



Diablo Canyon Power Plant

After Action Report/ Improvement Plan

Exercise Dates: November 2 - 4, and

December 8, 2016

Radiological Emergency Preparedness Program



FEMA

Published

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EXECUTIVE SUMMARY

The United States (U.S.) Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) Region IX National Preparedness Division, Technological Hazards Branch, evaluated an Off-site Ingestion Phase exercise (IPX) on November 2 - 4, 2016, in the Ingestion Pathway Zone (IPZ) surrounding the Diablo Canyon Power Plant (DCPP). An Out-of-Sequence (OoS) Demonstration was conducted on December 8, 2016, at the California Department of Public Health (CDPH) – Laboratory Field Services in Richmond, California. The findings in this report contain the final FEMA evaluation results, from the DCPP IPX and OoS Demonstration, with final determinations made by the FEMA Region IX Acting Regional Assistance Committee (RAC) Chair and approved by the FEMA Region IX Regional Administrator.

The purpose of the IPX is part of the Radiological Emergency Preparedness (REP) Program to assess the level of State and local Off-site Response Organizations (ORO) preparedness in response to a radiological incident at DCPP. The IPX, and OoS Demonstration, was held in accordance with FEMA's policies and guidance concerning the implementation of State and local ORO Radiological Emergency Response Plans (RERP) and procedures.

The scenario and the Extent-of-Play (EOP) Agreement was reviewed, and approved, by the FEMA Region IX Acting RAC Chair prior to the scheduled date of the IPX.

There was a Level 2 (L2) Finding identified, re-demonstrated and closed during Day 3 of the IPX. No Level 1 (L1) Findings were identified during the IPX. There were two Planning Issues, from previous IPXs, which were closed based on the successful demonstrated criteria during the 2016 IPX. There was one Area Requiring Corrective Action's (ARCA) from a previous IPX, closed based on the successful demonstrated criteria during the 2016 IPX.

In Summary: The State and local ORO demonstrated that their plans and procedures can be adequately implemented, and that there is a continued reasonable assurance that measures can be taken to protect the health and safety of the public in the event of a radiological incident at DCPP.

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name

Diablo Canyon Power Plant

Type of Exercise

Ingestion Phase exercise

Exercise Date

November 2 - 4, and December 8, 2016

Program

U.S. Department of Homeland Security/FEMA REP Program

Scenario Type

Radiological Emergency

1.2 Exercise Planning Team Leadership

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1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the Diablo Canyon Power Plant Ingestion Phase exercise:

State Jurisdictions:

- California Department of Fish and Wildlife
- California Department of Food and Agriculture
- California Department of Forestry and Fire Protection (Cal Fire)
- California Department of Parks and Recreation
- California Department of Public Health
- California Governor's Office of Emergency Services
- California Highway Patrol
- California State Water Resources Control Board

Local Jurisdictions and Organizations:

- County of San Luis Obispo
 - CALFIRE/SLO County Fire
 - County of San Luis Obispo Administrative Office
 - County of San Luis Obispo Department of Agriculture
 - County of San Luis Obispo Office of Emergency Services
 - County of San Luis Obispo Public Health Department
 - County of San Luis Obispo Public Works
 - County of San Luis Obispo Sheriff's Office

Monterey County:

- Monterey County Administrative Office
- Monterey County Agricultural Commissioner
- Monterey County Health Department
- Monterey County Office of Emergency Services

Santa Barbara County:

- Santa Barbara County Agricultural Commissioner
- Santa Barbara County Office of Emergency Management
- Santa Barbara County Public Health

Federal Jurisdictions

Federal Emergency Management Agency

Federal Radiological Monitoring and Assessment Center

United States Department of Agriculture

United States Department of Energy - Federal Radiological Monitoring and
Assessment Center

United States Environmental Protection Agency

United States Food and Drug Administration

United States Nuclear Regulatory Commission

Private Organizations

Pacific Gas and Electric - Diablo Canyon Power Plant

SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

The Federal Emergency Management Agency administers the REP Program pursuant to the regulations found in Title 44 Code of Federal Regulations (C.F.R.) § 350, 351 and 352 (October 2011) and the FEMA REP Program Manual, (January 2016). Title Emergency Management and Assistance, 44 C.F.R. § 350 (October 2011) codifies 16 Planning Standards that form the basis for radiological emergency response planning for licensees, State, local, and tribal governments impacted by the IPZ's established for each nuclear power plant (NPP) site in the United States of America. One of the REP Program cornerstones established by these regulations is the biennial exercise of Off-site response capabilities. During a biennial scenario based IPX, State and local governments demonstrate their abilities to implement their plans and procedures to protect the health and safety of the public in the event of a radiological incident occurring at a nuclear plant.

