10 CFR 50.90
10 CFR 50.54(q)

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102-07981-MLL/MDD
October 18, 2019

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3 and Independent Spent Fuel Storage Installation (ISFSI)**
Docket Nos. STN 50-528, 50-529, 50-530 and 72-44
Renewed Operating License Nos. NPF-41, NPF-51, NPF-74
License Amendment Request for Changes to Emergency Plan Staffing Requirements

Arizona Public Service (APS) is submitting a license amendment request (LAR) pursuant to the provisions of Section 50.90 of Title 10 of the Code of Federal Regulations (10 CFR), for PVNGS Units 1, 2, and 3 and related ISFSI, seeking approval of changes to the PVNGS Emergency Plan staffing requirements.

10 CFR 50.47(b) and 10 CFR 50, Appendix E, establish emergency planning standards that require: 1) adequate staffing, 2) satisfactory performance of key functional areas and critical tasks, and 3) timely augmentation of the response capability. APS is requesting Nuclear Regulatory Commission (NRC) approval of proposed changes to the Emergency Plan for PVNGS. The proposed changes would revise certain Emergency Response Organization (ERO) positions with the minimum staff ERO guidance specified in draft Revision 2 of NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.* The proposed changes have been reviewed considering the requirements of 10 CFR 50.47, *Emergency plans,* paragraph (b), 10 CFR 50 Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities,* and other applicable emergency preparedness NRC guidance documents.

An evaluation of the proposed changes pursuant to 10 CFR 50.54, *Conditions of licenses,* paragraph (q), *Emergency plans,* determined that the proposed changes result in a reduction in effectiveness of the Emergency Plan and, therefore, require prior NRC approval. A pre-submittal call was held with the NRC staff on July 11, 2019.

APS has concluded that the proposed changes present no significant hazards consideration under the standards set forth in 10 CFR 50.92, *Issuance of amendment.*

The proposed changes have been reviewed by the Plant Review Board in accordance with the requirements of the PVNGS Quality Assurance Program Description.

The Enclosure to this letter provides the APS evaluation of the proposed changes. Attachment 1 of the Enclosure contains marked-up pages of the current PVNGS Emergency

Plan. Attachment 2 of the Enclosure contains clean copy pages of the PVNGS Emergency Plan. Attachment 3 of the Enclosure contains an assessment of the ERO Minimum Staff and Full Augmented Staff Positions removed and Attachment 4 of the Enclosure contains documentation of the State of Arizona review of the proposed changes.

No new commitments are being made in this letter, however, APS will conduct a minimum staff drill at least once every drill cycle (8 years) and the State, NRC and Federal Emergency Management Agency (FEMA) will be provided the opportunity to observe, as described in the Enclosure.

APS requests that the changes be reviewed and approved within one year from the date of NRC acceptance review with implementation within six months following NRC approval.

If you have any questions about this request, please contact Michael D. DiLorenzo, Licensing Department Leader, at (623) 393-3495.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: October 18, 2019

Sincerely,

Lacal, Maria L(Z06149)

Digitally signed by Lacal, Maria L(Z06149)
DN: cn=Lacal, Maria L(Z06149)
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Enclosure: License Amendment Request – Changes to Emergency Plan Staffing Requirements

cc: S. A. Morris NRC Region IV Regional Administrator
S. P. Lingam NRC NRR Project Manager for PVNGS
C. A. Peabody NRC Senior Resident Inspector for PVNGS

Enclosure

License Amendment Request
Changes to Emergency Plan Staffing Requirements

Palo Verde Nuclear Generating Station, Units 1, 2 and 3 and ISFSI
Renewed Facility Operating License Nos. NPF-41, NPF-51 & NPF-74
(STN 50-528, STN 50-529, STN 50-530, and 72-44)

EVALUATION OF PROPOSED CHANGES

Subject: License Amendment Request for Changes to Emergency Plan Staffing Requirements

Supporting Attachments

Attachment 1 – Palo Verde Nuclear Generating Station Emergency Plan Marked-up Pages
Attachment 2 – Palo Verde Nuclear Generating Station Emergency Plan Clean Copy Pages
Attachment 3 – Assessment of ERO Minimum Staff and Full-Augmented Staff Positions Added and Removed
Attachment 4 – State of Arizona Review of Proposed Changes to Emergency Plan

1.0 SUMMARY DESCRIPTION

Title 10 of the Code of Federal Regulations (10CFR) Part 50.47(b) and 10 CFR 50, Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities,* establish emergency planning standards that require 1) adequate staffing; 2) satisfactory performance of key functional areas and critical tasks; and 3) timely augmentation of the response capability.

Arizona Public Service Company (APS) is requesting Nuclear Regulatory Commission (NRC) approval of a proposed revision to the Palo Verde Nuclear Generating Station (PVNGS) Emergency Plan. The proposed changes would revise certain Emergency Response Organization (ERO) positions in the PVNGS Emergency Plan. Specifically, the proposed changes would revise certain ERO positions in accordance with guidance specified in the *Alternative Guidance for Licensee Emergency Response Organizations,* finalized in a letter from the U.S. Nuclear Regulatory Commission (NRC) to the Nuclear Energy Institute (NEI), dated June 12, 2018 (Reference 6.15).

The proposed changes will also relocate the non-minimum staff ERO personnel from the PVNGS Emergency Plan to emergency preparedness implementing procedures (EPIPs).

The proposed changes have been reviewed considering the requirements of 10 CFR 50.47, *Emergency plans,* paragraph (b), 10 CFR 50 Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities,* and other applicable emergency preparedness NRC guidance documents. An evaluation of the proposed changes pursuant to 10 CFR 50.54, *Conditions of licenses,* paragraph (q), *Emergency plans,* determined that the proposed changes result in a reduction in effectiveness of the PVNGS Emergency Plan and, therefore, requires prior NRC approval.

As specified in this submittal, APS will conduct a minimum staff drill at least once every drill cycle (8 years) and the State, NRC and Federal Emergency Management Agency (FEMA) will be provided the opportunity to observe. The drill demonstrates that no loss of emergency planning (EP) function will result due to the proposed changes in the ERO. The drill will include each of the following emergency response facilities (ERF) described in the PVNGS Emergency Plan:

- Control Room/Satellite Technical Support Center (CR/STSC)
- Technical Support Center (TSC)
- Operations Support Center (OSC)
- Emergency Operations Center (EOC)
- Joint Information Center (JIC)

2.0 DETAILED DESCRIPTION

2.1 Proposed Changes

2.1.1 The content and format of the PVNGS Emergency Plan Table 1, *Minimum Shift Staffing for Emergencies,* will be revised to align with the draft NUREG-0654, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,* Revision 2, guidance. This includes revisions to the EP Functions and Major Tasks, as well as the Minimum Staff assigned to these areas. The proposed changes will result in a reduction of some designated Minimum Staff responders and the relocation of the Full-Augmented Staff from the Emergency Plan to the EPIPs, consistent with the draft NUREG-0654, interim use Revision 2, guidance (Reference 6.1).

The specific wording changes are provided in Attachments 1 and 2 of this enclosure as marked-up and clean copy Emergency Plan pages, respectively. Attachment 3 contains the

assessment of the Minimum Staff and Full-Augmented Staff added and removed from the PVNGS Emergency Plan. Attachment 4 of the License Amendment Request contains information related to the review of the proposed changes by the State of Arizona.

2.1.2 The justification for the staff augmentation times included in this request is based on the current Emergency Plan. In 1993, the NRC was requested to approve Revision 13 of the Emergency Plan (Reference 6.12) which provided the rationale for an augmentation time of 60 minutes during normal working hours and 120 minutes during off normal hours. In 1994, the NRC granted approval for that change (Reference 6.13). The NRC used that same timeframe in the Safety Evaluation dated March 19, 2004 (Reference 6.14), that approved the change in the number of Shift Technical Advisors on-shift. The rationale for the timeframe remains valid today. The following information supports the continuation of the timeframe.

- The PVNGS remote location and property size makes 60 and 90 minute augmentation times a challenge.
- By allowing the 120 minutes off-hour augmentation time, a sufficiently sized ERO exists resulting in an increased number of ERO responders and improved response.
- Most employees at PVNGS live within the existing 120 minute off-hour response time as a condition of employment. Changing the response time would result in an undue burden on the ERO.
- The entire ERO, including the JIC, is activated for an Alert or higher Emergency Classification Level (ECL).
- APS continues to use an "all call" augmentation response where the entire ERO is called out at the Alert level, in addition to the designated duty team.
- Additional resources to support the following functions remain in place during the first 60/120 minute augmentation time:
  - Command and Control:
    - Augmented Command and Control assistance to the affected Unit Shift Manager in the form of two on-shift Shift Managers/Emergency Coordinators from the unaffected Units.
    - Shift Managers, Control Room Supervisors and Shift Technical Advisors are all trained to the Emergency Coordinator position.
  - Radiation Protection:
    - Additional Radiation Protection support for onsite and offsite field monitoring is available if needed.
    - Dose Assessment and Radiation Protection leadership available on shift.
  - Repair Teams:
    - The number of plant equipment operators on site (12, 4 per unit) allows for support of operations and maintenance critical activities during the 120 minute augmentation time.
    - One mechanic, one electrician and one Instrumentation and Controls (I&C) technician to support critical maintenance activities during the first 60/120 minute augmentation time.
  - Communications:
    - Offsite communications to State and Local government and the NRC
  - Engineering Support:
    - Unaffected unit Shift Technical Advisor.
  - Security Leadership to support the callout process

The technical basis for draft NUREG-0654, Revision 2, Table B-1, *Minimum Staffing*, states that having three (3) Radiation Protection (RP) Technicians on-site for a three unit plant, to perform the Radiation Protection function of in-plant surveys and accessing radiologically controlled areas, is appropriate. The technical basis also describes augmenting those three in 60 minutes following the declaration of an Alert or higher ECL with three more, and an additional three at 90 minutes. The PVNGS proximity to the employee base challenges those response times. The proposed staffing in the amendment request still assures the necessary EP functions are able to be performed, but at the response times currently in the Emergency Plan. The results of an updated on-shift staffing analysis support that conclusion.

As a result, APS has elected to maintain the on-shift Radiological EP functions of in-plant surveys, job coverage and accessing radiologically controlled areas with the three RP technicians on-shift but supplementing those resources with an additional Radiation Monitoring Technician (RMT) or RP Technician (RPT) to be used for either onsite out of plant or offsite field monitoring. An additional field monitoring team will be part of the augmented ERO at 60 minutes during normal hours or 120 minutes off-hours.

