out of the female decontamination area. She was not carrying any personal items.

The second evacuee was posing as an autistic person with functional needs. She displayed reluctance at being surveyed and a case worker from the Arizona Department of Economic Security (DES) was called in for assistance. Her case worker was located outside the contaminated area, but close by where she could reassure the evacuee. The second evacuee was hand surveyed with the Ludlum 2241-2 and Model 44-9 pancake probe in the same manner as the first evacuee, with continuous reassurance and a calming manner. Per controller inject, contamination was found on her left palm. This hand was gloved during the remainder of the survey, then ungloved as she was taken to the sink for hand washing with soap and water. After the glove was removed, she touched her face and her other hand with the contaminated hand. These areas were re-surveyed with no contamination. All results were documented on the "Personnel Decontamination Log" and the "Post Decontamination Log". The evacuee was then monitored for contamination on her feet again and was "clean", per controller inject. She used the step-off pad to remove her booties and was escorted to the portal monitor, where no contamination was detected. Her personal items, consisting of a purse and sunglasses, were surveyed and were not contaminated, per controller inject. These items were released back to the individual. Her case worker and another escort were waiting for her and led her out of the female decontamination area. Modesty clothing was available if needed. Persons who were not able to be decontaminated would be transported to the applicable hospital with coordination from the RCC Captain.

Waste materials would be properly bagged and stored in a designated area.

The team members were questioned about the possibility of contamination on the personal items. They stated that they would first try to decontaminate the items, but if they were unsuccessful, they would list them on the "Inventory/Chain of Custody Record". The items would be bagged and given to the Maricopa County Sheriff's Officer, who was present in the female decontamination area. A box, labeled with "Caution Radioactive Materials", was available for storage of contaminated personal valuables to be taken by the Maricopa County Sheriff's Office. The Officer had bags with seals that listed owner's name and officer's name with identifying numbers. The Officer stated that she would take possession of the bagged personal items with the "Inventory/Chain of Custody Record" and place them in the designated box for transport. A previous issue from Buckeye High School Reception and Care Center (Issue No. 45-09-6a1-A-3) involving the acceptance of contaminated personal items by the Sheriff's Officers was corrected and successfully redemonstrated.

At the end of the exercise, the team members demonstrated how the area would be surveyed and decontaminated using "massalin" cloths. Team members performed thorough surveys of contaminated female evacuees, properly documented results, and handled contaminated personal property per procedure.

Two Ludlum Model 2241-2 survey instruments, each equipped with a Ludlum Model 44-9 pancake probe were available for monitoring. One instrument was employed and the second instrument was a spare. An SAIC Portal Monitor Model PPM-2000A with Canberra Omnitrak electronics was also available in male monitoring area. Masking tape was affixed to the floor of the male monitoring and decontamination area from the entry door to the opposing wall. The tape divided the men's locker room into a clean area and a possibly contaminated area. Two trash receptacles were located near the entrance to the male monitoring and decontamination area. One receptacle was lined with a normal trash bag for uncontaminated waste and the other was lined with a bag labeled "Radioactive Waste" for contaminated waste.

The first contaminated male evacuee arrived wearing gloves and rubber booties over his shoes. An male monitoring and decontamination worker immediately began monitoring the evacuee. As the monitoring progressed, a second male monitoring and decontamination worker documented the contamination levels on a body map. After simulating showering and re-monitoring, all areas were background. The bottom of his feet were monitored, found free of contamination, and the individual was guided to a step-off pad located on the clean side. The provision of modesty clothing was simulated. By inspection, modesty clothing was available. The evacuee was then monitored one final time by passing through a portal monitor near the exit from the male monitoring and decontamination area. The portal monitor did not alarm and the evacuee was directed to registration.

The second contaminated male evacuee arrived in the male monitoring and decontamination area. Using masking tape pressed against the pant leg, the contamination was reduced. After applying tape for a second time, the area was monitored and only background was detected. As with the first evacuee, the bottom of his feet were monitored, found free of contamination, and the individual was guided to a step-off pad located on the clean side. The evacuee was then monitored one final time by passing through the portal monitor. The portal monitor did not alarm and the evacuee was directed to registration.

Contamination was detected on the third male evacuee. Applying masking tape to all contaminated areas reduced the contamination. Re-applying the masking tape successfully removed all the contamination. As with the first two evacuees, his feet were successfully monitored, he stepped onto a step-off pad located on the clean side, passed through the portal monitor, and was directed to registration.

One of the male monitoring and decontamination workers was asked what he would do if an evacuee could not be successfully decontaminated. He answered that he would turn the evacuee over to the Maricopa County Sheriff's Deputy stationed in the male monitoring and decontamination who would then escort the evacuee somewhere. This response was not consistent with ARRA's Reception and Care Center Standard Operating Procedures, January 25, 2006, page RCC 14. This answer was immediately followed by another male monitoring and decontamination worker stating, "No, they would notify the RCC Captain and the RCC Captain would arrange transportation of the contaminated evacuee to a medical facility." This response was consistent with their SOP.

None of the evacuees had contaminated personal items. However, by interview, contaminated personal items would be documented on a three part Inventory/Chain of Custody Record form. The top copy would be attached to the Body Map, the second copy would be given to the Sheriff's Deputy along with the bagged items, and the third copy would be provided to the evacuee.

While not evaluated, Maricopa County Animal Care and Control (MCAC&C) demonstrated decontamination of household pets as part of the RCC response. After decontamination the animals were placed into holding kennels until they could be reunited with their owners.

The RCC registration area was set up in accordance with the Maricopa County plans and procedures. Three lanes were set up to help control the flow of traffic using Roller Barriers with retractable tape reels. Each lane had 5 tables set up for Registration/Potassium Iodide Distribution. Five laptops were available for registration staff to enter evacuee information into the WebEOC system. Paper registration forms were available in a grey container in the event there was an issue with the electronic registration. Evacuees that were determined to have no radiological contamination received a stamp on their hand at the monitoring and decontamination stations and were allowed to enter the registration area located in the school gymnasium. An MCSO Deputy was stationed at the entrance of the gymnasium to ensure that everyone entering the registration area had cleared radiological monitoring.

Greeters met the evacuees and guided them to the appropriate reception area staff. A registration record was established using WebEOC. WebEOC is an emergency management software program managed by Maricopa County. This exercise was the first time WebEOC was used to create an electronic registration record at the RCC. Staff used laptops to enter evacuee information into the WebEOC registration record. Registration stations were sufficient to handle the flow of evacuees. There was an extra registration station if needed. Staff members from ARC, DES, and ADEM received just-in-time training for the WebEOC registration system. Step by-step procedures for the WebEOC registration system were available to registration staff at each station. The information collected in the registration record included the evacuee's name, address, date of birth, address, telephone numbers (home, work, and mobile), any additional needs (i.e. Red Cross, Animal Care, APS, Public Health, DES, and Tohono O'Odham Nation liaison), allergies to any antibiotics or iodine, if the evacuee was breast feeding, taking the medicine zanaflex or have any skin

disorders. The results of monitoring and decontamination are recorded on the Personnel Decontamination Log (form RCC 15) and Post Decontamination Log (form RCC 16) at the monitoring and decontamination stations as indicated in the ARRA RCC SOP (Dec. 2005). Staff was available at the RCC for evacuees needing assistance with interpreters (Spanish, Tohono O'Odham, or sign language). Evacuee registration was also available at the pet registration area to link owners with their pets. After the registration staff entered the evacuees' information, evacuees were informed about additional RCC services. Shelter services were provided by ARC after registration. Evacuees were directed to the KI station after registration.