The results of this exercise, together with the review of the RERP's and procedures, the verification of the periodic requirements (found and identified in (NUREG)-0654/FEMA-REP-1) enable FEMA to provide a statement with transmission of this final After Action Report to the U.S. Nuclear Regulatory Commission (NRC) that State, and local plans and preparedness are:

- Adequate to protect the health and safety of the public living in the vicinity of the nuclear power facility; and
- That appropriate protective measures can be implemented Off-site in the event of a radiological incident occurring at the nuclear power facility.

2.2 Exercise Demonstration Criteria, and Core Capabilities

Ingestion Pathway exercises are conducted to provide FEMA the opportunity to evaluate and assess emergency plans and associated implementing procedures, and facilities and equipment, which would be used in a radiological incident occurring at the nuclear power facility.

Capabilities-based planning allows for exercise planning teams to develop exercise objectives and observe/evaluate exercise outcomes through a framework of specific action items that was derived from the Core Capabilities List. The following Core Capabilities form the basis for FEMA Region IX REP Program objectives observed and evaluated during this exercise.

Environmental Response/Health and Safety

Description: Conduct appropriate measures to ensure the protection of the health and safety of the public and workers, as well as the environment, from all-hazards in support of responder operations and the affected communities.

Mass Care Services

Description: Provide life-sustaining and human services to the affected population, to include hydration, feeding, sheltering, temporary housing, evacuee support, reunification and distribution of emergency supplies.

Operational Communications

Description: Ensure the capacity for timely communications in support of security, situational awareness, and operations by any means available, among and between affected communities in the impacted area and all response forces.

Operational Coordination

Description: Establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of core capabilities.

Planning

Description: Conduct a systematic process engaging the whole community as appropriate in the development of executable strategic, operational, and/or tactical-level approaches to meet defined objectives.

Public Health, Healthcare, and Emergency Medical Services

Description: Provide lifesaving medical treatment via Emergency Medical Services and related operations and avoid additional disease and injury by providing targeted public health, medical, and behavioral health support, and products to all affected populations.

Public Information and Warning

Description: Deliver coordinated, prompt reliable and actionable information to the whole community through the use of clear, consistent, accessible, and culturally and linguistically appropriate methods to effectively relay information regarding any threat or hazard, as well as the actions being taken and the assistance being made available, as appropriate.

Situational Assessment

Description: Provide all decision makers with decision-relevant information regarding the nature and extent of the hazard, any cascading effects, and the status of the response.

Additionally, each capability was linked to several corresponding activities and tasks to provide additional detail.

2.2.1 Exercise Demonstration Criteria

Off-site Response Organizations demonstrated the following criteria contained in FEMA REP Program Manual, (January 2016), and associated core capabilities from the U.S. Department of Homeland Security's National Preparedness Goal, (September 2015):

Evaluation Area 1 – Emergency Operations Management

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

Criterion 1.d.1: At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations.

Communications capabilities are managed in support of emergency operations. (NUREG - 0654/FEMA-REP-1, F.1, 2)

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

Evaluation Area 2 – Emergency Worker Exposure Control (EWEC)

Criterion 2.a.1: ORO's use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers (EW), including provisions to authorize radiation exposure in excess of administrative limits or Protective Action Guides. (NUREG-0654/FEMA-REP-1, C.6; J.10.e, f; K.4)

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

Criterion 2.d.1: Radiological consequences for the Ingestion Pathway are assessed and appropriate PAD's are made based on the ORO's planning criteria. (NUREG-0654/FEMA-REP-1, A.3; C.1, 4; D.4; J.9, 11)

Criterion 2.e.1: Timely Post-Plume Phase relocation, reentry, 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/FEMA-REP-1, I.10; J.9; K.3.a; M.1)