2.1.3 On-Shift ERO Revision Summary

The PVNGS on-shift staff will align with the guidance specified in draft Revision 2 of NUREG-0654 as follows. The proposed changes to the PVNGS Emergency Plan, Table 1, for the on-shift ERO will be revised accordingly.

- The on-shift Chemistry EP Function is revised to be a collateral function and not included as part of the on-shift ERO staffing.

- The designated number of Fire Brigade personnel (six including the Fire Team Advisor) will be removed and the Table will be annotated stating the Function will be controlled per the Fire Protection Program (FPP).

- The First Aid and Rescue EP function is removed from the Table.

- The total number of on-shift RP technicians will be increased to four to support on-site out of plant and off-site field monitoring until augmentation; however, the assignment to specific EP Functions and Major Tasks is revised to align with the draft NUREG-0654, Interim use Revision 2, guidance.

- The number of on-shift maintenance technicians will be increased to one mechanical, one electrical and one I&C technician to support critical maintenance activities that would have normally been augmented at the 60 minute timeframe.

Table 1 below identifies the current and proposed PVNGS on-shift minimum ERO staffing positions for each EP Function identified in the draft NUREG-0654, Revision 2, guidance.

An on-shift staffing analysis utilizing the guidance and methodology in NEI 10-05, *Assessment of On-Shift Emergency Response Organization Staffing and Capabilities,* concluded that the proposed changes did not result in conflicting duties for on-shift ERO personnel.

Table 1 - Current and Proposed PVNGS On-Shift Minimum ERO Staffing Positions for Each EP Function

EP Function	Current On-Shift Minimum Staff Positions	Proposed On-Shift Minimum Staff Positions
Command and Control	(1) Shift Manager/Emergency Coordinator	(1) Shift Manager/Emergency Coordinator
Communications	(2) Shift Communicators (NRC and State/Local)	(2) Shift Communicators (NRC and State/Local)
Radiation Protection (RP) (includes RP protection coverage, in-plant surveys, access control and field monitoring)	(3) RP Technicians (1) RFAT Driver Current RP Technicians include: (1) RP Technician (1) Radiation Monitoring Technician (1) Survey Qualified Technician	(4) RP Technicians (1) RFAT Driver
In Plant Protective Actions	(3) RP Technicians	None specified
Supervision of RP	(1) RP Monitor (Collateral duty)	(1) RP Monitor/Group Leader (Collateral duty)
Dose Assessment	(1) RP Monitor (Collateral duty)	(1) RP Monitor/Group Leader (Collateral duty)
Radiological Assessment/Chemistry	(2) Chemistry Technicians	None specified
Emergency Classifications	None specified	(1) Affected Unit Shift Technical Advisor (Collateral duty)
Engineering	(1) Unaffected Unit Shift Technical Advisor (STA) (Collateral duty)	(1) Unaffected Unit Shift Technical Advisor (STA) (Collateral duty)
Security	(1) Security Director and response resources per the Security Plan	(1) Security Director and response resources per the Security Plan
Repair Team Activities	(12) Plant Equipment Operators (Collateral Duty) (2) Mechanical Technicians (3) Electrical Technicians (1) I&C Technicians	(12) Plant Equipment Operators (Collateral Duty) (1) Mechanical Maintenance Technician (1) Electrical Maintenance Technician (1) I&C Maintenance Technician
Supervision of Repair Team Activities	(1) Shift Manager/Emergency Coordinator	(1) Shift Manager/Emergency Coordinator
Fire Fighting/Fire Brigade	(5) Fire Team Members (1) Fire Team Advisor	Per the Fire Protection Program
First Aid/Rescue Operations	(2) Fire Team Members (Collateral duty)	None specified

2.1.4 Minimum Staffing

The PVNGS Minimum Staff ERO is revised to be consistent with the draft NUREG-0654, Revision 2, guidance with some exceptions that include:

- No Technical Support Center (TSC) Dose Assessor. This is deemed to be acceptable because the PVNGS Emergency Operations Facility (EOF) is activated earlier than required by the draft NUREG-0654 guidance for escalating events. The TSC Dose Assessor is not considered necessary because the PVNGS EOF will activate at 60 minutes of an Alert or higher ECL during normal working hours (120 minutes off-hours), consistent with NRC Safety Evaluation dated March 19, 2004 (Reference 6.14), and will include an EOF Dose Assessment Health Physicist as Minimum Staff.

- The on-site Radiological Field Assessment Team (RFAT) may be used offsite and includes a RFAT driver.

The following ERO positions will be added to the PVNGS Emergency Plan as Minimum Staff consistent with the draft NUREG-0654, Revision 2, guidance:

- TSC Operations Manager (EAL Advisor) (Augmented)
- Operations Support Center (OSC) Manager (Augmented)
- Two OSC Repair Team Coordinators (Augmented)
- OSC RP Group Leader (Augmented)
- Dose Assessment Health Physicist (Augmented)
- Joint Information Center (JIC) Manager (Augmented)

The following ERO support positions will no longer be included in the PVNGS Emergency Plan and will be designated as Full-Augmented Staff. The Full-Augmented ERO will be managed under an EPIP consistent with the draft NUREG-0654, Revision 2, guidance.

On-shift	TSC	OSC	EOF	JIC
On-Shift Chemistry Technicians	Emergency Coordinator Technical Assistant	Administrative Support	Administrative & Logistics Coordinator	Video/Photo Coordinator
Fire Team including Fire Team Advisor	Chemistry Coordinator	ERF Communicator	Assistant Emergency Operations Director	Research/Writing Coordinator
Security	Administrative Support		Engineering Director	Spokesperson Coordinator
	Emergency Response Facility (ERF) Communicator		Health Physics Network (HPN) Communicator	Distribution Services Coordinator
	Maintenance Manager		Information Services (IS) Manager	ERF Communicator
	Satellite Technical Support Center (STSC) Operations Advisor		Radiological Assessment Communicator	Palo Verde Spokesperson
	Engineering Manager		Administrative Support	
			ERF Communicator	
			Security Manager	

The following positions will be reduced in number and no longer required on-shift consistent with the draft NUREG-0654, Revision 2, guidance. Additional resources will be called out, as needed.

- Electrical Technicians – Reduction of two (2) Electrical Maintenance Technician positions
- Mechanical Technician – Reduction of one (1) Mechanical Maintenance Technician position
- RP Technician – Reduction of two (2) on-shift RP Technician positions
- Chemistry Technician – Removed on-shift technicians from Emergency Plan and placed the TSC Chemistry Coordinator as a Full-Augmented position
- Removed EOF Engineering Director from minimum staffing and placed as a Full-Augmented position.

The PVNGS minimum ERO staff positions (On-shift and Augmented) are being revised as follows:

Function	Current Revision	Proposed Revision	Comment
Command and Control	• (1) Shift Manager/Emergency Coordinator[1] • (1) TSC Emergency Coordinator (Augmented) • (1) EOF Emergency Operations Director (Augmented)	• (1) Shift Manager/Emergency Coordinator[1] • (1) TSC Emergency Coordinator (Augmented) • (1) EOF Emergency Operations Director (Augmented)	No change
Plant Operations*	• (1) Control Room Supervisor (per Unit) • (2) Control Room Operators (per Unit) • (2) Shift Technical Advisors (Per Site/Collateral Duty)	• (1) Control Room Supervisor (per Unit) • (2) Control Room Operators (per Unit) • (2) Shift Technical Advisors (Per Site/Collateral Duty)	No change *Not described in draft NUREG-0654, Revision 2
Communications	• (1) STSC Communicator[1] • (1) STSC ENS Communicator[1] • (1) EOF NAN Communicator (Augmented) • (1) TSC ENS Communicator (Augmented)	• (1) STSC State and Local Communicator[1] • (1) STSC NRC Communicator[1] • (1) EOF State and Local NAN Communicator (Augmented) • (1) TSC NRC Communicator (Augmented) • Communicators as needed	No change
Repair Team Activities	• (12) Plant Equipment Operators • (2) Mechanical Technician (OSC) • (3) Electrical Technician (OSC) • (1) I&C Technician (OSC)	• (12) Plant Equipment Operators[1] • (1) Mechanical Maintenance Technician[1] • (1) Electrical Maintenance Technician[1] • (1) I&C Maintenance Technician[1] • (1) OSC Mechanical Maintenance Technician (Augmented) • (1) OSC Electrical Maintenance Technician (Augmented) • (1) OSC I&C Maintenance Technician (Augmented) • OSC Maintenance Technicians as needed	• Reduced (1) Mechanical/(2) Electrical Maintenance Technicians from OSC on-shift minimum staff

Function	Current Revision	Proposed Revision	Comment
Supervision of Repair Team Activities	• (1) Shift Manager/Emergency Coordinator	• (1) Shift Manager/Emergency Coordinator • (1) OSC Manager (Augmented) • (2) OSC Repair Team Coordinators (Augmented) • (1) OSC RP Group Leader (on-shift Radiation Protection Monitor/RP Group Leader)	Added to Emergency Plan minimum staff • (1) OSC Manager (augmented) • (2) OSC Repair Team Coordinators (Augmented)
Radiation Protection/Field Monitoring	• (3) Radiation Protection Technicians (OSC) • (1) RFAT Driver • (1) Radiation Protection Monitor[1] (performed from Control Room until TSC and EOF are manned, then transition to OSC)* • (1) Radiation Protection Technicians or Radiation Monitoring Technician • (1) Survey Qualified Position • (1) Radiation Monitoring Technician • (2) Chemistry Technicians • (6) Radiation Protection Technician (Augmented)	• (4) Radiation Protection Technicians (OSC) • (1) RFAT Driver • (1) Radiation Protection Monitor/RP Group Leader[1] (performed from Control Room until TSC and EOF are manned, then transition to OSC RP Group Leader) • (6) Radiation Protection Technicians (OSC) (Augmented)	• Reduced on-shift RP from 8 to 6 • Eliminated (2) Chemistry Technicians from on-shift minimum staff • No change to augmented position *Collateral Duty between RP supervision and dose assessment
Radiation Protection Supervision	• (1) Radiation Protection Monitor[1] (performed from Control Room until TSC and EOF are manned, then transition to OSC)* • (1) TSC Radiation Protection Coordinator (Augmented)** • (1) EOF Radiological Assessment Coordinator (RAC) (Augmented)**	• (1) Radiation Protection Monitor/RP Group Leader[1] (performed from Control Room until TSC and EOF are manned, then transition to OSC RP Group Leader)* • (1) TSC Radiation Protection Coordinator (Augmented) • (1) EOF Radiological Assessment Coordinator (RAC) (Augmented)	No change *Collateral Duty between RP supervision and dose assessment **Not in PVNGS Emergency Plan Table 1
Dose Assessment	• (1) Radiation Protection Monitor[1] (performed from Control Room until TSC and EOF are manned)* • (1) EOF Radiological Assessment Coordinator (Augmented)**	• (1) Radiation Protection Monitor/RP Group Leader[1] (performed from Control Room until TSC and EOF are manned)* • (1) EOF Dose Assessment Health Physicist (Augmented)	Added Dose Assessment Health Physicist to minimum staff in EOF *Collateral Duty between RP supervision and dose assessment **Not in PVNGS Emergency Plan Table 1