At the KI station, Community Health nurses interviewed evacuees and assisted them in completing a Consent Form for KI Administration. The decision to issue and disperse KI to the general public is made by the MCDPH Medical Officer and is outlined in the state and local plan. Clerical support acted as traffic monitors. Two local pharmacists were available for questions. Nurses determined whether the evacuee had been in the designated sectors of the EPZ when the order was given to evacuate. They used a map showing the plant location with the evacuation zones and identified where the evacuee lived and whether the evacuee had traveled through the plume. Nurses had information about specific areas that had been ordered to evacuate. The evacuees were informed about KI being dispersed at the next table and were asked a series of questions to determine if they were allergic to iodine, had thyroid disease, skin disorders or were pregnant. Evacuees determined to have been in the evacuated areas during the specified hours were directed to the KI dispensation desk. Evacuees who were not in the evacuated areas in the designated hours could also request KI. Pharmacists at the KI dispensation desk verified Consent Forms with the evacuee and administered KI in accordance with the recommended dose guidelines set forth in the Clinical Protocol. All completed evacuee Consent Forms, whether KI was administered or not, were input directly into the MCDPH registration WebEOC database by health department staff at the KI administration desk. There were no children participating, however the pharmacist was prepared to cut or dissolve one 65mg tablet to provide the recommended KI dosage for children under the age of three. Supplies of KI are maintained by MCSO at the Avondale Substation and were delivered to the RCC by a deputy who then provided security in the KI distribution area of the RCC. The KI supplies were maintained in an air conditioned MCSO vehicle in compliance with the temperature controlled storage requirements for the drug. ARRA kits also had adequate supplies of KI for workers in the monitoring and decontamination areas. Ingestion of KI was simulated. The pharmacists answered evacuee's questions and provided a KI information sheet that explained its use and importance. All forms were in Spanish and English. Four nurses were bilingual for English and Spanish. A Tohono O'odham Native American interpreter was available to escort members of the Tohono O'odham Native American tribe throughout the RCC.

ARC set up evacuee services operations in the school cafeteria. Evacuees who had cleared monitoring and registered for ARC assistance were directed to the school cafeteria. ARC registration captures information about the evacuee's residence, family, primary language, method of transportation, medical considerations and shelter needs. Since the Spanish population is estimated in excess of 10%, most of the ARC forms, emergency instructions, and signage were available printed in English and Spanish. ARC registrars also provided evacuees specific information for Shelter Residents which included policies about valuables, smoking, weapons, alcohol, drugs, pets, phones, children, quiet hours, cars, and cleanliness.

ARC had the ability to prepare hot meals at the RCC cafeteria and at the Centerra Mirage Elementary School, approximately one and a half miles away, if required. Centerra Mirage Elementary served as an

initial Congregate Care Center (CCC). These facilities are fully accessible for persons who require additional assistance. ARC provided accessible transportation to CCCs. Some health services would be available at the CCC. Household pet shelter services were provided by the Maricopa County Animal Care and Control. Pets held at the RCC would be transferred to CCCs to reunite owners with their pets. ARC worked closely with Maricopa County to ensure transportation for evacuees who left contaminated vehicles at the RCC. If small numbers of evacuees need long term care, the ARC would send them to individual hotels outside the EPZ. The ARC has negotiated agreements with hotels to house evacuees with functional needs, including those with certain mental or physical illnesses not requiring hospitalization.

Each of the ARC volunteer staff members interviewed was well versed in their areas of specialization and knowledgeable of appropriate ARC guidelines. Their extensive natural disaster experience provided a high degree of confidence that evacuees would be provided proper care in the event they needed temporary housing at a CCC.

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.

a. MET: 1.e.1, 3.a.1, 3.b.1, 6.c.1.
b. AREAS REQUIRING CORRECTIVE ACTION: 6.a.1.

ISSUE NO.: 45-11-6a1-A

CRITERION: The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees and /or EWs. (NUREG-0654, J.10.h; J.12; K.5.a)

CONDITION: The toggle switch was on the DET 2 position on the Ludlum 2241-2when attempting to source check the instrument with attached 44-9 pancake probe. The DET 2 toggle position is used when operating the Ludlum 2241-2 with the 44-38 side window probe.

POSSIBLE CAUSE: Unfamiliarity with the instrument

REFERENCE: NUREG-0654 J.12, K.5. ARRA RCC4: Instrument Operation Check Ludlum 2241-2

EFFECT: Radiation survey meters could be placed into service that do not meet the acceptable criteria for operation.

CORRECTIVE ACTION DEMONSTRATED: The Controller referenced the applicable section of the procedure, the team member source checked the survey meter again with the toggle switch in the “DET 1” position. The source check results were within the range listed on a sticker on the side of the meter, which corresponded to 20% of the reference value. The second survey meter was successfully source checked within 20% of the reference value.

The results were documented on the "Ludlum Check Source Sheet". Re-demonstration of the Ludlum 2241-2 survey meter source check was successful.

c. DEFICIENCY: None
d. PLAN ISSUES: 6.a.1.

ISSUE NO.: 45-11-6a1-P-3

CRITERION: The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees and /or EWs. (NUREG-0654, J.10.h; J.12; K.5.a)

CONDITION: It was unclear from current plans and procedures as to how vehicle owners would be able to claim their keys and vehicle, should it be successfully decontaminated. The ARRA survey sheets RCC VS 2 thru 5 in the ARRA SOPs document the owner, vehicle registration, address and contact number. The registration process (once cleared through initial monitoring) does not ask evacuees whether their vehicle has been surveyed contaminated.

POSSIBLE CAUSE: Possible planning oversight.

REFERENCE: ARRA SOP: Radiation Survey Packet for Vehicles

EFFECT: Recovery of the vehicle may be difficult without proper documentation of receipt, should an evacuee's vehicle be successfully decontaminated.

RECOMMENDATION: Consider possibilities to include in the plans a process during registration to capture this information with owner and vehicle information, as this may be the location where acknowledgement of receipt could be obtained; or a process to link the documented survey sheets with the existing database in WebEOC.

ISSUE NO.: 45-11-6a1-P-4

CRITERION:
The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees and /or EWs. (NUREG-0654, J.10.h; J.12; K.5.a)

CONDITION: Inadequate shade hampered the view of the portal monitor displays, making it difficult at times, for REAT monitors to read. Absence of shade for evacuees and REAT monitors may also increase the chances of heat stress, should an evacuation occur mid day during the summer.

POSSIBLE CAUSE: Possible planning oversight.

REFERENCE: NUREG-0654, J.12,

EFFECT: Personnel could suffer from heat related issues while at the initial monitoring location.

RECOMMENDATION: Consider supplying tents/shade for EWs and evacuees

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

SECTION 6: CONCLUSION

FEMA evaluated an off-site ingestion pathway exercise for the jurisdictions on March 1-3, 2011 and March 15, 2011 in the 10-mile EPZ and the 50-mile ingestion pathway zone 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. There were no Deficiencies and no uncorrected ARCAs identified during the course of the exercise.

Four planning issues were identified during this exercise.