Evaluation Area 3 – Protective Action Implementation

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

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

Criterion 3.d.1: Appropriate traffic and access control points are established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654/FEMA-REP-1, A.3; C.1.4; J.10.g, j)

Criterion 3.e.1: The ORO's demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural (Ag) production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. (NUREG-0654/FEMA- REP-1, A.3; C.1 4; J.11)

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/FEMA- REP-1, G.1, J.9, 11)

Criterion 3.f.1: Decisions regarding controlled reentry, relocation, and return of individuals during the post-plume phase are coordinated with appropriate organizations and implemented. (NUREG-0654/FEMA-REP-1, E.7; J.10.j; J.12; K.5.b; M.1, 3)

Evaluation Area 4 – Field Measurements and Analyses

Criterion 4.b.1: The field teams (2 or more) demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and PAD making. (NUREG-0654/FEMA-REP-1, C.1; I.8; J.11)

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

Evaluation Area 5 – Emergency Notification and Public Information.

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

Evaluation Area 6 – Support Operations/Facilities.

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

2.2.2 Core Capabilities

Mission Areas serve as an aid in integration and coordination across Core Capabilities to achieve the goal of a secure and resilient nation.

Of the eight Core Capabilities previously listed, there are four, which span three of five Mission Areas. These are Environmental Response, Operational Coordination, Planning, and Public Information and Warning.

The following are classifications of those Core Capabilities, within associated Mission Areas, and related REP Program demonstration criteria evaluated during the IPX and the OoS Demonstration:

Protection Mission Area Core Capabilities are the product of diverse activities, and include the capabilities to safeguard the homeland against acts of terrorism and man-made or natural disasters. Associated diverse activities include:

- Develop protection plans that identify critical objectives based on planning requirements, provide a complete and integrated picture of the sequence and scope of the tasks to achieve the planning objectives, and implement planning requirements within the time frame contemplated within the plan using available resources for protection-related plans.
- Implement, exercise, and maintain plans to ensure continuity of operations.

Protection Mission Area Core Capabilities is met by the demonstration of REP Program criterion: 1.c.1, 3.a.1, 3.c.1, 4.b.1, 4.c.1, and 6.b.1.

Mitigation Mission Area Core Capabilities focus on the premise those individuals, the private and nonprofit sectors, communities, and the Nation as a whole are made more resilient when the consequences and impacts, the duration and human cost to respond to and recover from all adverse incidents are reduced. Associated diverse activities include:

- Build and sustain resilient systems, communities, and critical infrastructure and key resources lifelines so as to reduce their vulnerability to natural, technological, and human-caused threats and hazards by lessening the likelihood, severity, and duration of the adverse consequences.
- Assess risk and disaster resilience so that decision makers and responders can take informed action to reduce their entity's risk and increase their resilience.

Mitigation Mission Area Core Capabilities is met by the demonstration of REP Program criterion: 1.d.1, 1.e.1, 3.d.1, 3.d.2, 3.e.1, 3.e.2, and 5.b.1.

Response Mission Area Core Capabilities emphasizes saving and sustaining lives, stabilizing the incident, rapidly meeting basic human needs, establishing a safe and secure environment, and supporting the transition to recovery. Associated diverse activities include:

- Mobilize all critical resources and establish command, control, and coordination structures within the affected community and other coordinating bodies in surrounding communities and across the Nation.
- Enhance and maintain command, control and coordination structures, consistent with the National Incident Management System.

- Establish physical access through appropriate transportation corridors and deliver required resources to save lives and to meet the needs of disaster survivors.
- Identify, assess, and mitigate worker health and safety hazards and disseminate health and safety guidance and resources to response and recovery workers.
- Deliver medical countermeasures to exposed populations.

Response Mission Area Core Capabilities is met by the demonstration of REP Program criteria: 1.c.1, 1.e.1, 2.a.1, 2.c.1, 2.d.1, 2.e.1, 3.a.1, 3.d.1, 3.e.2, 3.f.1, and 5.b.1.

2.3 Scenario and Extent-of-Play Agreement Summary

The November 2 - 4, 2016, IPX, and December 8, 2016, OoS Demonstration was based on a scenario of events occurring at DCPD that invoked emergency response actions to be carried out by the OROs during the Plume Phase on Day 1. The same scenario drove events on the Ingestion Phase, Day 2, to focus on developing Protective Action Recommendations (PAR) for relocation, reentry, and return. Likewise Day 3 of the IPX focused on the Decision Makers considering PARs, developed on Day 2, and identifying related PADs and implementing strategies.