Function	Current Revision	Proposed Revision	Comment
Emergency Classification	• (1) Affected Unit Shift Technical Advisor[1]	• (1) Affected Unit Shift Technical Advisor[1] • (1) TSC Operations Manager (Augmented)	No change **Affected Unit Shift Technical Advisor is not in the current PVNGS Emergency Plan Table 1
Engineering	• (1) Unaffected Unit Shift Technical Advisor[1] (Core/Thermal Hydraulics) • (1) TSC Electrical Engineer (Augmented) • (1) TSC Mechanical Engineer (Augmented) • (1) TSC Reactor Analyst (Core/Thermal Hydraulics) (Augmented) • (1) EOF Engineering Director (Augmented)	• (1) Unaffected Unit Shift Technical Advisor[1] (Core/Thermal Hydraulics) • (1) TSC Electrical/I&C Engineer (Augmented) • (1) TSC Mechanical Engineer (Augmented) • (1) TSC Reactor Analyst (Core/Thermal Hydraulics) (Augmented)	Eliminated EOF Engineering Director from minimum staff
Joint Information Center	• None specified	• Communications resources to address media concerns until JIC manned. (not required in facility) • (1) Joint Information Center Manager (Augmented)	New addition but no additional resources needed.
Fire Team	• (5) Fire Protection/Emergency Medical Technicians • (1) Fire Team Advisor	• Per Fire Protection Program	No reduction in personnel, relocation of requirement
Security	• (1) Security Director (located in TSC) • Per Security Plan	• (1) Security Director (located in TSC) • Per Security Plan	No change
Offsite Fire Support	• Response within 45 minutes	Not required	No position associated with task
Offsite Medical Support	• Response within 45 minutes	Not required	No position associated with task

[1] May be performed by other positions as long as there are no collateral duties assigned to that position that impact the performance of that position.

2.1.5 Full-Augmented Staff

The description of the Full-Augmented Staff contained in the PVNGS Emergency Plan will be relocated to an EPIP. The PVNGS Full-Augmented Staff will continue to be notified to respond at an Alert or higher ECL at the same time as the Minimum Staff personnel; however, the Full-Augmented ERO response is not required to activate the Emergency Response Facility (ERF). Below is a list of each position described in the current PVNGS Emergency Plan and the disposition as it relates to the proposed Emergency Plan.

Position	Response Time	Disposition
Technical Support Center (TSC)		
Emergency Coordinator	Augmented	Minimum staff position/no change
Emergency Coordinator Technical Assistant	Augmented	Position relocated to EPIP
Operations Manager	Augmented	Minimum staff position/no change
Engineering Manager	Augmented	Position relocated to EPIP
NRC Communicator	Augmented	Minimum staff position/no change
Maintenance Manager	Augmented	Position relocated to EPIP
Mechanical Engineer	Augmented	Minimum staff position/no change
Electrical/I&C Engineer	Augmented	Added as minimum staff
Operations Advisor (STSC)	Augmented	Position relocated to EPIP
Radiation Protection Coordinator	Augmented	Added as minimum staff
Chemistry Coordinator	Augmented	Position relocated to EPIP
Reactor Analyst	Augmented	Minimum staff position/no change
Security Director	On-Shift	Minimum staff position/no change
ERF Communicator	Augmented	Position relocated to EPIP
Administrative Support	Augmented	Position relocated to EPIP
Emergency Operations Facility (EOF)		
Emergency Operations Director	Augmented	Minimum staff position/no change
Assistant Emergency Operations Director	Augmented	Position relocated to EPIP
Engineering Director	Augmented	No longer minimum staff, position relocated to EPIP
Dose Assessment Health Physicist	Augmented	Added to minimum staff
Radiological Assessment Coordinator	Augmented	Added as minimum staff
ERF Communicator	Augmented	Position relocated to EPIP
HPN Communicator	Augmented	Position relocated to EPIP
Information Services Manager	Augmented	Position relocated to EPIP
State and Local NAN Communicator	Augmented	Minimum staff position/no change
Radiological Assessment Communicator	Augmented	Position relocated to EPIP
Security Manager	Augmented	Position relocated to EPIP
Administrative and Logistics Coordinator	Augmented	Position relocated to EPIP
Administrative Support	Augmented	Position relocated to EPIP
Joint Information Center (JIC)		
Joint Information Center Manager	Augmented	Added as minimum staff
Palo Verde Spokesperson	Augmented	Position relocated to EPIP
Spokesperson Coordinator	Augmented	Position relocated to EPIP
Distribution Services Coordinator	Augmented	Position relocated to EPIP
ERF Communicator	Augmented	Position relocated to EPIP
Research/Writing Coordinator	Augmented	Position relocated to EPIP
Video/Photo Coordinator	As Needed	Position relocated to EPIP

Position	Response Time	Disposition
Operations Support Center (OSC)		
OSC Manager	Augmented	Position reclassified as minimum staff
Repair Team Coordinators	Augmented	Position reclassified as minimum staff (two required)
RP Group Leader	Augmented	Minimum staff position [Relocated from Radiation Protection Monitor (RPM) in Control Room once EOF/TSC manned]
Administrative Support	Augmented	Position relocated to EPIP
ERF Communicator	Augmented	Position relocated to EPIP
Mechanical Maintenance Technician	Augmented	Minimum staff position/no change
Electrical Maintenance Technician	Augmented	Minimum staff position/no change
I&C Maintenance Technician	Augmented	Minimum staff position/no change
RP Technicians	Augmented	Minimum staff position/no change

2.2 Reason for the Proposed Changes

The PVNGS Emergency Plan is being revised to align with the recently issued draft NUREG-0654, Revision 2, guidance. The revision to the draft NUREG-0654 guidance reflects changes to NRC regulations, guidance, and policies, as well as advances in technology and best practices that have occurred since the NUREG guidance was originally issued in November 1980. The NRC issued a letter to the Nuclear Energy Institute in June 2018 endorsing the use of Table B-1, *Emergency Response Organization (ERO) Staffing and Augmentation Plan.*

2.3 Palo Verde Nuclear Generating Station Emergency Plan Background

PVNGS (Units 1, 2 and 3) is located west of Phoenix, Arizona. The plant consists of a single site with three Pressurized-Water Reactors (PWRs). The Facility Operating License (FOL) for Unit 1 was issued on June 1, 1985, and renewed on April 21, 2011; the FOL for Unit 2 was issued April 24, 1986, and renewed on April 21, 2011; and the FOL for Unit 3 was issued November 25, 1987, and renewed on April 21, 2011.

The PVNGS Emergency Plan provides direction and guidance through EPIPs, and associated program administrative documents. The Emergency Plan outlines the basis for response actions that would be implemented in an emergency. The Emergency Plan establishes the concepts, evaluation and assessment criteria, and protective actions that are necessary to limit and mitigate the consequences of potential or actual radiological emergencies.

2.3.1 Palo Verde Nuclear Generating Station Emergency Plan, Revision 3

The PVNGS original Emergency Plan SER was issued in NUREG 0857 - *Safety Evaluation Report - related to the operation of Palo Verde Nuclear Generating Station: Units 1, 2, and 3*, and the Supplements culminating in 1984. The SER contained multiple supplements associated with the Emergency Planning function. This corresponded to Revision 5 of the shared Station Emergency Plan that closed out all of the outstanding licensing conditions identified in NUREG 0857. The final Safety

Evaluation Report (removing the initial licensing conditions) was not issued until later in October of 2000.

Revision 3 of the Emergency Plan lists all positions in the ERO and did not clearly differentiate minimum staff positions. In subsequent revisions, a clear list of the positions that correspond with draft NUREG-0654, Table B1, was put in the Emergency Plan.

2.3.2 Regional Acceptance Letter, dated October 1994, documented NRC review of Revision 14 of the PVNGS Emergency Plan regarding the emergency response organization. Regional Acceptance Letter, dated April 1995, documented NRC review of Revision 15 of the PVNGS Emergency Plan. This revision approved changes to the emergency response organization.

2.3.4 *PVNGS Units 1, 2, and 3 - Emergency Plan change to reduce the number of Shift Technical Advisors in Emergency Response Organization Staffing*, dated March 19, 2004, removed one of three STAs and listed the emergency response positions as it referenced the changes to Revision 27 of the Emergency Plan.

2.4 Minimum and Full-Augmented Staffing as discussed in the PVNGS Emergency Plan

The PVNGS Emergency Plan designates two types of augmented ERO responders. Those designated as Minimum Staff and Full-Augmented Staff. Minimum Staff are those key ERO responders needed to relieve the on-shift staff of key EP functions/tasks required in response to the emergency. Those key functions and associated tasks are identified in NUREG-0654, Section II.B. Evaluation Criterion 5 of Section II.B of NUREG-0654/FEMA-REP-1, Revision 1, states in part:

> *Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.*

Those ERO positions designated as Minimum Staffing in the PVNGS Emergency Plan are those required to activate their respective ERF. Specifically, these are the ERO positions that are the minimum needed to implement the Emergency Plan (i.e., if any position or function is not staffed then the Emergency Plan may not be effectively implemented). These positions, in most cases, are required to respond to their respective ERF within 60 minutes of the declaration of an Alert or higher during normal working hours and within 120 minutes during off normal hours, as described in Safety Evaluation dated March 19, 2004.

The positions which are considered Full-Augmented Staff (i.e., Non-Minimum Staff) are those positions which provide support for the Minimum Staff in their response to the emergency. While some Full-Augmented positions were historically described in the PVNGS Emergency Plan, they were only added to Section 4.2.2 through 4.2.4, at the time of the initial licensing.