APPENDIX A: IMPROVEMENT PLAN

Issue Number: 45-11-5a1-P-1	**Criterion: 5a1**
ISSUE: The KTAR Checklist for Palo Verde EAS Messages lists a procedure that is out of order pertaining to how the message is developed at KTAR.	
RECOMMENDATION: Move the second step "Tape the EAS Message and Follow-Up Message" down on the checklist to after step five "MCDEM will request a HOLD on the message until you are contacted again".	
CORRECTIVE ACTION DESCRIPTION: Review the *KTAR Checklist for Palo Verde EAS Messages* to ensure the appropriate implementation sequence and revise as necessary.	
CAPABILITY: Emergency Public Information and Warning	PRIMARY RESPONSIBLE AGENCY: Maricopa County Department of Emergency Management
CAPABILITY ELEMENT: Planning	START DATE: 4/28/11
AGENCY POC: John Padilla	COMPLETION DATE: 7/14/11

Issue Number: 45-11-2b2-P-2	**Criterion: 2b2**
ISSUE: Inconsistent direction regarding implementation of the directive for EWs to ingest KI was provided to REAT Forward.	
RECOMMENDATION: 1. Modify the "Protective Action Decision Checklist" used in the SEOC to include specific information as to which EWs should ingest KI. 2. Review ARRA procedures to ensure instructions related to the ingestion of KI by EWs provides consistent guidance to personnel in the field.	
CORRECTIVE ACTION DESCRIPTION: 1. Revise Step 6 of the *Protective Action Decision Checklist* to which EWs in what specific areas should ingest KI. 2. Develop a form for use in the TOC to direct and document KI use by EWs and include in applicable ARRA procedures	
CAPABILITY: Responder Safety and Health	PRIMARY RESPONSIBLE AGENCY: Arizona Division of Emergency Management
CAPABILITY ELEMENT: Planning	START DATE: 4/28/11
AGENCY POC: 1. Bill Wolfe, 2. Toby Morales	COMPLETION DATE: 7/29/11

Issue Number: 45-11-6a1-P-3	**Criterion: 6a1**
ISSUE: It was unclear from current plans and procedures as to how vehicle owners would be able to claim their keys and vehicle, should it be successfully decontaminated. The ARRA survey sheets RCC VS 2 thru 5 in the ARRA SOPs document the owner, vehicle registration, address and contact number. The registration process (once cleared through initial monitoring) does not ask evacuees whether their vehicle has been surveyed contaminated.	
RECOMMENDATION: Consider possibilities to include in the plans a process during registration to capture this information with owner and vehicle information, as this may be the location where acknowledgement of receipt could be obtained; or a process to link the documented survey sheets with the existing database in WebEOC.	
CORRECTIVE ACTION DESCRIPTION: Evaluate whether the existing evacuee Service Center process addresses this issue and/or develop a process (Web EOC, valet type parking) if necessary to coordinate this process.	
CAPABILITY: Mass Care	PRIMARY RESPONSIBLE AGENCY: Maricopa County Department of Emergency Management
CAPABILITY ELEMENT: Planning	START DATE: 4/28/11
AGENCY POC: John Padilla	ESTIMATED COMPLETION DATE: TBD

Issue Number: 45-11-6a1-P-4	**Criterion: 6a1**
ISSUE: Inadequate shade hampered the view of the portal monitor displays, making it difficult at times, for REAT monitors to read. Absence of shade for evacuees and REAT monitors may also increase the chances of heat stress, should an evacuation occur mid day during the summer.	
RECOMMENDATION: Consider supplying tents/shade for EWs and evacuees.	
CORRECTIVE ACTION DESCRIPTION: Form a task force to review, make recommendations and develop cost estimates related to shade, hydration, cooling stations, the processing of evacuees at the Reception and Care Centers prior to the release of radiation, etc.). This task force will include representatives of ADEM, ARRA, MCDEM and other agencies as appropriate.	
CAPABILITY: Mass Care	PRIMARY RESPONSIBLE AGENCY: Arizona Division of Emergency Management
CAPABILITY ELEMENT: Planning	START DATE: 4/28/11
AGENCY POC: Bill Wolfe	ESTIMATED COMPLETION DATE: 9/01/11

APPENDIX B: EXERCISE TIMELINE

Table 1 -Exercise Timeline

DATE: 2011-03-01, SITE: Palo Verde Nuclear Generating Station, AZ

Emergency Classification Level or Event	Time Utility Declared	ADACP	MCSO OSCP	PVNGS JIC	SEOC	TOC	MCEOC
Unusual Event	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alert	0806	0840	0821	Not Activated	0811	0812	0812
Site Area Emergency	1019	1050	1037	1021	1027	1028	1028
General Emergency	1147	1222	1215	1148	1156	1156	1159
Simulated Rad. Release Started	1019	1050	1215	1021	1027	1019	1028
Simulated Rad. Release Terminated	Ongoing	Ongoing	Ongoing	Ongoing	1430	1430	Ongoing
Facility Declared Activated		0845	0830	N/A	0819	N/A	N/A
Facility Declared Operational		0845	0900	0920	0908	0900	0859
Declaration of Emergency: State		1200	1113	1145	1130	N/A	N/A
Declaration of Emergency: Local		1200	1056	1124	1043	N/A	1035
Exercise Terminated			1609	1708	1605	1605	1405
Early Precautionary Actions: Close Parks and Beaches		N/A	N/A	N/A	N/A	N/A	N/A
Early Precautionary Actions: School Transfers		1115	1107	N/A	N/A	N/A	N/A
Early Precautionary Actions: Shelter Livestock		1115	1150	1050	N/A	N/A	N/A
1st Protective Action Decision: Evacuate 2 Mile Radius; Evacuate Sectors A, B and C out to 10 Miles; Evacuate Tonopah High School and Winterswell School; Restrict Airspace out to 10 Mile Radius and up to 10,000 Feet		N/A	1107	1050	1044	1044	1044
1st Siren Activation		N/A	1056	1050	N/A	N/A	1055
1st EAS Message		N/A	1058	1050	N/A	N/A	1058
2nd Protective Action Decision: Evacuate Sectors D and E out to 5 Miles		N/A	1223	1220	1216	1216	1216
2nd Siren Activation		N/A	1226	1251	N/A	N/A	1225
2nd EAS Message		N/A	1228	1251	N/A	N/A	1228
3rd Protective Action Decision: Evacuate Sectors D and E out to 10 Miles; Evacuate Palo Verde School		N/A	N/A	1320	1316	1316	1316
3rd Siren Activation		N/A	1323	1404	N/A	N/A	1328
3rd EAS Message		N/A	1325	1404	N/A	N/A	1331
4th Protective Action Decision: Agricultural Embargo of Evacuated Areas and NE to 32 Miles		N/A		1702	1605	1605	N/A
KI Administration Decision: EWs		1220	1223	1218	1216	1216	1216

Table 1 -Exercise Timeline
DATE: 2011-03-01, SITE: Palo Verde Nuclear Generating Station, AZ

Emergency Classification Level or Event	Time Utility Declared	NWS EAS	KTAR EAS	MCSOWC	REAT-Forward
Unusual Event	N/A	N/A	N/A	N/A	N/A
Alert	0806	0825	N/A	0812	0905
Site Area Emergency	1019	N/A	N/A	N/A	1033
General Emergency	1147	N/A	N/A	N/A	1145
Simulated Rad. Release Started	1019	N/A	N/A	N/A	1019
Simulated Rad. Release Terminated	Ongoing	N/A	N/A	N/A	Ongoing
Facility Declared Activated		0825	N/A	N/A	N/A
Facility Declared Operational		0830	24/7	N/A	0915
Declaration of Emergency: State		N/A	N/A	N/A	N/A
Declaration of Emergency: Local		N/A	N/A	N/A	N/A
Exercise Terminated		1617	1605	N/A	N/A
Early Precautionary Actions: Close Parks and Beaches		N/A	N/A	N/A	N/A
Early Precautionary Actions: School Transfers		N/A	N/A	N/A	N/A
Early Precautionary Actions: Shelter Livestock		N/A	N/A	N/A	N/A
1st Protective Action Decision: Evacuate 2 Mile Radius; Evacuate Sectors A, B and C out to 10 Miles; Evacuate Tonopah High School and Winterswell School; Restrict Airspace out to 10 Mile Radius and up to 10,000 Feet		N/A	N/A	N/A	1049
1st Siren Activation		N/A	N/A	N/A	N/A
1st EAS Message		N/A	1058	N/A	N/A
2nd Protective Action Decision: Evacuate Sectors D and E out to 5 Miles		N/A	N/A	N/A	1220
2nd Siren Activation		N/A	N/A	N/A	N/A
2nd EAS Message		1230	N/A	N/A	N/A
3rd Protective Action Decision: Evacuate Sectors D and E out to 10 Miles; Evacuate Palo Verde School		N/A	N/A	N/A	1330
3rd Siren Activation		N/A	N/A	N/A	N/A
3rd EAS Message		N/A	1337	N/A	N/A
4th Protective Action Decision: Agricultural Embargo of Evacuated Areas and NE to 32 Miles		N/A	N/A	N/A	N/A
KI Administration Decision: EWs		N/A	N/A	N/A	1330