A technical review of the scenario was completed on October 11, 2016, by FEMA, and indicated that it was adequate to support demonstration of DHS/FEMA requirements, as well as selected Off-site evaluation criteria per the EOP Agreement and as provided in the REP Program Manual, (January 2016).

A summary of the DCPD IPX scenario is as follows (times listed are for planning purposes only):

Initial conditions at DCPD have both units at 100% power and operating at normal operating temperature and pressure.

At 0809, the containment fan-cooling unit (CFCU) 1-4, develops a large leak. DCPD operators isolate the leak and electrically disable CFCU 1-4.

0833: Significant mechanical damage to a limited number of fuel pins is caused by loose parts. A number of loose parts finally lodging in upper area of fuel assembly, and shutdown of Unit 1 is initiated as per operating procedure.

0929: Centrifugal charging pumps 1-3 experience an overcurrent condition, but breaker 52-HG-11

fails to open. Auxiliary transformer 1-2 4kV Bus G feeder breaker 52-HG-13 opens, and 4kV Bus G is de-energized and locked out.

1002: Unit 1 main turbine auto-stop oil pressure rapidly decreases when an oil line threaded fitting fails causing a main turbine to "trip" and initiate a reactor trip signal. The reactor fails to trip, and additional fuel damage occurs. The reactor was successfully tripped, from Control Room 90 seconds later.

1037: A loss of coolant accident occurs causing Containment Area High Range Radiation Monitors 30/31 to indicate rising radiation levels in containment. Containment Exhaust Isolation Valve RCV-11 disk mechanically fails and rotates slightly off its seat due to manufacturing defect.

1047: Containment High Radiation Monitors 30/31 read > 80 R/hr. This constitutes a potential loss of the containment fission product barrier. Recommend PARs to Evacuate Protective Action Zone (PAZ) 1 & 2, & surrounding Ocean out to 5 Nautical Miles)

1126: Containment loss and radiological release due to containment exhaust isolation value RCV-12 also rotates off its seat due to common-mode failure as RCV-11, initiating an Off-site radiological release. Radiological release was monitored by plant vent effluent monitors. (PAR Upgrade to Evacuate PAZ 3)

1326: Radiological release is terminated by repairing and closing mechanical damper MD-35, downstream in the effluent pathway.

1330: ENDEX - Approximate time set for exercise termination.

Extent-of-Play Agreement Summary:

The purpose of the EOP Agreement is to identify, and negotiate, demonstration criteria and any planned deviations from the implementation of the applicable plans that will be evaluated during the exercise. Applicable plans include the state of California NPP Emergency Response Plan (ERP), and San Luis Obispo (SLO) County NPP ERPs and Procedures. The State and OROs will implement applicable elements in these plans and procedures.

The expected outcome, of the OROs, is the demonstration of reasonable assurance that the health and safety of the general public can be protected during an NPP incident.

Pursuant to FEMA policy, federal agencies are not evaluated during an evaluated exercise or drill. Federal actions that result in State or ORO non-compliance of an evaluation area may be documented by the evaluator but will not result in any finding.

The FEMA Lead Evaluator and the State Lead ORO Exercise Controller will terminate the exercise when all parties agree that all the required demonstration criteria have been adequately demonstrated and evaluated.

SECTION 3: ANALYSIS OF CAPABILITIES

3.1 Exercise Evaluation and Results

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities that participated in the November 2 - 4, 2016, IPX, and the OoS Demonstration in December 8, 2016, demonstrating portions of the Off-site emergency response capabilities inside of the IPZ surrounding DCPD.

Each jurisdiction and functional entity was evaluated on its demonstration of selected criteria as indicated in the EOP Agreement and as outlined in the FEMA REP Program Manual, (January 2016).