As described in the PVNGS Emergency Plan, these Full-Augmented positions consist of liaisons, coordinators, and additional communicators which help facilitate communication and the emergency response effort over time, but are not directly needed to implement the functions/tasks identified in draft NUREG-0654, Table B-1. The list of Full-Augmented positions and their current assigned tasks are listed in Attachment 3.

2.5 EOF Activation as discussed in the PVNGS Emergency Plan

The draft NUREG-0654, Revision 2, guidance establishes that the EOF facility activate within 60 minutes of a Site Area Emergency (SAE) or greater ECL. APS has elected to activate the EOF within 60 minutes of an Alert or higher ECL. By establishing the EOF at the Alert level, certain EP functions such as dose assessment and State/Local communications can be established once operational following the Alert classification at the EOF (once operational) and need not be duplicated at the TSC. In addition, due to the remote location of the site, APS had sought and gained approval to augment the ERO off-hours within 120 minutes following an Alert or higher ECL.

Additionally, for the activation of the ERFs at the Alert or higher ECL, the augmented resources are readily available during normal working hours. In essentially all circumstances, the ERF staff is onsite and the 60 minute augmentation time allows for EOF staffing from station personnel. This timeframe was approved by the NRC on February 25, 1994, and the approval referenced in NRC Safety Evaluation dated March 19, 2004.

The turnover of Command and Control of EP functions will occur through a conference line between the Control Room (CR), TSC, and EOF. In this manner, there will be no delay in transferring functions such as Emergency Action Level (EAL) classifications, State/Local Notifications, Protective Action Recommendations (PARs), and Emergency Exposure Control from the CR to the respective ERF (i.e., TSC or EOF), once operational.

2.6 ERO Performance Validation

As part of the development of this amendment request, APS conducted a drill to assess the capabilities of the final Minimum Staff personnel. The drill was used to demonstrate that there was not a loss of function due to the changes in the ERO. The drill was critiqued and the issues identified during the drill were entered into the corrective action program. No issue was identified that impacted this submittal. In addition to validating the change, following approval of this license amendment, PVNGS will conduct a minimum staff drill to ensure that the designated minimum staff is adequate to perform the necessary functions needed to respond to an emergency until the ERO is fully augmented. A minimum staff drill will be conducted at least once every drill cycle (8 years) and the State, NRC and Federal Emergency Management Agency (FEMA) will be provided the opportunity to observe.

2.7 On-Shift Staffing Analysis (OSA)

Regulatory Issue Summary (RIS) 2016-10, *License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation,* states that an on-shift staffing analysis under 10 CFR 50, Appendix E, Section IV.A.9 should not be used to provide the primary basis to support the Technical Evaluation of a License Amendment Request (LAR). The OSA however may be utilized as part of the overall evaluation of staffing changes. The RIS states:

…an evaluation performed using only the guidance of NEI 10-05 does not satisfy the requirement to identify and evaluate changes to ERO augmentation timing or ERO augmentation staffing that reduces the capability to perform an emergency planning function.

In conjunction with this License Amendment Request, APS validated the results of the OSA performed under 10 CFR 50, Appendix E, Section IV.A.9. The results are used to support the conclusions made in this LAR for on-shift staffing; however, APS understands the OSA comprises a select set of identified scenarios and should not be used as the sole basis for the conclusions in the Technical Evaluation.

The PVNGS OSA is considered part of the station Emergency Plan and is maintained as a stand-alone document referenced in the Emergency Plan. The PVNGS On-Shift Staffing Technical Basis has been docketed as part of the PVNGS Emergency Plan under this title.

The changes submitted have been evaluated under the requirements of 10 CFR 50, Appendix E, Section IV.A.9, and have been found consistent with the OSA evaluation currently in place.

3.0 TECHNICAL EVALUATION

The evaluation of the proposed changes is discussed below.

3.1 Technical Advancements and Support

The following section discusses technical changes in plant systems, procedures, EP equipment/programs and training which have been completed to better support ERO functions, ease operator burden and improve augmented staff efficiency. The following discussion describes the improvements implemented since the last revision of NUREG-0654 staffing guidance.

3.1.1 Plant Monitoring

The PVNGS Plant Monitoring provides for real time monitoring and trending of plant parameters. There are three Monitoring Systems, briefly described below.

Plant Monitoring System (PMS)

Plant Monitoring consists of two subsystems:

- Plant Computer (PC)
- Core Monitoring Computer (CMC)

The plant computer provides monitoring, alarming and logging functions normally associated with the nuclear steam supply system and balance of plant. The core monitoring computer provides a reactor core status monitoring capability redundant to that provided by the plant computer. The system, as a whole, provides the plant operator with a continuous, comprehensive source of plant information, including monitoring, displaying, alarming and logging of plant parameters. The plant monitoring system also performs certain controlling functions and performance calculations.

The CMC performs the core operating limit supervisory system (COLSS) function, processes

incore detector signals and monitors control element assembly (CEA) positions. The PC provides complete redundancy for these functions.

There are a total of eight control board/operator consoles available for display of information in each Control Room

The consoles use a Windows based computer system using a standard point and click Human Machine Interface (HMI) to navigate around the system. Allowing for familiarity and ease of navigation

Five selectable dual pen chart recorders are available for Operator selected point trending in addition to trending on monitors

The plant computer alarm program provides messages for analog inputs, digital inputs, and calculated values that are in alarm.

The post-trip review program runs on the PC providing the ability to review data immediately prior to a reactor trip and following the trip

This PC program provides a sequence of events recorder for points closely related to the tripping of the reactor.

Emergency Response Facility Data Acquisition and Data Display System (ERFDADS)

ERFDADS provides display, trending and alarm functions on plant parameters
The trends are built into pre-built displays and custom trending is available to the plant operators and Emergency Response Organization in the Unit Control Rooms (CR), Satellite Technical Support Centers (STSC) and Technical Support Center (TSC).

ERFDADS supports two subsystems:
Safety Parameter Display System (SPDS)
Emergency Response Data System (ERDS)

Parameters displayed by the SPDS and ERFDADS are the quantitative and qualitative measures to indicate the accomplishment or maintenance of critical safety functions. Information needed to assess the status of the plant safety parameters is obtained by the measurement of key plant variables. The safety parameters utilized to assess the maintenance or accomplishment of the critical safety functions as required by NUREG-0737, Supplement 1, Section 4 are:

1. Reactivity control
2. Reactor core cooling and heat removal
3. Reactor coolant system integrity
4. Containment conditions
5. Radiation control

ERFDADS is also able to display and trend the full range of Plant Computer points. The SPDS and ERFDADS provide a concise display of critical plant variables to the CR personnel to aid them in rapidly and reliably determining the safety status of the plant. The SPDS and ERFDADS are operated during normal plant operations, as well as during abnormal and emergency conditions. The principal purpose and function is to aid the

CR personnel during abnormal and emergency conditions in determining the safety status of the plant.

In general, the ranges of parameters monitored by the SPDS and ERFDADS are identical to those ranges monitored by existing control room instrumentation. Ranges displayed by the SPDS/ERFDADS are adequate to cover plant responses analyzed in the Updated Final Safety Analysis Report (UFSAR) Chapter 15*, Accident Analysis.*

Plant Information System (PI)

The PI process book is a powerful digital display system that allows display of points from ERFDADS (and thus the plant computer) as well as other points such as Operations logged points. There are approximately 25,000 points from each Unit as well as about 10,000 common Unit points available.

There are multiple pre-built displays including one that is used to display a plant overview for Emergency event classification purposes. Custom built displays and trends are readily built and used by the plant operators. The PI points can be used to establish triggers at which employees can be automatically notified via email or text. The PI is the system by which the ERDS data is transmitted offsite.

The full range of PI capabilities is available in the Emergency Operations Facility (EOF) and on any PVNGS connected PC on-site or at the EOF. Many key employees are also able to access PI via mobile devices remotely. Benefits of the current level of computer capabilities include:

- Improved plant monitoring capability for emergency functions.
- Real time plant data available through graphical displays.
- Pl functions available to any desktop computer through the plant's site-wide network and EOF.
- Programming capability for automated response such as indication of critical parameter alarms.
- Easier interface when switching between graphical displays.
- The Shift Manager has improved plant monitoring capability to support EC function.
- Data manipulation functions, such as plotting information graphically or recovering historical data, require fewer key strokes and are more easily performed.
- The increased capabilities of Digital Monitoring Systems have enhanced timeliness of monitoring and assessing plant conditions.

In aggregate, these improvements support the proposed change in ERO staffing by ensuring that major functions and tasks are completed more easily with less burdens on the Control Room staff.

3.1.2 Dose Assessment

Radiological dose assessment has benefited from technological advances that make its use simpler and less time consuming. In 1987, APS used the DOS-based computer program MESOREM. MESOREM required manual entry of plant parameters in order to perform a dose assessment. In 2004, a MESOREM adjustment spreadsheet was created to accommodate

the PVNGS Steam Generator replacements and power uprates. This required additional calculations.

In 2007, APS switched to a Windows based computer program called RADDOSE. RADDOSE was designed to allow a timely dose assessment by on-shift staff. This was done by minimizing the required number of menu navigation commands and allowing plant data to be directly imported into the software program. In addition, existing human performance traps in MESOREM were eliminated.

APS is currently undertaking a dose assessment software improvement program where Unified RASCAL Interface (URI) is being incorporated. The current project plan reflects implementation complete in the first half of 2020. Improvements will be made to the dose assessment capability within the Control Room and Emergency Operations Facility allowing for a rapid calculation capability as well as a more refined calculation. Unified RASCAL Interface will have the capability to use automated and manual entry.

The overall improvements in technology and information availability over the years have enabled the on-shift staff to assess plant conditions quickly and efficiently, and with less distraction than before. The computing power of modern computer processors allow for calculation of dose projections within seconds.

3.1.3 Automated Call-Out Systems

Enhancements in automated call-out and paging systems have resulted in streamlined processes for activation of the ERO. The ERO activation can occur through a Web-based or phone-based system to initiate rapid notification of ERO members in lieu of individual calls to fill the individual ERO positions included in the current PVNGS Emergency Plan. The system includes a primary activation system as well as back-up capability to ensure uninterrupted operation.

3.1.4 Procedural Improvements

a. Emergency Operating Procedures (EOPs)

Since the original Emergency Plan approval, EOPs have been improved through industry initiatives. EOPs generally use a symptom-based approach that demands less assessment and interpretation of plant conditions by the crew. In addition, the EOPs are better human factored, and have an improved layout allowing for more consistent implementation.