APPENDIX C: EXERCISE EVALUATORS AND TEAM LEADERS

Plume Phase Evaluator Assignments

LOCATION	EVALUATOR	AGENCY
Field Monitoring Team-Alpha	Scott Flowerday	FEMA RVI
Field Monitoring Team-Beta	Martin Vyenielo	FEMA RIII
Field Monitoring Team-Charlie	Dennis Wilford	ICF
Arizona Department of Agriculture Command Post	Barton Freeman	FEMA RIII
Palo Verde Nuclear Generating Station Joint Information Center	Bill Bischof, *Henry Christiansen, Elena Joyner	FEMA RVI, ICF, FEMA RIX
State of Arizona Emergency Operations Center	*Marcy Campbell, Elsa Lopez, Robert Neff, Meg Swearingen, Barbara Thomas	ICF, FEMA RVI, FEMA RIII, ICF, FEMA RI
Technical Operations Center	*Joseph Keller, Timothy Pflieger	ICF, FEMA RVI
Radiological Emergency Assessment Team-Forward	*Katherine Nishihara	FEMA RIX
Maricopa County Sheriff's Office On-scene Command Post	James Hickey, *John Rice	ICF, FEMA RI
Maricopa County Emergency Operations Center	*Alan Bevan, Brad DeKorte	ICF, FEMA RVI
Maricopa County Sheriff's Office Warning Center	Janet Hlavaty-LaPosa	FEMA RX
Arlington School	Rebecca Fontenot, Janet Hlavaty-LaPosa	FEMA HQ, FEMA RX
Back-up Route-alerting	James Hickey	ICF
Special-needs Population Evacuation	James Hickey	ICF
MCSO Roadblock	Janet Hlavaty-LaPosa	FEMA RX
National Weather Service Radio	Roy Smith	ICF
KTAR EAS Radio Station	Rebecca Fontenot	FEMA HQ
* Team Leader		

Post-Plume Phase Evaluator Assignments

LOCATION	EVALUATOR	AGENCY
Radiological Technical Operations Laboratory	James Hickey	ICF
State Emergency Management, Ingestion Phase Recovery	*Marcy Campbell, Barton Freeman, Robert Neff, Meg Swearingen	ICF, FEMA RIII, FEMA RIII, ICF
Radiological Emergency Assistance Team Forward, Recovery	*Katherine Nishihara	FEMA RIX
Technical Operations Center Ingestion Phase	*Joseph Keller, Timothy Pflieger	ICF FEMA RVI
AZ Joint Information Center, Recovery	*Henry Christiansen	ICF
Off-Site Field Sampling Team, Alpha	Scott Flowerday	FEMA RVI
Off-Site Field Sampling Team, Beta	Martin Vyenielo	FEMA RIII
Off-Site Field Sampling Team, Charlie	Dennis Wilford	ICF
Food Control Point	*Katherine Nishihara	FEMA RIX
Re-Entry Point	John Rice	FEMA RI
Maricopa County EM, Ingestion Phase Recovery	*Alan Bevan, Brad DeKorte, Elsa Lopez	ICF, FEMA RVI, FEMA RVI
La Paz County	Brad DeKorte, Elsa Lopez, Robert Neff	FEMA RVI, FEMARVI, FEMA RIII
Pinal County	Brad DeKorte, Elsa Lopez, Robert Neff	FEMA RVI, FEMARVI, FEMA RIII
Yavapai County	Brad DeKorte, Elsa Lopez, Robert Neff	FEMA RVI, FEMARVI, FEMA RIII
Yuma County	Brad DeKorte, Elsa Lopez, Robert Neff	FEMA RVI, FEMARVI, FEMA RIII
* Team Leader		

Evacuee Monitoring and Decontamination
Reception and Care Center Phase Evaluator Assignments

LOCATION	EVALUATOR	AGENCY
Desert Edge High School Reception & Care Center	Chris Cammarata, Korkean Dulgerian, Robert Gantt, Michael Howe, Elena Joyner, *Katherine Nishihara, Jill Leatherman, Alberto Sifuentes, Roy Smith, Meg Swearingen, Daryl Thome, John Woytak	FEMA RII, FEMA RII, ICF, FEMA HQ, FEMA RIX, FEMA RIX, ICF, FEMA RIX, ICF, ICF, ICF, FEMA RIX
* Team Leader		

APPENDIX D: ACRONYMS

ADA	Arizona Department of Agriculture
ADAC	Arizona Department of Agriculture Coordinator
ADEM	Arizona Division of Emergency Management
ADOT	Arizona Department of Transportation
AMS	Aerial Measuring System
ANG	Arizona National Guard
ANI	American Nuclear Insurers
ARC	American Red Cross
ARCA	Areas Requiring Corrective Action
ARRA	Arizona Radiation Regulatory Agency
CAP	Civil Air Patrol
CB	Citizens Band
CFR	Code of Federal Regulations
CP	Command Post
DES	Arizona Department of Economic Security
DHS	U.S. Department of Homeland Security
DIR	Disaster Initiated Review
DOE	U.S. Department of Energy
DPS	Department of Public Safety
DRD	Direct Reading Dosimeter
EAS	Emergency Alert System
ECL	Emergency Classification Level
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
EW	Emergency Worker
FCP	Forward Command Post
FDA	U.S. Food and Drug Administration
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
FRMAC	Federal Radiological Monitoring and Assessment Center
FST	Field Sampling Team
GE	General Emergency
HSEEP	Homeland Security Exercise and Evaluation Program
IC	Incident Commander
JIC	Joint Information Center
KI	Potassium Iodide
MCDEM	Maricopa County Department of Emergency Management
MCDOT	Maricopa County Department of Transportation
MCDPH	Maricopa County Department of Public Health
MCEOC	Maricopa County Emergency Operations Center
MCSO	Maricopa County Sheriff's Office
mrem	milli-rem, roentgen equivalent man (rem)
NAN	Notification and Alert Network
NIMS	National Incident Management System
NRC	Nuclear Regulatory Commission
NWS	National Weather Service
OROs	Offsite Response Organizations

OSCP	On-scene Command Post
OSL	Optically Stimulated Luminescence (Dosimeters)
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PI	Public Inquiry
PIO	Public Information Officer
PVNGS	Palo Verde Nuclear Generating Station
R	Roentgen, µR – micro-Roentgen, mR – milli-Roentgen
RAP	Radiological Assistance Program
RCC	Reception and Care Center
REAT-F	Radiological Emergency Assistance Team - Forward
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
RML	Radiation Measurement Laboratory
SAE	Site Area Emergency
SEOC	Arizona State Emergency Operations Center
SOP	Standard Operating Procedure
T/ACP	Traffic and Access Control Point
TD	Technical Director
TLD	Thermoluminescent Dosimeter
TOC	Technical Operations Center
USDA	U.S. Department of Agriculture
WC	Warning Center

APPENDIX E: EXTENT OF PLAY

STATE OF ARIZONA/MARICOPA COUNTY
OFFSITE CRITERIA & EXTENT OF PLAY
2011 EVALUATED PLUME AND POST-PLUME EXERCISE
PALO VERDE NUCLEAR GENERATING STATION

Controllers and/or evaluators can request re-demonstration of any area as long as it does not impede play.