3.2 Summary Results of Exercise Evaluation

The matrix in Table 3.1 presents the status of all exercise Assessment Areas and sub-element criterion that were demonstrated, for evaluation during the IPX, by all participating jurisdictions and functional entities. The REP Program uses the following alphanumeric key to indicate demonstration status of those criteria evaluated during the IPX:

L1 – Level 1 Finding was identified (previously listed as an Deficiency)

L2 – Level 2 Finding was identified (previously listed as an ARCA)

M – Met (No L1 or L2's assessed and no unresolved ARCAs from prior exercises)

N – Not Demonstrated

P – Plan Issue was identified

Below are the alphanumeric key definitions as defined in the FEMA REP Program Manual, (January 2016):

Level 1 Finding: “An observed or identified inadequacy of organizational performance in an exercise that could cause a determination that Off-site emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant.”

Level 2 Finding: “An observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety.”

Met: “The jurisdiction or functional entity performed all activities under the Demonstration Criterion to the level required in the EOP Agreement, with no Level 1 or Level 2 Findings assessed under that criterion in the current exercise and no unresolved prior Level 2 Findings.”

Not Demonstrated: “A justifiable reason, the jurisdiction or functional entity did not perform activities under the Demonstration Criterion as specified in the EOP Agreement or at the frequency required in Exhibit III-2.”

Plan Issue: “An observed or identified inadequacy in the ORO’s emergency plan/procedures, rather than in the ORO’s performance.”

The identifying number for L1 Finding and L2 Finding includes the following elements, with each element separated by a hyphen (-).

- Plant Site Identifier – A two-digit number corresponding to the Utility Billable Plant Site Codes (19 is the code for DCPD).
- Exercise Year – The last two digits of the year the exercise or drill was conducted.
- Demonstration Criterion – An alpha letter and two-digit number corresponding to the criteria in the FEMA REP Exercise Evaluation Methodology.
- Issue Classification Identifier – (L1, L2, or P)
- Exercise Issue Identification Number – A separate two (or three) digit indexing number assigned to each issue identified in the exercise.

Table 3.1 - Summary of Exercise Evaluation

DATE: November 2 - 4, and December 8, 2016 SITE: Diablo Canyon Power Plant, CA. L1: Level 1 Finding, L2: Level 2 Finding M: Met, P: Plan Issue, N: Not Demonstrated		DEMONSTRATION CRITERIA State Dose Assessment Center – Advance Party Meeting State Dose Assessment Center State Dose Assessment Center – Field Operations California Department of Public Health – Drinking Water and Radiological Laboratory Branch - OoS Interview Recovery Interagency Coordination Group – Day 3: State Agencies Recovery Interagency Coordination Group – Day 3: State Joint Information Center Agricultural Hold Access Control Points and Reentry – OoS Interview						
Emergency Operations Management								
Direction and Control	1c1	M	M	M			M	
Communications Equipment	1d1		M	M				
Equipment and Supplies to Support Operations	1e1		M	M	M		M	
Protective Action Decision Making								
EW Exposure Control Decision Making	2a1			M			M	
PADs for Disabled/Functional Needs	2c1						M	
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1	M	M	M			M	M
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1	M	M	M				M
Protective Action Implementation								
Implementation of Emergency Worker Exposure Control	3a1			M	M			
Implementation of protective actions for special populations	3c1							M
Implementation of Traffic and Access Control	3d1						M	M
Implementation of Ingestion Pathway decisions – availability use of info	3e1		M				M	M
Materials for Ingestion Pathway PADs are available	3e2						M	M
Implementation of relocation, reentry, and return decisions	3f1							M
Field Measurement and Analysis								
Post plume phase field measurements and sampling	4b1			M				
Laboratory operations	4c1				M			
Emergency Notification and Public Info								
Emergency Information and Instructions for the Public and the Media	5b1							M*
Support Operations/Facilities								
Monitoring/decontamination of emergency worker equipment	6b1			M				