The EOPs interface well with new technology such as the process protective cabinet (PPC). The PPC system is capable of graphically displaying plant conditions to assist in EOP execution.

Abnormal Operating Procedures (AOPs) also contain directional steps for when a review of the classification procedure is required to determine potential classifiable conditions. This prompts the user to identify applicable EALs.

b. Emergency Action Levels (EAL)

In 2017, APS updated the classification methodology to that published in NEI 99-01, Revision 6, *Development of Emergency Action Levels for Non-Passive Reactors.* The current PVNGS EALs incorporate the new guidance that has simplified the classification process,

including the use of a matrix of EAL initiating conditions that streamlines the process of evaluating EAL against plant conditions. The incorporation of radiological setpoints used in the classification has improved the ability to timely classify the emergency based on radiological conditions in lieu of waiting for a dose assessment result.

3.1.5 Training

a. Operations Training

Training is used to strategically drive improved performance at PVNGS. Since NRC approval of the PVNGS Emergency Plan, the Systematic Approach to Training (SAT) has resulted in developing a task list for Operations personnel. The SAT process ensures training is conducted to industry-accepted standards, and has led to accreditation of the Operations Training Programs by the Institute of Nuclear Power Operations (INPO) National Academy for Nuclear Training.

A dynamic simulator is routinely used during Operations training. "As found" simulator evaluations that include emergency response scenarios are part of the requalification segment. Simulator scenarios are designed to be realistic and reflect a wide range of plant conditions, including emergency conditions. During the simulator evaluated sessions the control room staff is typically taken from normal operations to accident conditions resulting in the declaration of at least one event which can range from a Notice of Unusual Event (UE) up to a General Emergency (GE). The Operations crew performs critical functions, such as classification, core damage assessment, accident mitigation, response prioritization, and communications without augmentation from additional responders. The proficiency of the control room staff to perform these functions while maintaining situational awareness, without additional support is assessed during evaluated simulator sessions.

The licensed operator continuing training (LOCT) Program includes licensed Operations crew performance evaluations that are to consider the scenario guidance attributes of *Institute of Nuclear Power Operations* (INPO) Operations Department Standing Instruction, ODSl-3, *Operations Department Guidance for Conducting Crew Performance Evaluations.*

INPO ODSI 3, *Operations Department Guidance for Conducting Crew Performance Evaluations*, provides guidance on the realistic integration of the emergency response into crew performance evaluations. The purpose is to ensure the additional challenges the emergency plan responsibilities add to the crew's ability to manage an event are realistically represented in the crew performance evaluations. Representing the event as realistically as possible, which includes the additional challenges of emergency plan responsibilities, helps promote the situational awareness necessary during a real event.

b. Shift Technical Advisor (STA) Training

The STA was originally trained as an advisor to the operating shift per NUREG-0737, *Clarification of TMI Action Plan Requirements.* In 2014, additional guidelines were developed by INPO for the training of STAs. This is detailed in the document ACAD 14-002, *Guidelines for the Training and Qualification of the Shift Technical Advisor.*

The ACAD 14-002 guidelines describe the role of the STA. The STA performs independent assessments of plant operating concerns, technical support, appropriate corrective actions, analysis of events and their effects, effectiveness of response(s) to emergent conditions,

classifications of emergencies, protection of the public and any other actions related to critical safety functions and plant safety during abnormal and emergency situations. They also contribute to operations during normal plant conditions. By routine monitoring of equipment and plant operations, the STA can focus on preventive actions in order to mitigate the consequences of an accident. The STAs are licensed senior reactor operators (SROs) or SRO Certified (in accordance with PVNGS STA accredited training program), degreed engineers that attend License Operator Continuing Training. Therefore, they are trained and capable of monitoring critical safety functions and assess the needed actions for restoration of those functions using the plant functional recovery procedures. They are trained in systematic troubleshooting in accordance with plant procedure (01DP-9ZZ01, *Systematic Troubleshooting*).

c. Non-License Operator (NLO) Training

The NLO receives a broad level of training to support their assigned duties both during plant operations and emergencies. As part of that training, they are familiar with plant systems, emergency actions, communications, and maintenance activities. The NLO may be used for AOP/EOP actions, off-site communications (State/Local and NRC) and in-plant maintenance. In-plant maintenance is primarily focused on Emergency Core Cooling System (ECCS) restoration in the initial phase of an emergency but would be able to expand, as necessary, to perform other actions such as small valve repair/maintenance, instrument air to valves, tightening fittings, addressing emergency diesel generator (EDG) crank case oil issues (even though credited for longer than 2 hours), fuse pulling and replacement, breaker troubleshooting, lifting and landing leads; as well as still support the security order (B.5.b) event (in the absence of an available electrician/I&C and adding oil to pumps if mechanical support is unavailable). Oversight of the maintenance activities would be under the on-shift mechanical, electrical and I&C technicians, as needed.

3.1.6 Radiation Protection Improvements

There have been many improvements in RP since the original PVNGS Emergency Plan staffing was established under NUREG-0654, Revision 1, guidance.

The following provides a summation of the technology/tools associated with the in-plant protective actions:

a. Access Control

- Access to the Radiologically Controlled Area (RCA) is controlled electronically. The electronic access control system provides for the user to electronically sign Radiation Work Permits (RWPs) to self-authorize themselves to access the RCA and self-issuance of an electronic dosimeter [in addition to the assigned Dosimetry of Legal Record (DLR) that is always worn]. Access to the RCA is controlled electronically without interface with a RP Technician (RPT).

b. Personnel Monitoring

- Personnel are issued self-reading dosimeters that are continuously worn for constant monitoring. No RPT support is needed for issuance of dosimetry to on-shift emergency workers since dosimeters are issued through the electronic access control

system. The dosimeters are self-reading, alarming electronic dosimeters that provide readout of accumulated dose and ambient dose rate.

- Automated whole-body monitors provide contamination monitoring. All radiation workers are qualified to use the automated whole-body monitors without RPT interface.

- In circumstances when the automated whole-body monitors are not available, hand held friskers are used for personnel contamination monitoring. All radiation workers are qualified to use the hand-held friskers without RPT interface.

c. Dosimetry

- Personnel are issued DLRs that are continuously worn for constant monitoring.

- Secondary dosimeters are self-issued through the electronic access control system. The secondary dosimeters are self-reading, alarming electronic dosimeters that provide readout of accumulated dose and ambient dose rate. No RPT support is needed for issuance of electronic dosimeters.

- Emergency electronic dosimetry is available in each unit at the Radiation Protection Island and available for use.

- If an electronic dosimeter is lost or damaged, additional electronic dosimeters are maintained in a fast-activation mode for immediate monitoring.

d. Area Radiation Monitors (ARMS)

Area Radiation Monitors (ARMs) are also used and reviewed prior to dispatch of personnel into the plant. PVNGS has multiple ARMs throughout the plant.

Some RPT support functions associated with in-plant protective actions such as access control, personnel monitoring, dose assessment, and dosimetry now require less dedicated support time since they are covered by plant process enhancements (newer technology/tools).

These technologies/tools include available equipment such as portal monitors, self-alarming dosimeters, and an automated access control point.

Onsite ERO members expected to be dispatched into the plant for evaluation, operations, or repair activities are radiation worker qualified and understand and are trained on how to use the available tools.

3.1.7 Improvements Summary

The improvements to staffing, equipment, procedures, and training that have occurred since initial approval of the PVNGS Emergency Plan have resulted in a significant increase in the on-shift capabilities and knowledge. Based on these improvements, it is concluded that there would be no significant degradation or loss of any functional task as a result of the proposed changes in ERO staffing.

3.2 Functional Analysis

This analysis evaluates the impact of implementing the changes in staffing on the ERO ability to perform the tasks for the major functional areas of the PVNGS Emergency Plan. The analysis demonstrates that no degradation or loss of function would occur as a result of the change.

3.2.1 EP Function: Command and Control (formerly Emergency Direction and Control)

The Command and Control function includes the following tasks as defined in the draft NUREG-0654, Revision 2, guidance:

- Provide overall ERO command and control, until relieved.
- Approve emergency action level (EAL) and/or protective action recommendation (PAR) classifications, until relieved.
- Authorize personnel dose extensions, until relieved.

This function is important for effective emergency response because adequate command and control enables the PVNGS ERO to effectively develop priorities for response planning and corrective action(s) and to provide a unified approach to the event response by providing a single individual with overall command and control authority. The function is staffed and maintained at all times and is assigned to the Operations Shift Manager (SM). Palo Verde Nuclear Generating Station has a Shift Manager for each of the three units and an unaffected unit Shift Manager may relieve the affected unit Shift Manager as Emergency Coordinator as needed. Additionally, Control Room Supervisors, Senior Reactor Operators and Shift Technical Advisors are trained and qualified to the Emergency Coordinator level to provide a more thorough understanding of the emergency by the Control Room staff. The augmentation (relief) of this position is intended to relieve the SM of EP functions so that the SM can focus on the event response from an operations perspective. As plant conditions support, this occurs with TSC and EOF facility activation at 60/120 minutes of an Alert ECL declaration, or greater, and is a position staffed by the TSC Emergency Coordinator and EOF Emergency Operations Director. The EOF Emergency Operations Director will take responsibility for those EP functions associated with PARs following activation of the EOF, also at the Alert or greater ECL.

a. On-Shift Minimum Staff – The table below identifies the current, proposed, and draft NUREG-0654, Revision 2, guidance for this EP Function and proposed Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Command and Control – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Shift Manager/Emergency Coordinator* * may be performed by persons assigned other functions	• (1) Shift Manager/Emergency Coordinator*	• (1) Shift Manager/Emergency Coordinator*

Emergency Plan Change Assessment

The PVNGS existing on-shift staffing table currently aligns with the draft NUREG-0654, Revision 2.

Draft NUREG-0654, Revision 2 Alignment

APS will maintain the existing title for this EP Function. The draft NUREG-0654, Revision 2, Operations Shift Manager will be titled Shift Manager/EC at PVNGS.

b. Augmented Minimum Staff – The table below identifies the current and proposed Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Command and Control – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Emergency Coordinator (TSC) • (1) Emergency Operations Director (EOF) Note: These positions are staffed at the Alert ECL	• (1) Emergency Coordinator (TSC) • (1) Emergency Operations Director (EOF) Note: These positions are staffed at the Alert ECL	• (1) TSC Emergency Coordinator (at Alert or higher) • (1) EOF Emergency Director (at SAE or higher)

The proposed ERO staffing is consistent with the draft NUREG-0654, Revision 2, guidance. There is one difference between the APS proposed Augmented Minimum Staff and the draft NUREG-0654, Revision 2, guidance. Specifically, APS will staff the TSC EC and EOF Emergency Operations Director within 60 minutes of an Alert or higher ECL while the draft NUREG-0654 guidance staffs the position within 60 minutes of a SAE or higher ECL. This difference is consistent with the previously approved Revision 14 of the PVNGS Emergency Plan and included in the NRC Safety Evaluation dated March 19, 2004. The augmentation expands the PVNGS emergency response at the Alert level and will ensure EOF ERO will be immediately available should an Alert classification escalate to a SAE or GE.