All play, demonstrations, and interviews will be conducted in accordance with the 2010 State of Arizona – Maricopa County Offsite Plan, procedures, and/or checklists unless specifically stated in this Extent of Play.

No active play in support of ingestion pathway activities will occur for projected consequences beyond 50-miles.

OUT OF SEQUENCE DEMONSTRATIONS AND ACTIVITIES

Facility (Activity)	**Date**	**Location**
Arlington School District Interviews/Inspections	FEB 28, 2011	9410 S 355th Ave Arlington, AZ
Maricopa County Sheriff's Office (MCSO) Avondale Substation (KI Inspections)	FEB 28, 2011	920 E Van Buren St. Avondale, AZ
Radiological Emergency Assistant Team –Forward (REAT Forward) Buckeye Airport	MAR 1 & 2, 2011	3000 S Palo Verde Rd. Buckeye, AZ
Reception and Care Center (RCC)	MAR 15, 2011	Desert Edge High School, 15778 W Yuma Rd, Goodyear, AZ
KI Transport (MCSO Avondale Substation to RCC)	MAR 15, 2011	See Above

EVALUATION AREA 1--EMERGENCY OPERATIONS MANAGEMENT

Sub-Element 1.a--Mobilization

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to alert, notify, and mobilize emergency personnel and to activate and staff emergency 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, A.4; D.3, 4; E.1, 2; H.4).

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

EXTENT OF PLAY: Day 1 (March 1, 2011) The State of Arizona and Maricopa County Emergency Operations Centers (SEOC and MCEOC respectively) and the Joint Information Center (JIC) will be notified per procedure and will respond when called. The Arizona Department of Agriculture (ADA) Emergency Operations Center (EOC) will be partially activated initially and will notify additional staff, as the scenario requires. Field monitoring teams, Radiological Emergency Assistance Team – Forward (REAT Forward), Civil Air Patrol (CAP), special evacuation group, and special needs individuals will be pre-staged.

Monitoring and Sampling Plan activities will be conducted at the SEOC on Day 2 (March 2, 2011). Arizona Radiation Regulatory Agency (ARRA) and MCSO will demonstrate a re-entry point at REAT-Forward. All primary and supporting agencies will participate to include (Federal Radiological Monitoring and Assessment Center (FRMAC) and other federal partners as available.

Day 3 (Event day 7) activities will be conducted in a scenario driven table top exercise with all players in one room on March 3, 2010 at the Sheraton Phoenix Airport Hotel, 1600 S. 52nd Street, Tempe, AZ 85281. Initial discussions will take place on March 2, 2011 in the SEOC. Cell phone service and a computer network with connections to the Internet will be available. A log of events will be maintained and map projection will occur.

All participating agencies will pre-stage on March 2 & 3, 2011.

Sub-Element 1.b--Facilities

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have facilities to support the emergency response.

Criterion 1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654, H.3).

EXTENT OF PLAY: The State Emergency Operations Center (SEOC), Technical Operations Center (TOC), Radiological Emergency Assistance Team – Forward (REAT Forward), Joint Information Center (JIC) and Arizona Department of Agriculture (ADA) Emergency Operations Center (EOC). The Maricopa County Emergency Operations Center (MCEOC), Maricopa County Sheriff's Office (MCSO) and Maricopa

County Department of Transportation (MCDOT) On-Scene Command Post (OSCP), and the Reception and Care Center (RCC).

The specifics in each EOC will vary with organizational plans. Controlled access, if necessary, will be carried out per established procedures. Controlled access to the SEOC will be conducted at the Main Gate to the post. If adequate numbers of Military Police (MPs) are available, MPs will also be posted at the SEOC.

Note: All offsite response facilities received a baseline evaluation during the 2003 evaluated exercise. No substantial changes in structure or mission have occurred since that evaluation in the other facilities.

Sub-Element 1.c--Direction and Control

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the capability to control their overall response to an emergency.

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, A.1.d; A.2.a, b).

EXTENT OF PLAY: Offsite response organizations will demonstrate the capability to direct and control the overall response effort within their areas of responsibility as outlined in the Plan.

Sub-Element 1.d--Communications Equipment

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should establish reliable primary and backup communication systems to ensure communications with key emergency personnel at locations such as the following: appropriate contiguous governments within the emergency planning zone (EPZ), Federal emergency response organizations, the licensee and its facilities, emergency operations centers (EOC), and field teams.

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, F.1, 2).

EXTENT OF PLAY: Primary and back-up communication systems will be demonstrated.

Sub-Element 1.e--Equipment and Supplies to Support Operations

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have emergency equipment and supplies adequate to support the emergency response.

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

EXTENT OF PLAY: Maps, displays and other necessary equipment and supplies will be utilized at the state and county Emergency Operations Centers (EOCs) as well as other appropriate locations. Once a

decision to use Potassium Iodide (KI) for EWs is made, sufficient quantities and appropriate instructions for use will be made available. The ingestion of KI by EWs will be simulated. KI for field-monitoring teams is available in the kits that will be used at the Radiological Emergency Assistance Team – Forward (REAT Forward) facility at the Buckeye Airport. KI for the general public is stored at the Maricopa County Sheriff's Office (MCSO) Avondale Substation and will be transported by MCSO to the designated Reception and Care Center (RCC). KI for the general public will be available for inspection following the school interview on Monday, February 28, 2011.

An interview with Arlington School officials (superintendent, principal, teacher, transportation supervisor and a bus driver) will be conducted out-of-sequence on Monday, February 28, 2011 at 10:00 a.m. KI inspection will be conducted at the school. TLDs are a part of the kits that Arlington School staff is prepared to take with them on the buses, along with the KI and this will be part of the demonstration/interview.

EVALUATION AREA 2--PROTECTIVE ACTION DECISION-MAKING

Sub-Element 2.a--Emergency Worker Exposure Control

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the capability to assess and control the radiation exposure received by EWs and have a decision chain in place, as specified in the ORO's plans and procedures, to authorize emergency worker exposure limits to be exceeded for specific missions.

Radiation exposure limits for EWs are the recommended accumulated dose limits or exposure rates that EWs may be permitted to incur during an emergency. These limits include any pre-established administrative reporting limits (that take into consideration Total Effective Dose Equivalent or organ-specific limits) identified in the ORO's plans and procedures.

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 EWs including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654, K.4, J.10. e, f).

EXTENT OF PLAY: Radiological Emergency Assistance Team – Forward (REAT Forward) and EWs will be provided appropriate dosimetry as needed and will follow plans and procedures regarding the use of dosimetry, issuance of Potassium Iodide (KI) and emergency worker exposure guidelines and limits. Should an evacuation of the REAT Forward be ordered as a protective decision, this evacuation will be simulated by interview. Demonstration through interview will occur out of sequence regarding exceeding emergency worker exposure limits at the Maricopa County Sheriff's Office (MCSO) Command Post, REAT-Forward, Maricopa County EOC and the Technical Operations Center (TOC).

Sub-Element 2.b.--Radiological Assessment and Protective Action Recommendations and Decisions for the Plume Phase of the Emergency

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the capability to use all available data to independently project integrated dose and compare the estimated dose savings with the protective action guides. OROs have the capability to choose, among a range of protective actions, those most appropriate in a given emergency situation. OROs base these choices on PAGs from the ORO's plans and procedures or EPA 400-R-92-001 and other criteria, such as, plant conditions, licensee protective action recommendations, coordination of protective action decisions with other political jurisdictions (for example, other affected OROs), availability of appropriate in-place shelter, weather conditions, and situations that create higher than normal risk from evacuation.

Criterion 2.b.1: Appropriate protective action recommendations 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, I.8, 10 and Supplement 3).

EXTENT OF PLAY: Plume location and dose will be projected through the use of models, data from field monitoring teams and information provided by the licensee. Appropriate Protective Action Recommendations (PARs) will be developed as outlined in the Plan.