* L2 Finding identified and Re-demonstrated

<p>DATE: November 2 - 4, and December 8, 2016 SITE: Diablo Canyon Power Plant, CA. L1: Level 1 Finding, L2: Level 2 Finding M: Met, P: Plan Issue, N: Not Demonstrated</p>	<p>DEMONSTRATION CRITERIA</p>	<p>Recovery Interagency Coordination Group – Day 3: County of San Luis Obispo</p>	<p>Recovery Interagency Coordination Group – Day 3: Monterey County</p>	<p>Recovery Interagency Coordination Group – Day 3: Santa Barbara County</p>
Emergency Operations Management				
Direction and Control	1c1	M	M	M
Communications Equipment	1d1			
Equipment and Supplies to Support Operations	1e1	M		
Protective Action Decision Making				
EW Exposure Control Decision Making	2a1	M	M	M
PADs for Disabled/Functional Needs	2c1	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		
Protective Action Implementation				
Implementation of Emergency Worker Exposure Control	3a1	M		
Implementation of protective actions for special populations	3c1	M		
Implementation of Traffic and Access Control	3d1	M	M	M
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, reentry, and return decisions	3f1	M		
Field Measurement and Analysis				
Post plume phase field measurements and sampling	4b1			
Laboratory operations	4c1			
Emergency Notification and Public Info				
Emergency Information and Instructions for the Public and the Media	5b1			
Support Operations/Facilities				
Monitoring/decontamination of emergency worker equipment	6b1			

3.1 Criteria Evaluation Summaries

3.3.1 California Jurisdictions

3.3.1.1 State Dose Assessment Center – Advance Party Meeting

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

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

3.3.1.2 State Dose Assessment Center – Day 2

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

- a. MET: 1.c.1, 1.e.1, 2.d.1, 2.e.1, 3.e.1
- b. LEVEL 1 FINDING: None
- c. LEVEL 2 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: 56-11-2d1-P-4

ISSUE: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO planning criteria.

Following Federal Radiological Monitoring and Assessment Center (FRMAC) lead, the Unit and FRMAC applied the Food and Drug Administration (FDA) Derived Intervention Levels (DILs) to the two drinking water samples. The Safe Drinking Water Act (SDWA),

not the FDA DILs, must be used to determine if drinking water is suitable for human consumption. The FDA DILs are based on a maximum dose of 5 rem Committed Dose Equivalent to an organ or 0.5 rem Committed Effective Dose Equivalent to the whole body. The SDWA is based on a maximum annual dose of 4 millirem. These limits are quite different. For example, the FDA DIL for iodine-131 is 4600 pCi/I and the SDWA limit for iodine-131, in drinking water, is 3 pCi/I; a factor of 1500 times smaller.

CORRECTIVE ACTION DEMONSTRATED: As stated in the current revised state of California State Dose Assessment Center (SDAC) Protective Actions Unit (PAU) Procedure, E-57, (June 2016), page 10, sec. 7.0 "Protective action decisions are made by agencies with jurisdiction and authority to make decisions."

In addition, the PAU Procedure (E-57), (June 2016), page 26, sub-section 3 states "If sample results indicate that State of California Drinking Water Standards are exceeded for any [drinking] water system, the SDAC PAU should issue a PAR notifying the decision makers of the water system and sample results that exceed the State of California Drinking Water Standards."

Based on the current revisions to the state of California SDAC Protective Actions Unit (PAU) Procedure, E-57, (June 2016), Planning Issue 56-11-2d1-P-4 is resolved.

- g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.3 State Dose Assessment Center – Day 2: Field Operations

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

- a. MET: 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.d.1, 3.a.1, 4.b.1, 6.b.1
- b. LEVEL 1 FINDING: RESOLVED: (ARCA) 51-11-3.a.1-A-3.

ISSUE: A field team member was issued a Thermoluminescent Dosimeter (TLD) by the RAP, and no documentation was completed.

Team members were issued TLD's for their normal day-to-day job functions. These TLD's were used for dose record as part of the exercise. One team member did not have their TLD with them and was given one by the Federal RAP On-site. The team member may have

assumed the TLD used was simulating their normally worn TLD – though that was never made clear.

If not simulating their day-to-day TLD, the worker would have no paper record of which TLD was issued by the RAP, and no way to track the dose received during the sampling event.

CORRECTIVE ACTION DEMONSTRATED: A SDAC Assistant Safety Officer-Radiation ensured each Environment Monitoring Team staff completed appropriate paperwork (SDAC Worker Dosimetry Record sheet) prior to issuance of TLD's. The issuance of the Dosimetry Record sheet was consistent with that specified in the revised Procedure E-81, SDAC Emergency Worker Radiation Protection and Monitoring, Attachment 2, (December 2015).