3.2.2 EP Function: Communications

The Communications function includes the following tasks as defined in the draft NUREG-0654, Revision 2, guidance:

- Communicate EAL and PAR classifications to offsite response organizations (OROs), including the NRC, until relieved.

This function is important for effective emergency response. The function ensures adequate communication onsite and offsite to successfully implement the emergency plan. APS maintains the ability to staff this position at all times. This function is assigned to a pre-existing on-shift staff member as a collateral duty and has been assessed through an on-shift staffing analysis, via 10 CFR 50, Appendix E, Section IV.A.9, to ensure that this EP

Function can be performed when needed without any additional competing priorities.

The augmentation (relief) of this position in the TSC/EOF occurs within 60 minutes of an Alert ECL, or greater, during normal working hours (120 minutes off-hours), and is intended to relieve the on-shift staff of this EP function. This function consists of two ERO members to fulfill the communication needs (i.e., one for the NRC and one for State/Local notification and status updates). One additional Communicator is staffed in the EOF, also at the Alert or higher ECL, to support additional NRC communications such as Health Physics/RP related issues. Under the PVNGS Emergency Plan, additional communicators can be called upon as needed, and at the discretion of the EC or EOD.

a. On-Shift Minimum Staff – The table below identifies the current and proposed Emergency Plan On-shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Communications – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) STSC Communicator* • (1) ENS Communicator* *Note these positions may be performed by persons assigned other functions	• (1) State and Local Communicator (STSC)* • (1) NRC Communicator (STSC)* *Note these positions may be performed by persons assigned other functions	• (1) Communicator[1] [1] Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.

Emergency Plan Change Assessment

There are no changes between the current PVNGS Emergency Plan staffing and the proposed changes to the Emergency Plan for the On-shift Communications function.

Draft NUREG-0654, Revision 2, Alignment

APS will keep the Shift Communication function consistent with the draft NUREG-0654, Revision 2, guidance but will use two communicators vs. a single one. On-Shift Communicator(s) will perform NRC and State/Local communications, as needed, until relieved.

A difference identified related to the PVNGS implementation of the draft NUREG-0654, Revision 2, guidance is the absence of the note (1) regarding collateral duties. The note states: *"Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time,"* and is not included in the PVNGS Emergency Plan. This note is not necessary because no collateral duties are assigned to the On-shift Communicators under the PVNGS Emergency Plan once communication duties are assumed.

There are no other deviations from the draft NUREG-0654, Revision 2, guidance.

b. Augmented Minimum Staff – The table below identifies the current and proposed Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Communications – Augmented Minimum Staff		
Current Emergency Plan	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) TSC ENS Communicator • (1) EOF State/Local Communicator • (1) EOF HPN Communicator* *Not in PVNGS Emergency Plan Table 1	• (1) NRC Communicator (TSC) • (1) State/Local NAN Communicator (EOF) (additional communicators will be staffed as needed)	• (1) TSC Communicator (NRC) • (1) TSC Communicator (ORO) • (1) EOF Communicator @ SAE ECL or greater • As needed (one communicator staffed at TSC for NRC communications if needed)

Emergency Plan Change Assessment

APS is maintaining the Augmented Minimum Staff TSC NRC and EOF State/Local NAN Communicator as currently described in the PVNGS Emergency Plan with no proposed changes to those positions. At PVNGS, the State/Local NAN Communicator in the EOF serves the function of the TSC Communicator (ORO) referenced in the draft NUREG-0654, Revision 2, guidance. Additional Communications will be staffed at the EOF or TSC as needed.

The following position, identified in the current Emergency Plan, is being re-categorized as Full-Augmented Staff and managed within an EPIP consistent with the guidance in draft NUREG-0654, Revision 2.

EOF HPN Communicator - The EOF HPN Communicator identified in the current Emergency Plan is removed and relocated to an EPIP. APS is adding a statement to the staffing Table that additional communicators will be staffed as needed. This ensures that if required, additional NRC communicators can be augmented as necessary to support communications between PVNGS and the NRC.

3.2.3 EP Function: Radiation Protection (formerly Radiological Assessment In-Plant Surveys and In Plant Protective Actions)

The RP function includes the following tasks as defined in draft NUREG-0654, Revision 2, guidance:

- Provide qualified radiation protection coverage for responders accessing potentially unknown radiological environments during emergency conditions.
- Provide in-plant surveys.

- Control dosimetry and radiologically controlled area access.

The ability to provide radiological expertise when the plant is experiencing an event with serious radiological consequences is crucial, due to the unknown radiological environment faced by emergency workers, particularly at the onset of the event.

This function is staffed by three qualified RP staff members on-shift. The PVNGS proposed ERO staffing will occur in a single stage vs. the two stage process specified in the draft NUREG-0654, Revision 2, guidance. The draft NUREG augmentation (support) of this position occurs in two stages:

1) within 60 minutes of an Alert ECL or greater, three additional qualified RP techs are available; and
2) within 90 minutes of an Alert ECL, or greater, an additional three additional qualified RP staff are available; all are staffed in the OSC.

The total number of qualified RP staff for the ERO is 10 considering the on-shift and augmented staff. APS has elected to maintain the single step activation where the augmented RP technicians are activated at the Alert or higher ECL and a total of 6 augmented for a total of 10 RP (not counting the on-shift RPM).

The draft *Technical Analysis in Support of the Guidance in NUREG-0654/FEMA-REP-1, SECTION II.B, Emergency Response Organization,* draft Revision 2 states that:

> "*based upon staff review and approval of ERO staffing plans, and the evaluation of licensee exercises, the [NRC] staff has determined that expecting 3 qualified RP staff on-shift is reasonable at a three unit site for the increased time period (30 minutes to 60 minutes), at which point additional RP resources would become available, and that 3 additional RP staff in 60 minutes and 3 additional RP staff in 90 minutes is acceptable to ensure the staff can maintain its reasonable assurance finding (10 CFR 50.47(a)). In addition, the [NRC] staff has determined that field monitoring teams (RFATs) (onsite and offsite) can function with limited RP expertise while under the direct supervision of senior RP staff in the TSC or EOF, thus removing the need for a fully qualified RP staff member being a part of the FMT when their expertise is better suited supporting the ERO on-site*."

The senior RP staff supervising the RFATs at PVNGS is responsible for directing the RFATs as well as providing direction for their safety from the radiological event.

In addition, the Chemistry/Rad Chemistry function listed in Table B-1 to Revision 1 of NUREG-0654 is no longer needed as the need for immediate reactor coolant sampling has been reduced due to the variety of plant indications of fuel damage available at PVNGS.

Overall, the ERO functions assigned to qualified RP staff are more clearly defined in Table B-1 to the draft NUREG-0654, Revision 2, guidance and support the reduction of the overall staffing levels for qualified RPs.

a. On-Shift Minimum Staff – The table below identifies the current and proposed Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Radiation Protection – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Radiation Protection Monitor (Dose Assessment and RP Team Supervision) • (1) Radiation Monitoring Technician* RP Persons (Rad Monitoring and Effluents) • (1) Radiation Monitoring or RP Technician (OSC) • (3) RP Technicians (OSC) • (1) Survey Qualified Technician • (2) Chemistry Technicians (OSC) *May be performed by persons assigned other functions	• (4) Radiation Protection Technicians • Based on a three unit site Note: Radiation Protection Monitor is located under Dose Assessment and RP Supervision.	• (3) Radiation Protection Personnel • Based on a three unit site

Emergency Plan Change Assessment

APS currently maintains three RPTs on-shift to satisfy Technical Specifications and the Emergency Plan requirements. Four RPTs are assigned to the tasks of in plant surveys, in-plant protective actions and access control. Those tasks are considered collateral duties and a RPT may be assigned other functions (e.g., on-site or out of plant survey).

APS will maintain four RPTs on-shift; however, under the draft NUREG-0654, Revision 2, guidance, the RP tasks are combined such that the need to add the clarifying note regarding other functions is not necessary. As such, Table 1 is revised to show four RPTs for this function without the note which states the task may be performed by persons assigned other functions.

The proposed revision also removes the Chemistry Technicians from Table 1. The Chemistry/Rad Chemistry function listed in Table B-1 to Revision 1 of NUREG-0654 is no longer needed as the need for immediate reactor coolant sampling has been reduced due to the variety of available plant indications of fuel damage available at PVNGS. Early indications of fuel damage can be identified through Containment Radiation Monitors, Core Exit Thermocouples, or Effluent Radiation Monitors, all of which are available in the CR.

An on-shift staffing analysis under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that the Chemistry major task is not required per the PVNGS Emergency Plan implementing procedures prior to augmentation. The On-shift Staffing Analysis (OSA) indicates that the primary responsibility of the on-shift Chemistry technician is chemistry/radiochemistry sampling to identify fuel damage; however, no chemistry sampling tasks were noted as being time critical in any of the analyzed events.

Draft NUREG-0654, Revision 2, Alignment

The proposed ERO staffing is consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654 guidance. APS will maintain four RP technicians on-shift to perform the RP functions and tasks for protection coverage for responders, in-plant surveys, dosimetry, radiologically controlled area access and on-site/off-site field monitoring (if necessary). This is a deviation from the draft NUREG-0654, Revision 2, guidance and supports continued use of the off-hours augmentation time of 120 minutes following an Alert or higher ECL.

b. Augmented Minimum Staff – The table below identifies the current and proposed Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Radiation Protection – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (6) Additional RP Technicians @ 60 minutes during normal working hours/120 minutes off-hours (OSC)	• (6) Additional RP Technicians @ 60 minutes during normal working hours/120 minutes off-hours (OSC)	• Additional Radiation Protection Technicians @ 60 minutes (In addition to personnel on-shift) (3) (OSC) • Additional Radiation Protection Technicians @ 90 minutes (In addition to personnel on-shift and those responding within 60 min (3) (OSC)

Emergency Plan Change Assessment

Currently, APS designates six Augmented Minimum Staff RPTs as required to support the EP Major Tasks of In-Plant Surveys and In-Plant Protective Actions at 60/120 minutes. APS proposes to maintain six Augmented Minimum Staff RPTs.