Criterion 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PAD) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654, J.9, 10.f, m).

EXTENT OF PLAY: A decision making process involving consideration of all relevant factors and all necessary coordination will be utilized as outlined in the Plan.

Decision makers will determine protective action(s) subsequent to discussion with the State Emergency Operations Center (SEOC) Policy Section and Maricopa County Emergency Operations Center (MCEOC) and following recommendations from the licensee and the Arizona Radiation Regulatory Agency (ARRA) in the Technical Operations Center (TOC).

Sub-element 2.c--Protective Action Decisions Consideration for the Protection of Special Populations

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to determine protective action recommendations, including evacuation, sheltering and use of potassium iodide (KI), if applicable, for special population groups (for example, hospitals, nursing homes, correctional facilities, schools, licensed day care centers, mobility impaired individuals, and transportation dependent individuals). Focus is on those special population groups that are (or potentially will be) affected by a radiological release from a nuclear power plant.

Criterion 2.c.1: Protective action decisions are made, as appropriate, for special population groups. (NUREG-0654, J.9, J.10.d, e).

Special population protections are included in the Offsite Plan to include notification, evacuation of schools and the use of KI. The Plan will be followed.

Sub-Element 2.d.--Radiological Assessment and Decision-Making for the Ingestion Exposure Pathway

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the means to assess the radiological consequences for the ingestion exposure pathway, relate them to the appropriate PAGs, and make timely, appropriate protective action decisions to mitigate exposure from the ingestion pathway.

During an accident at a nuclear power plant, a release of radioactive material may contaminate water supplies and agricultural products in the surrounding areas. Any such contamination would likely occur during the plume phase of the accident and, depending on the nature of the release, could impact the ingestion pathway for weeks or years.

Criterion 2.d.1: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria. (NUREG-0654, J.9, J.11).

EXTENT OF PLAY: Radiological dose assessments, projections and protective action recommendations and decisions will be continuously performed and demonstrated.

Protective action(s) will be determined subsequent to discussion with the State Emergency Operations Center (SEOC) Policy Section and Maricopa County or following recommendations from the licensee and the Arizona Radiation Regulatory Agency (ARRA) in the Technical Operations Center (TOC). Discussion with other agencies will occur as appropriate to the scenario and in accordance with the Plan.

Participation, regarding Protective Action Decisions with Indian Nations, adjacent counties and risk municipalities within 50-miles will be demonstrated. No active play in support of ingestion pathway activities will occur for projected consequences beyond 50-miles.

Sub-Element 2.e.--Radiological Assessment and Decision-Making Concerning Relocation, Re-Entry, and Return

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the capability to make decisions on relocation, re-entry, and return of the general public. These decisions are essential for the protection of the public from the direct long-term exposure to deposited radioactive materials from a severe accident at a nuclear power plant.

Criterion 2.e.1: Timely relocation, re-entry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures. (NUREG-0654, I.10; J.9; M.1).

EXTENT OF PLAY: Radiological dose assessments, projections and protective action recommendations and decisions will be continuously performed and demonstrated.

Protective action(s) will be determined subsequent to discussion with the State Emergency Operations Center (SEOC) Policy Section and Maricopa County or following recommendations from the licensee and the Arizona Radiation Regulatory Agency (ARRA) in the Technical Operations Center (TOC). Discussion with other agencies will occur as appropriate to the scenario and in accordance with the Plan.

Participation, regarding Protective Action Decisions with Indian Nations, adjacent counties and risk municipalities within 50-miles will be demonstrated.

EVALUATION AREA 3--PROTECTIVE ACTION IMPLEMENTATION

Sub-Element 3.a--Implementation of Emergency Worker Exposure Control

Intent: This sub-element derives from NUREG-0654, which provides that OROs should have the capability to provide for the following: distribution, use, collection, and processing of direct-reading dosimetry and permanent record dosimetry; the reading of direct-reading dosimetry by EWs at appropriate frequencies; maintaining a radiation dose record for each emergency worker; and establishing a decision chain or authorization procedure for EWs to incur radiation exposures in excess of protective action guides, always applying the ALARA (As Low As is Reasonably Achievable) principle as appropriate.

Criterion 3.a.1: The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to EWs in accordance with the plans and procedures. EWs periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart.
(NUREG-0654, K.3.a, b).

EXTENT OF PLAY: Appropriate dosimetry will be issued to EWs as outlined in the Plan. Should an evacuation of the REAT Forward be ordered as a protective decision, this evacuation will be simulated by interview.

An interview with Arlington School officials, including a bus driver, will be conducted out-of-sequence on February 28, 2011. TLD’s are a part of the kits that Arlington School staff is prepared to take with them on the buses, along with the KI and this will be part of the demonstration/interview. Re-demonstration ability is requested for this interview. (See Exercise Timeline)

Sub-Element 3.b--Implementation of KI Decision

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to provide radioprotective drugs for EWs, institutionalized individuals, and, if in the plan and/or procedures, to the general public for whom immediate evacuation may not be feasible, very difficult, or significantly delayed. While it is necessary for OROs to have the capability to provide KI to EWs and institutionalized individuals, the provision of KI to the general public is an ORO option and is reflected in ORO's plans and procedures. Provisions should include the availability of adequate quantities, storage, and means of the distribution of radioprotective drugs.

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

EXTENT OF PLAY: Once a decision to use Potassium Iodide (KI) is made, sufficient quantities and appropriate instructions for the use of KI will be made available. KI for field-monitoring teams is contained in the kits that are distributed at the Radiological Emergency Assistance Team – Forward (REAT Forward) location at the Buckeye Airport. KI for other EWs will be distributed by the Maricopa County Sheriff's Office (MCSO) at the MCSO On-Scene Command Post at the Maricopa County Department of Transportation (MCDOT) facility at State Route 85 and Maricopa County Route 85. EWs will demonstrate the appropriate record keeping for the ingestion of KI, but will simulate the actual ingestion of the KI.

KI for the general public is stored at the MCSO Avondale Substation and will be transported by MCSO to the designated Reception and Care Center (RCC). The demonstration of KI distribution and record keeping by the MCDPH at the RCC will occur out-of-sequence Tuesday, March 15, 2011 beginning at about 10:30 a.m.

An interview with Arlington School officials, including a bus driver, will be conducted out-of-sequence on February 28, 2011. TLD's are a part of the kits that Arlington School staff is prepared to take with them on the buses, along with the KI and this will be part of the demonstration/interview.

Re-demonstration ability is requested for KI interviews.

Sub-Element 3.c--Implementation of Protective Actions for Special Populations

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to implement protective action decisions, including evacuation and/or sheltering, for all special populations. Focus is on those special populations that are (or potentially will be) affected by a radiological release from a nuclear power plant.

Criterion 3.c.1: Protective action decisions are implemented for special populations other than schools within areas subject to protective actions. (NUREG-0654, J.10.c, d, g).

EXTENT OF PLAY: Volunteer individuals will be used to simulate the evacuation of a special needs population. Maricopa County Sheriff's Office (MCSO) deputies will be dispatched to a location where the special needs individuals will be located and will describe by interview their actions involving evacuation assistance. One special needs call and response will be demonstrated. Re-demonstration ability is requested for this interview. (1 Interview)

Criterion 3.c.2: OROs/School officials implement protective actions for schools. (NUREG-0654, J.10.c, d, g).

EXTENT OF PLAY: There will be no actual evacuation of school children. Arlington School will participate in an out-of-sequence interview, including the principal, a teacher and a bus driver, on February 28, 2011. Re-demonstration ability is requested for this interview.

Sub-Element 3.d.--Implementation of Traffic and Access Control

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the capability to implement protective action plans, including relocation and restriction of access to evacuated/sheltered areas. This sub-element focuses on selecting, establishing, and staffing of traffic and access control points and removal of impediments to the flow of evacuation traffic.

Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654,J.10.g, j).

EXTENT OF PLAY: The Maricopa County Department of Transportation (MCDOT) and the Maricopa County Sheriff's Office (MCSO) will demonstrate and secure one traffic and access control point. This will take place in accordance with the scenario. Re-demonstration ability is requested for this activity.

Criterion 3.d.2: Impediments to evacuation are identified and resolved. (NUREG-0654, J.10.k)

EXTENT OF PLAY: One impediment to evacuation will be demonstrated by simulation, including the decision making process to select alternate routes, inform the public of restrictions related to the impediment and develop a plan to remove the impediment.

Sub-Element 3.e--Implementation of Ingestion Pathway Decisions

Intent: This sub-element derives from NUREG-0654, which provides that OROs should have the capability to implement protective actions, based on criteria recommended by current Food and Drug Administration guidance, for the ingestion pathway zone (IPZ), the area within an approximate 50-mile radius of the nuclear power plant. This sub-element focuses on those actions required for implementation of protective actions.

Criterion 3.e.1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. NUREG-0654, J.9, 11).

EXTENT OF PLAY: This will be fully demonstrated through scenario activities on Day 2, March 2, 2011. The Arizona Department of Agriculture (ADA) will coordinate activities and implement protective strategies associated with the embargo of contaminated agricultural products at a time mutually agreed upon by the ADA, Arizona Radiation Regulatory Agency (ARRA), Maricopa County Sheriff's Office (MCSO), and Evaluators. ADA, MCSO, and ARRA will demonstrate food control point procedures at Radiological Emergency Assistance Team – Forward (REAT-Forward. Re-demonstration ability is requested for this activity.

Participation, regarding Protective Action Decisions with Indian Nations, adjacent counties and risk municipalities within 50-miles will be demonstrated. No active play in support of ingestion pathway activities will occur for projected consequences beyond 50-miles.

Criterion 3.e.2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production. (NUREG-0654, J.9, 11).

EXTENT OF PLAY: Printed information has been made available to farmers, dairy farmers, ranchers, food processors and food distributors based on a mailing list provided by the Arizona Department of Agriculture (ADA). Copies of these materials, boilerplate for Media Statements, and sample ADA advisories are available for review.

Participation, regarding Protective Action Decisions with Indian Nations, adjacent counties and risk municipalities within 50-miles will be demonstrated.

Sub-Element 3.f--Implementation of Relocation, Re-Entry, and Return Decisions

Intent: This sub-Element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should demonstrate the capability to implement plans, procedures, and decisions for relocation, re-entry, and return. Implementation of these decisions is essential for the protection of the public from the direct long-term exposure to deposited radioactive materials from a severe accident at a commercial nuclear power plant.

Criterion 3.f.1: Decisions regarding controlled re-entry of EWs and relocation and return of the public are coordinated with appropriate organizations and implemented. (NUREG-0654, M.1, 3).

EXTENT OF PLAY: Arizona Radiation Regulatory Agency (ARRA) and Maricopa County Sheriff's Office (MCSO) will demonstrate a re-entry point on March 2, 2011 at Radiological Emergency Assistance Team – Forward (REAT-Forward) at the Buckeye Airport. Post-Plume Phase activities will be demonstrated during activities conducted in a scenario driven table top exercise with all players in one room

on March 3, 2010 at the Sheraton Phoenix Airport Hotel, 1600 S. 52nd Street, Tempe, AZ 85281. Initial discussions will take place on March 2, 2011 in the State Emergency Operations Center (SEOC).

Participation, regarding Protective Action Decisions with Indian Nations, adjacent counties and risk municipalities within 50-miles will be demonstrated.

EVALUATION AREA 4--FIELD MEASUREMENT AND ANALYSIS

Sub-Element 4.a--Plume Phase Field Measurements and Analyses

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to deploy field teams with the equipment, methods, and expertise necessary to determine the location of airborne radiation and particulate deposition on the ground from an airborne plume. In addition, NUREG-0654 indicates that OROs should have the capability to use field teams within the plume emergency planning zone to measure airborne radioiodine in the presence of noble gases and to detect radioactive particulate material in the airborne plume. In the event of an accident at a nuclear power plant, the possible release of radioactive material may pose a risk to the nearby population and environment. Although accident assessment methods are available to project the extent and magnitude of a release, these methods are subject to large uncertainties. During an accident, it is important to collect field radiological data in order to help characterize any radiological release. Adequate equipment and procedures are essential to such field measurement efforts.

Criterion 4.a.1: The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates. (NUREG-0654, H.10; I.7, 8, 9).

EXTENT OF PLAY: Three field monitoring teams will be capable of obtaining airborne radioiodine and particulate samples, determine field radioiodine measurements, transmit data and transport samples to Radiological Emergency Assistance Team – Forward (REAT Forward). Booties and Personal Protective Equipment (PPE) will be simulated. Charcoal cartridges will be used as a substitute for silver zeolite. Re-demonstration ability is requested for this activity. Donning and doffing of PPE demonstrated on March 1, 2011.

Note: Three teams will be in the field and if sufficient personnel are available, additional field teams may be dispatched for training purposes only. These teams would not be for evaluation.

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

EXTENT OF PLAY: Three field monitoring teams will be pre-staged and dispatched from the Radiological Emergency Assistance Team – Forward (REAT Forward) under the control of the REAT Forward Captain and at the direction of the Technical Director in the Technical Operations Center (TOC). Field monitoring

team survey results will be transmitted to REAT Forward. Samples will be transported to REAT Forward for laboratory analysis.

Note: Based on the request for Federal assistance, the Environmental Protection Agency (EPA) Mobile Laboratory will be providing laboratory assistance in the field and federal partner participants will be integrated into REAT Forward field monitoring teams as appropriate.

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, I. 9).

EXTENT OF PLAY: Three field monitoring teams will be capable of obtaining airborne radioiodine and particulate samples, determine field radioiodine measurements, transmit data and transport samples to Radiological Emergency Assistance Team – Forward (REAT Forward). Booties and Personal Protective Equipment (PPE) will be simulated. Charcoal cartridges will be used as a substitute for silver zeolite. Re-demonstration ability is requested for this activity.

Sub-Element 4.b--Post Plume Phase Field Measurements and Sampling

Intent: This sub-element derives from NUREG-0654, which provides that OROs should have the capability to assess the actual or potential magnitude and locations of radiological hazards in the IPZ and for relocation, re-entry and return measures. This sub-element focuses on the collection of environmental samples for laboratory analyses that are essential for decisions on protection of the public from contaminated food and water and direct radiation from deposited materials.

Criterion 4.b.1: The field teams demonstrate the capability to make appropriate measurements and to collect appropriate samples (for example, food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision-making. (NUREG-0654, I.8; J.11).

EXTENT OF PLAY: Milk samples will be taken at the Triple G Dairy on Palo Verde Road (adjacent to Buckeye Airport). This activity will be demonstrated on March 2, 2011. Soil, vegetation and water sampling will also be demonstrated on March 2, 2011. Re-demonstration ability is requested for sampling activities. Three field-monitoring teams will be pre-staged and dispatched from the Radiological Emergency Assistance Team – Forward (REAT Forward) under the control of the REAT Forward Captain and at the direction of the Technical Director in the Technical Operations Center (TOC).

Note: Three teams will be in the field and if sufficient personnel are available, additional field teams may be dispatched for training purposes only. These teams would not be for evaluation.

Arizona Radiation Regulatory Agency (ARRA) will use Arizona procedures during the Plume Phase and FRMAC procedures will be used when FRMAC arrives in accordance with the Plan.

Sub-Element 4.c--Laboratory Operations

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to perform laboratory analyses of radioactivity in air, liquid, and environmental samples to support protective action decision-making.