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

3.3.1.4 California Department of Public Health – Drinking Water and Radiation Laboratory Branch (OoS Interview and Demonstration)

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

- a. MET: 1.e.1, 3.a.1, 4.c.1.
- b. LEVEL 1 FINDING: None
- c. LEVEL 2 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: 19-05-1e1-P-1

ISSUE: The RCS staff operated an InInspector 1000 Canberra radiological monitoring instrument. Prior to instrument use, no operational check was performed that used a known source and required an instrument response to be within a prescribed range.

In addition, there was no label affixed to the instrument that defined an acceptable range for the instrument response to a specific source. The state of California Department of Health Services NPPER procedures fail to require an operational check using a known source nor a label affixed to the instrument that specifies that the instrument response must fall within the defined range.

CORRECTIVE ACTION DEMONSTRATED: As stated in the CDPH Drinking Water and Radiation Laboratory Branch Standard Operating Procedure for Nuclear Power Plant Emergency Response (rev. 2), (November 2016), page 8, sec. 8.1 "Prior to the first daily use of a survey meter, calibration of the survey meter is checked using a Cs-137 source and recorded in a log book (appendix D). If the acceptance limits are not met, another survey meter is checked and used."

- g. PRIOR ISSUES - UNRESOLVED: None

3.3.1.5 Recovery Interagency Coordination Group – Day 3: State Agencies

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

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

3.1.1.6 Recovery Interagency Coordination Group – Day 3: State Joint Information Center

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

- a. MET: 2.d.1, 2.e.1, 3.c.1, 3.d.1 5.b.1
- b. LEVEL 1 FINDING: None

c. LEVEL 2 FINDING: ISSUE NO.: 19-16-5b1-L2-1- RESOLVED/CLOSED

CRITERION: Off-site Response Organizations provide accurate subsequent emergency information and instructions to the public and the news media in a timely manner.

(NUREG- 0654/FEMA-REP-1, E.5,7; G.3.a; G.4.a,c).

CONDITION: The Joint Information Center (JIC) demonstrated the ability to provide information to the public and news media regarding post plume, ingestion phase activities in response to an incident at the Diablo Canyon Power Plant on November 4, 2016. Public messages and news releases were crafted by the Recovery Interagency Coordination Group (RICG). The JIC received messages from the RICG, suggested edits for readability, and then returned the messages for approval by the RICG manager. Signed messages were released to the media and posted on an emergency management website for public information.

Press release number 3, issued at 1215, advised emergency workers, residents and business employees who re-enter the evacuated areas not to consume food or water from the area. "People are advised to bring in their own food and water, as needed." Later in that same media release, the message stated, "For those allowed re-entry into the restricted area, guidance and precautionary information will be provided, such as do not eat, drink, or smoke." The news release provided conflicting information within the same paragraph, potentially confusing the public with contradicting instructions and messages. Additionally, the ORO self-identified some other concerns and conflicts with the original news release developed.

POSSIBLE CAUSE: The media release may not have been adequately reviewed and edited for potential conflicting statements. Technical and subject matter experts may need more training on how to best construct public information messages with public information officers.

REFERENCE: NUREG- 0654/FEMA-REP-1, E. 5, 7

EFFECT: The statement for those re-entering the restricted area to bring in food and water and the statements advising those same persons not to eat, drink or smoke while in the restricted area may have created public confusion.

RE-DEMONSTRATION: Press release number #3 was re-demonstrated by a representative of the JIC, the acting Public Health Officer as a component of the RICG and staff from the CDPH. The intent in this statement was to prevent possible heat exhaustion, dehydration or fainting for those persons re-entering the restricted area. These effects would be a greater health risk than the effect of drinking clean water or food that may become contaminated in the process of ingestion. In the re-demonstration discussion, the acting Public Health Officer decided that prevention of heat exhaustion, dehydration or fainting from lack of nourishment may be addressed in separate guidance. Press release

number # 3 was revised by removing the statement for persons to bring food and water into the restricted area.