Technological advances in RP tasks (i.e., protection coverage for responders, in-plant surveys, dosimetry and radiologically controlled area access) support the additional time proposed in the draft NUREG-0654, Revision 2, guidance for the three RPTs. This includes the availability of installed area, process, airborne and effluent radiation monitors, automated systems and information technology solutions supporting Radiation Work Permits (RWPs) and dosimetry issuance, and enhanced work processes that are available under accident conditions. Supporting tools and processes include portal monitors, self-alarming dosimeters, and automated access control system for the RCA that maintain active radiation work permits (e.g., the system verifies qualifications, dose margins, and access requirements). However, due to PVNGS unique location, full RP augmentation at the Alert or higher ECL is 60 minute response time during normal working hours and 120 minutes during off-hours. During normal working hours, the resources needed to man the onsite ERFs are immediately available for responding to their facility, the 60 minutes is for the site responders to report to the EOF.

Draft NUREG-0654, Revision 2, Alignment

APS will staff six additional RPTs at 60/120 minutes in lieu of the draft NUREG-0654, Revision 2, guidance. The augmented minimum staff will perform the RP functions for protection coverage for responders, in-plant surveys, dosimetry, radiologically controlled area access and provide a second RFAT team member. The assigned major tasks are aligned with those stated in the draft NUREG-0654 guidance even though the augmentation times deviate.

3.2.4 EP Function: Supervision of Radiation Protection Staff and Site Radiation Protection

The Supervision of Radiation Protection Staff and Site Radiation Protection Function include the following tasks as defined in the draft NUREG-0654, Revision 2, guidance:

- Evaluate and assess plant and offsite radiological data in the development of onsite protective actions and offsite PARs, until relieved.
- Recommend onsite protective actions and offsite PARs to the applicable decision-maker, until relieved.
- Direct all radiation protection activities, including RFAT direction, until relieved.
- Provide relevant information to applicable communicators who are communicating offsite PARs to OROs, until relieved.

This function is important for effective emergency response to a radiological event because the management of RP resources, and the assistance this position provides the Emergency Operations Director (EOD), is crucial for response to radiological events.

Radiological events can be very significant and constantly evolving, and require significant expertise in radiation and radiological consequences. The evaluation of radiological events, and the development of effective PARs, requires this expertise to support the EOD in making these decisions.

The augmentation (relief) of this function occurs with facility activation within 60/120 minutes of an Alert ECL, or greater, and is staffed in the EOF. Also for PVNGS, at the Alert ECL, or greater, an EOF Radiological Assessment Coordinator position is staffed. Note that this position is primarily tasked with providing the applicable command and control position (i.e., EOF Emergency Operations Director) relevant expertise on radiological events.

a. On-Shift Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Supervision of Radiation Protection Staff and Site Radiation Protection – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Radiation Protection Monitor	• (1) Radiation Protection Monitor/RP Group Leader	• Operations Shift Manager

Emergency Plan Change Assessment

The current PVNGS Emergency Plan specifies that the Radiation Protection Monitor report to the affected unit Control Room and perform dose assessment and provide supervision to the RP Technicians on-shift. The draft NUREG-0654, Revision 2, guidance assigns this function to the Shift Manager/Emergency Coordinator. The tasks identified above align with current responsibilities for the Radiation Protection Monitor in the current Emergency Plan.

Draft NUREG-0654, Revision 2, Alignment

APS will continue to use the Radiation Protection Monitor (now called Radiation Protection Monitor/RP Group Leader*)* on-shift to perform the *Supervision of Radiation Protection Staff* function until relieved by the augmented staff. This is a deviation from the draft NUREG-0654, Revision 2, guidance but provides the equivalent supervision. The proposed ERO staffing is functionally consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654, Revision 2, guidance.

b. Augmented Minimum Staff – The table below identifies the current and proposed Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Supervision of Radiation Protection Staff and Site Radiation Protection – Augmented Minimum Staff		
Current Emergency Plan	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) TSC Radiation Protection Coordinator* • (1) EOF Radiological Assessment Coordinator* * Not in PVNGS Emergency Plan Table 1	• (1) TSC Radiation Protection Coordinator • (1) EOF Radiological Assessment Coordinator	• (1) TSC Site Radiation Protection Coordinator • (1) EOF Rad Protection Manager @ SAE ECL or greater

Emergency Plan Change Assessment

APS will staff both the TSC RP Coordinator and the EOF Radiological Assessment Coordinator at 60/120 minutes from an Alert ECL. There are no changes proposed to the current Emergency Plan for this Function.

Draft NUREG-0654, Revision 2, Alignment

The TSC RP Coordinator will perform site related duties which include actions to recommend onsite protective actions, to direct all radiation protection activities at the site, and to evaluate and assess plant radiological data in the development of on-site protective actions.

The EOF Radiological Assessment Coordinator will perform duties which include actions to evaluate and assess off-site radiological data in the development of on-site protective actions and offsite PARs, and to direct field monitoring teams at the Alert ECL, or greater.

The APS staffing of this Function is different from the draft NUREG-0654, Revision 2, guidance in that APS staffs both the TSC Radiation Protection Coordinator (RPC) and the EOF RAC at 60/120 minutes from an Alert ECL. The draft NUREG-0654 guidance does not staff the EOF Radiological Assessment Coordinator until the SAE declaration.

This will increase the PVNGS emergency response at the Alert level and will ensure the EOF RAC will be immediately available should an Alert classification escalate to a SAE or GE.

The proposed ERO staffing activates the EOF earlier than the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654, Revision 2, guidance.

3.2.5 EP Function: Dose Assessments/Projections

The Dose Assessments/Projections function includes the following tasks as defined in the draft NUREG-0654, Revision 2, guidance:

- Perform dose assessments/projections and provide input to applicable PAR decision-maker, until relieved.

This function is important for effective emergency response to a radiological event because timely dose assessments/projections ensure accurate and timely PARs can be developed, when necessary. APS maintains the ability to staff this position at all times. This function is assigned to a pre-existing on-shift staff member as a collateral duty. An OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that this EP function can be performed when needed without any additional competing priorities.

The augmentation (relief) of this function occurs within 60/120 minutes of an Alert ECL, or greater, and is staffed in the EOF.

Maintaining the ability to perform dose assessments/projections at all times ensures that the consequences of a radiological event, to the public, are effectively mitigated by

providing timely dose related information to the Shift Manager/Emergency Coordinator or Emergency Operations Director (EOF) depending on which position is in command and control. As a result, this position (function) is expected to be available on-shift, in the Control Room, and in the EOF depending on the ECL declared.

a. On-Shift Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Dose Assessments/Projections – On-shift Staff Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Radiation Protection Monitor	• (1) Radiation Protection Monitor/RP Group Leader[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.	• Dose Assessment/Projections Staff[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time

Emergency Plan Change Assessment

APS currently utilizes on-shift RP Monitor to perform the Dose Assessment Function prior to augmentation. To align with the draft NUREG-0654, Revision 2, guidance, the PVNGS Emergency Plan is revised to annotate the Dose Assessment Function as the collateral duty and annotated with note (1) *"Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time."*

Draft NUREG-0654, Revision 2, Alignment

APS will maintain a Shift Dose Assessor (Radiation Protection Monitor/RP Group Leader) on-shift to perform dose assessments/projections and provide input to applicable PAR decision-maker functions. This function is performed by the on-shift RPM under the current Emergency Plan and has been demonstrated successfully in drills and exercises. The proposed ERO staffing for this Function is consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654 guidance.

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Dose Assessments/Projections – Augmented Minimum Staff		
Current Emergency Plan	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) EOF Radiological Assessment Coordinator* * Not in PVNGS Emergency Plan Table 1	• (1) EOF Dose Assessment Health Physicist	• TSC (1) Dose Assessment/Projection Staff • EOF (1) Dose Assessment/Projection Staff @ SAE or greater

Emergency Plan Change Assessment

APS currently staffs one Radiological Assessment Coordinator at the EOF as Augmented Minimum Staff. The proposed revision to the PVNGS Emergency Plan would add one Dose Assessment staff to be activated within 60/120 minutes of an Alert ECL or greater.

Draft NUREG-0654, Revision 2, Alignment

The APS proposed ERO staffing for the Dose Assessment Function is different from that in the draft NUREG-0654, Revision 2, guidance. Specifically, the draft guidance provides for one Dose Assessment position to be staffed at the TSC within 60 minutes of an Alert ECL or higher. A second Dose Assessor is staffed at the EOF within 60 minutes of an SAE ECL or higher. APS proposes to staff one EOF Dose Assessor at 60/120 minutes from an Alert ECL or higher.

The draft NUREG-0654, Revision 2, guidance was developed with the premise that TSC is activated at the Alert ECL or higher and the EOF is activated at the SAE ECL or higher. While the Dose Assessment function falls more in line with the EOF responsibilities, it is not activated within the draft NUREG-0654 guidance until a SAE ECL or higher. In order to provide early relief of the on-shift Dose Assessment function for Alert ECLs, the guidance provides a TSC Dose Assessor, which is available at the Alert ECL.

The PVNGS EOF is staffed within 60/120 minutes of an Alert ECL or higher, therefore it is unnecessary to staff the redundant TSC Dose Assessor. The EOF Dose Assessment Health Physicist will perform duties which include actions to perform dose assessments/projections and provide input to applicable PAR decision-maker at the Alert ECL, or greater.

3.2.6 EP Function: Emergency Classifications

The Emergency Classifications function includes the following tasks as defined in the draft NUREG-0654, Revision 2, guidance:

- Evaluate plant conditions and recommend emergency classifications, until relieved.

This function is important to ensure a prompt and effective emergency response. Because the impetus for implementing the Emergency Plan is the determination of an EAL at the correct ECL, having this ability maintained at all times is essential. This function is assigned to a pre-existing on-shift staff member as a collateral duty. An OSA under 10 CFR 50,

Appendix E, Section IV.A.9 was performed to ensure that this EP function is performed when needed without any additional competing priorities. The augmentation (relief) of this function occurs within 60/120 minutes of an Alert ECL, or greater, and is staffed in the TSC.