Criterion 4.c.1: The laboratory is capable of performing required radiological analyses to support protective action decisions. (NUREG-0654, C.3; J.11).

EXTENT OF PLAY: Arizona Radiation Regulatory Agency (ARRA) laboratory staff will demonstrate the receipt and logging of samples, contamination control, and laboratory procedures for processing samples per the Plan. Mobile laboratory operations will be demonstrated on March 1, 2011 at Radiological Emergency Assistance Team – Forward (REAT Forward). Fixed laboratory operations will be demonstrated at the ARRA Laboratory, 4814 South 40th Street, Phoenix, Arizona on March 2, 2011. Prepackaged samples may be used to reduce time lag.

EVALUATION AREA 5--EMERGENCY NOTIFICATION AND PUBLIC INFORMATION

Sub-Element 5.a--Activation of the Prompt Alert and Notification System

Intent: This sub-element derives from NUREG-0654, which provides that OROs should have the capability to provide prompt instructions to the public within the plume pathway EPZ. Specific provisions addressed in this sub-element are derived from the Nuclear Regulatory Commission (NRC) regulations (10 CFR Part 50, Appendix E.IV.D.), and FEMA-REP-10, ``Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants."

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 FEMA REP guidance. (10 CFR part 50, appendix E.IV.D and NUREG-0654, E.5,6,7).

EXTENT OF PLAY: Maricopa County Department of Emergency Management (MCDEM) will simulate Siren sounding. Emergency Alert System (EAS) simulated messages to KTAR and the Phoenix office of the National Weather Service (NWS) will be generated and distributed, but will not be broadcast. Simulated EAS messages will be alternated between KTAR and NWS. Re-demonstration ability for KTAR and NWS activities is requested.

Criterion 5.a.3: Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. Backup alert and notification of the public is completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system. (NUREG-0654, E.6, Appendix 3.B.2.c).

EXTENT OF PLAY: Maricopa County Department of Emergency Management (MCDEM) will simulate Siren sounding. One group of simulated Emergency Planning Zone (EPZ) residents will be pre-staged at a failed siren. The Maricopa County Sheriff's Office (MCSO) will provide verbal instructions without sirens or lights. Re-demonstration for this activity is requested.

An updated siren warning system provides notification to the 10-mile EPZ population. No supplemental warning to the 10-mile EPZ will be demonstrated.

Sub-Element 5.b--Emergency Information and Instructions for the Public and the Media

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to disseminate to the public appropriate emergency information and instructions, including any recommended protective actions. In addition, NUREG-0654 provides that OROs should ensure that the capability exists for providing information to the media. This includes the availability of a physical location for use by the media during an emergency. NUREG-0654 also provides that a system should be available for dealing with rumors. This system will hereafter be known as the public inquiry hotline.

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

EXTENT OF PLAY: Media Briefings and follow-up Media Statements will be coordinated at the Joint Information Center (JIC). The dissemination of information to the media will be simulated. Public Inquiry will be demonstrated via message injects at the State Emergency Operations Center (SEOC) and will coordinate responses with the licensee Rumor Control and the JIC. The JIC, Public Inquiry, and Rumor Control will fully participate on Day 1, March 1, 2011. . (Mock media will used to question spokespersons during Day 1 activities.)

Day 2 Post-Plume Phase activities will be conducted at the State Emergency Operations Center (SEOC). A monitoring and sampling plan will be produced and may provide media information. All primary and supporting agencies will participate. The JIC will not be activated; however, Public Information Officer (PIO) staff from the Arizona Division of Emergency Management (ADEM), Maricopa County Department of Emergency Management (MCDEM), and Arizona Department of Agriculture (ADA) will be present to address media issues.

Post-Plume Phase activities for the JIC, Public Inquiry and Rumor Control activities will be demonstrated in a scenario driven table top exercise with all players in one room on March 3, 2010 at the Sheraton Phoenix Airport Hotel, 1600 S. 52nd Street, Tempe, AZ 85281. Cell phone and internet service will be available. JIC participation will be limited to key staff. Media statement templates will be available and at least one media statement will be produced. Play will be stopped to conduct a media briefing

EVALUATION AREA 6--SUPPORT OPERATION/FACILITIES

Sub-Element 6.a--Monitoring and Decontamination of Evacuees and EWs and Registration of Evacuees

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the capability to implement radiological monitoring and decontamination of evacuees and EWs, while minimizing contamination of the facility, and registration of evacuees at reception centers.

Criterion 6.a.1: The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees and/or EWs. (NUREG-0654, J.10.h; J.12; K.5.a).

EXTENT OF PLAY: Designated Reception and Care Center (RCC) operations will be demonstrated out-of-sequence on Tuesday, March 15, 2011 at about 10:30 a.m. at the Desert Edge High School, 15778 W Yuma Rd, Goodyear, AZ. A representative number of simulated evacuees may be processed through multiple times to demonstrate 150 evacuees per hour. Staff will be pre-staged between approximately 9:00 to 9:30 a.m. for this demonstration.

A Radiological Emergency Assistance Team (REAT) will be dispatched to the RCC to monitor a sample of the population. Of the evacuees, two males and two females with their belongings will simulate being contaminated for decontamination demonstration. No actual disrobing or showering will be demonstrated. Evacuee vehicle monitoring and decontamination will be demonstrated by interview.

One emergency worker will simulate being contaminated for decontamination demonstration at REAT Forward on Tuesday March 1, 2011 and decontamination procedures will be demonstrated through interview. No actual disrobing or showering will be demonstrated.

Sub-Element 6.b--Monitoring and Decontamination of Emergency Worker Equipment

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the capability to implement radiological monitoring and decontamination of emergency worker equipment, including vehicles.

Criterion 6.b.1: The facility/ORO has adequate procedures and resources for the accomplishment of monitoring and decontamination of emergency worker equipment, including vehicles. (NUREG-0654, K.5.b).

EXTENT OF PLAY: Emergency Worker vehicle and equipment monitoring and decontamination will be demonstrated at the Radiological Emergency Assistance Team – Forward (REAT Forward) as field monitoring teams return from the field or as mutually agreed upon by the REAT Forward Captain and Evaluators on March 1, 2011. Decontamination procedures will be demonstrated by interview. An out-of-sequence interview with the responding Fire Department will be demonstrated on March 1, 2011 as agreed

on by the REAT Forward Captain, Fire Department and evaluators. One vehicle will be used for decontamination demonstration. Re-demonstration ability is requested for this activity.

Sub-Element 6.c--Temporary Care of Evacuees

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) demonstrate the capability to establish relocation centers in host areas. The American Red Cross (ARC) normally provides congregate care in support of OROs under existing letters of agreement.

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. (Found in MASS CARE--Preparedness Operations, ARC 3031). Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate before entering congregate care facilities. (NUREG-0654, J.10.h, J.12).

EXTENT OF PLAY: Maricopa County Department of Emergency Management (MCDEM) and the Grand Canyon Chapter of the American Red Cross (ARC) will activate the designated Reception and Care Center (RCC) out-of-sequence on Tuesday, March 15, 2011 at about 10:30 a.m. at the Desert Edge High School, 15778 W Yuma Rd, Goodyear, AZ. Managers will demonstrate by interview that the centers provide services and accommodations consistent with ARC planning guidelines and in accordance with the Plan.

Sub-Element 6.d--Transportation and Treatment of Contaminated Injured Individuals

Intent: This sub-element derives from NUREG-0654, which provides that Offsite Response Organizations (ORO) should have the capability to transport contaminated injured individuals to medical facilities with the capability to provide medical services.

Criterion 6.d.1: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654, F.2; H.10; K.5.a, b; L.1, 4).

EXTENT OF PLAY: This sub-element is demonstrated out-of-sequence per separate scheduling and agreement with FEMA.

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