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

3.3.1.7 Agricultural Hold Access Control Points and Reentry – OoS Interview

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

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

3.3.2 Risk Jurisdictions

3.3.2.1 Recovery Interagency Coordination Group – County of San Luis Obispo

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

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

- g. PRIOR ISSUES - UNRESOLVED: None

3.3.2.2 Recovery Interagency Coordination Group – Monterey County

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

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

3.3.2.3 Recovery Interagency Coordination Group – Santa Barbara County

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

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

SECTION 4: CONCLUSION

The Federal Emergency Management Agency, Region IX, evaluated an Off-site IPX on November 2 - 4, 2016, in the IPZ surrounding DCPD, and a OoS Demonstration on December 8, 2016. The purpose of the exercise, and OoS Demonstration, was to assess the level of local and State emergency preparedness in response to a simulated radiological incident. This exercise was conducted in accordance with FEMA policies, guidance concerning local, State RERPs, and procedures.

The findings presented in this report are based on the evaluations of the federal evaluation team, with final determinations made by the FEMA Region IX Acting Regional Assistance Committee Chair and approved by the Regional Administrator.

Based on the evaluation of the November 2 - 4, 2016, IPX and OoS demonstrations, the Off-site radiological emergency response plans for the state of California and the affected local jurisdictions, site-specific to DCPD can be implemented, and are adequate to provide continued reasonable assurance that appropriate measures can be taken Off-site to protect the health and safety of the public in the event of a radiological emergency at DCPD.

Therefore, Title 44 C.F.R. § 350, approval of the Off-site radiological emergency response plans and preparedness for the state of California site-specific to DCPD will remain in effect.

APPENDIX A: EXERCISE EVALUATORS AND *TEAM LEADERS

LOCATION	EVALUATOR	AGENCY
State Dose Assessment Center: Advance Planning Meeting on Day - 1	*Alberto Sifuentes Jimmy Wortham Roy Smith Daryl Thome	FEMA RIX USDA/APHIS ICFI ICFI
State Dose Assessment Center: Day - 2 @ Embassy Suites	*Alberto Sifuentes Ryan Jones LaShawn Halsey Laurel Ryan Roy Smith Daryl Thome	FEMA RIX FEMA RI FEMA HQ FEMA RIX ICFI ICFI
State Dose Assessment Center - Day - 2: Field Operations @ CSTI	*Ken Wierman Dennis Wilford Thomas Essig	FEMA HQ ICFI ICFI
Agricultural Hold Access Control Points and Reentry - OoS Interview	*Todd Smith	USDA/APHIS
California Department of Public Health - Drinking Water and Radiation Laboratory Branch - OoS Demonstration	*Daryl Thome Roy Smith	ICFI ICFI
Recovery Interagency Coordination Group - Day 3: State Agencies	*Jill Leatherman Laurel Ryan	ICFI FEMA RIX
Recovery Interagency Coordination Group - Day 3: State Joint Information Center	*Paul Anderson Barbara Thomas	FEMA RIX FEMA RI
Recovery Interagency Coordination Group - Day 3: San Luis Obispo County	*Alberto Sifuentes Dennis Wilford	FEMA RIX ICFI
Recovery Interagency Coordination Group - Day 3: Monterey County	*Ken Wierman	FEMA HQ
Recovery Interagency Coordination Group - Day 3: Santa Barbara County	*Jimmy Wortham	USDA/APHIS

APPENDIX B: ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
ARCA	Area(s) Requiring Corrective Action
CDPH	California Department of Public Health
CFCU	Containment fan cooling unit
C.F.R.	Code of Federal Regulations
DCPP	Diablo Canyon Power Plant
DHS	Department of Homeland Security
DIL	Derived Intervention Levels
EOP	Extent-of-Play
ERP	Emergency Response Plan
EW	Emergency Worker
EWEC	Emergency Worker Exposure Control
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FRMAC	Federal Radiological Monitoring and Assessment Center
IPX	Ingestion Phase exercise
IPZ	Ingestion Pathway Zone
JIC	Joint Information Center
KI	Potassium Iodide
L1	Level 1 Finding
L2	Level 2 Finding
NPP	Nuclear Power Plant
NRC	Nuclear Regulatory Commission
OES	Office of Emergency Services
OoS	Out-of-sequence
ORO	Off-site Response Organization
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PAU	Protective Action Unit
PAZ	Protective Action Zone
RAC	Regional Assistance Committee
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plans
RICG	Recovery Interagency Coordination Group
SDAC	State Dose Assessment Center
SDWA	Safe Drinking Water Act

Acronym	Meaning
SLO	San Luis Obispo
TLD	Thermoluminescent Dosimeter
U.S.	United States

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