Maintaining the ability to perform this function at all times ensures that ECL decisions, and as applicable, the PAR decisions, are timely and accurate as these decisions have a direct correlation to public health and safety from the consequences of a radiological event. This function works in coordination with the ED in command and control, and as a result is available on-shift and in the TSC.

a. On-Shift Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Emergency Classifications – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Affected Unit Shift Technical Advisor* * Not previously required in plan, but in use	• (1) Affected Unit Shift Technical Advisor[1] [1]Other qualified personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.	• (1) Emergency Classification Advisor[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.

Emergency Plan Change Assessment

The PVNGS Emergency Plan, Table 1, does not currently specify a separate Emergency Classification Function for the on-shift staff. APS proposes to revise Emergency Plan, Table 1, to align with the draft NUREG-0654, Revision 2, guidance. This function is assigned to a pre-existing on-shift staff member as a collateral duty (e.g., STA). The STA has the experience and training to fill this position and the responsibilities for monitoring plant operation are consistent with the EP position responsibilities. Additionally, an OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that this EP function is performed when needed without any additional competing priorities.

Draft NUREG-0654, Revision 2, Alignment

APS will maintain an Emergency Classification Advisor (Shift Technical Advisor) on-shift to evaluate plant conditions and recommend emergency classifications. There are no differences or deviations from the draft NUREG-0654, Revision 2, guidance.

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Emergency Classifications – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• None specified	• (1) TSC Operations Manager	• (1) TSC Emergency Classification Advisor

Emergency Plan Change Assessment

Palo Verde Nuclear Generating Station's current Emergency Plan does not specifically identify a Classification Advisor on Table 1. Palo Verde Nuclear Generating Station proposes to utilize the Operations Manager to support EAL Classification. Palo Verde Nuclear Generating Station proposes to revise the Emergency Plan Table 1 to include the Emergency Classification Function and assign the TSC Operations Manager to support and advise the non-delegable responsibility of EAL Classification. The Operations Manager under the Emergency Plan has the necessary background, experience and training to fill this position. Additionally, an OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that this EP function is performed when needed without any additional competing priorities.

Draft NUREG-0654, Revision 2, Alignment

APS will staff a TSC Operations Manager at 60/120 minutes to evaluate plant conditions and recommend emergency classifications. The proposed ERO staffing is consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654, Revision 2, guidance.

3.2.7 EP Function: Engineering

The Engineering function includes the following tasks as defined in the draft NUREG-0654, Revision 2, guidance:

- Provide engineering coverage related to the specific discipline of the assigned engineer, until relieved. Specifically:
    - An engineer to monitor and evaluate changing core/thermal hydraulic issues is important to effective emergency response because monitoring and evaluating core conditions, or thermal hydraulic conditions of the reactor coolant system, can support timely corrective action(s), ECL declarations, and subsequent PARs. Radiological events from a power reactor come from damage to an operating reactor core, or the systems used to cool the core, and engineering expertise in this area can greatly benefit the licensee's response.

      This function is assigned to a pre-existing on-shift staff member as a collateral duty. An OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that this EP function is performed when needed without any additional competing priorities. The augmentation (relief) of this function occurs within 60/120 minutes of an Alert ECL, or greater, and is staffed in the TSC.

- An engineer to provide expertise in Electrical/Instrumentation and Control (I&C) systems and equipment supports the evaluation of these systems/equipment and supports the development of repair plans if necessary. The augmentation (support) of this function occurs within 60/120-minutes of an Alert ECL, or greater, and is staffed in the TSC.

- An engineer to provide expertise in mechanical systems and equipment supports the evaluation of these systems/equipment and supports the development of repair plans if necessary. The augmentation (support) of this function occurs within 60/120-minutes of an Alert ECL, or greater, and is staffed in the TSC.

a. On-Shift Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Engineering – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Unaffected Unit Shift Technical Advisor (STA)	• (1) Unaffected Unit Shift Technical Advisor (STA)[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.	• (1) Core/Thermal Hydraulics Engineer[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.

Emergency Plan Change Assessment

The current PVNGS Emergency Plan utilizes the unaffected unit STA to satisfy the on-shift responsibilities for the Plant System Engineering, Repair, and Corrective Actions Function (Major Tasks: Technical Support). The current Emergency Plan has the unaffected unit STA perform maintenance and electrical troubleshooting.

Under the new guidance, the EP function is re-categorized as the Engineering Function. The PVNGS Emergency Plan is revised to identify the Engineering Function is a collateral duty satisfied by the unaffected STA on-shift.

STAs are SRO Licensed or SRO Certified (in accordance with PVNGS STA accredited training program) degreed engineers that attend License Operator Continuing Training. The STA is familiar with plant systems along with Abnormal Operating Procedures (AOPs), Emergency Operating Procedures (EOPs) and Functional Recovery procedures and actions. The STA is trained on systematic troubleshooting. The integrated knowledge of the position allows for a thorough understanding of the plant systems (all vs. individual systems) and their relative importance for accident response. Troubleshooting of the critical plant systems and the needed actions are within the capability of the STA.

An OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that this EP function is performed when needed without any additional competing priorities.

Draft NUREG-0654, Revision 2, Alignment

APS will maintain a STA on-shift to perform the Core/Thermal Hydraulics Engineer function as a collateral duty. There are no differences or deviations from the draft NUREG-0654, Revision 2, guidance and the proposed revision to the PVNGS Emergency Plan.

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Engineering – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Reactor Analyst • (1) Mechanical Engineer • (1) Electrical Engineer • (1) EOF Engineering Director	• (1) Reactor Analyst • (1) Mechanical Engineer • (1) Electrical/Instrumentation & Controls Engineer	• (1) Core/Thermal Hydraulic Engineer • (1) Mechanical Engineer • (1) Electrical/Instrumentation and Control (I&C) Engineer

Emergency Plan Change Assessment

The PVNGS Emergency Plan currently identifies an Augmented Minimum Staff of one Reactor Analyst who performs Core/Thermal Hydraulics, one Mechanical Engineer and one Electrical/Instrument & Control Engineer consistent with the draft NUREG-0654, Revision 2, guidance. These positions will continue as Augmented Minimum Staff in the proposed PVNGS Emergency Plan, Table 1.

Draft NUREG-0654, Revision 2, Alignment

APS will staff a Reactor Analyst (Core Thermal/Hydraulic Engineer), a Mechanical Engineer, and an Electrical/I&C Engineer at 60/120 minutes to provide engineering coverage related to their specific discipline. The EOF Engineering Director position is not identified in the draft NUREG-0654, Revision 2, guidance. There are no differences or deviations from the draft NUREG-0654, Revision 2, guidance. The proposed ERO staffing is consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654 guidance.

3.2.8 EP Function: Security

The PVNGS Security Force is controlled and maintained by the NRC approved Physical Security Plan (PSP) and is not reflected in the Emergency Plan. APS currently staffs an on-shift position, Security Director, who supports the Emergency Coordinator in the Control Room and in the TSC once activated.

a. On-Shift Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Security – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• Per the Security Plan • (1) Security Director	• (1) Security Director	• Security staffing per the site-specific security plan

Emergency Plan Change Assessment

There are no changes between the current PVNGS Emergency Plan staffing and the proposed changes to the Emergency Plan for the On-shift Security function.

Draft NUREG-0654, Revision 2, Alignment

There are no differences or deviations from the draft NUREG-0654, Revision 2, guidance. The proposed ERO staffing is consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654 guidance.

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Security – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• Per the Security Plan	• Per the Security Plan	• (1) TSC Security Liaison

Emergency Plan Change Assessment

APS will maintain an on-shift Security Leader who functions as the Security Director and transitions to the TSC once activated. The current practice of designating the Security Director as an On-shift Minimum Staff position ensures timely and effective coordination between the security force and the ERO, particularly for events where offsite resources are necessary as well as for security related events and site personnel accountability.

Draft NUREG-0654, Revision 2, Alignment

APS will maintain an on-shift Security Director making the augmentation of a position in 60/120 minutes to be a liaison to the Security Force unnecessary. There are no differences or deviations from the draft NUREG-0654, Revision 2, guidance.

The proposed ERO staffing is consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654 guidance.

3.2.9 EP Function: Repair Team Activities

The NRC has determined that, from an EP perspective, the ability to get Emergency Core Cooling System (ECCS) equipment operational was the primary basis for necessitating maintenance expertise while on-shift. The PVNGS ECCS equipment are designed to be redundant and diverse such that common mode failures are very unlikely. From the PVNGS UFSAR:

> *Palo Verde Nuclear Generating Station ECCS, with passive and active subsystems, is designed to inject borated water into the reactor coolant system (RCS) following a LOCA.*
>
> *The ECCS consists of the centrifugal high and low pressure pumps, safety injection and shut down cooling pumps, safety injection tanks, shutdown cooling heat exchangers and the refueling water tank, along with the associated piping, valves, instrumentation and other related equipment.*
>
> *The ECCS provides shutdown capability for the accidents … by means of boron injection. It is designed to tolerate a single active failure (short-term) or a single active or passive failure (long-term). It can meet its minimum required performance level with onsite or offsite electrical power.*

As a result of the redundant and diverse design, the need to accommodate maintenance functionality on-shift is unnecessary. Nevertheless, a minimum number of maintenance technicians are assigned to respond to an event as part of the ERO, with more technicians available on an as-needed basis depending on the event.

The augmentation (support) of the electrician, I&C and mechanic positions occur within 60/120 minutes of an Alert ECL, (or greater), and is staffed in the OSC. The OSC is the emergency response facility associated with maintenance tasks, as directed by the command and control staff in the TSC.

a. On-Shift Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Repair Team Activities – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (2) Mechanical Technicians (May be provided by other personnel assigned other functions.) • (3) Electrical Technicians (May be provided by other personnel assigned other functions.) • (1) I&C Technician (May be provided by other personnel assigned other functions.) (12) Plant Equipment Operators	• (1) Mechanical Maintenance Technician[1] • (1) Electrical Maintenance Technician[1] • (1) I&C Maintenance Technician[1] • (12) Plant Equipment Operators[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.	• Operations Staff[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.

Emergency Plan Change Assessment

The PVNGS current Emergency Plan allows the Repair Activities Function to be performed as a collateral duty by Plant Equipment Operators and the on-shift maintenance staff. The proposed revision utilizes the language from the draft NUREG-0654, Revision 2, guidance; however, adopting the guidance from the draft NUREG to utilize Plant Equipment Operators to perform this EP function and not on-shift maintenance results in a change to the Emergency Plan.

Additionally, the mechanical, electrical and I&C resources are added to support any maintenance needed for restoration of critical safety systems during the timeframe prior to the 60/120 minute augmentation, APS will staff one Mechanical Maintenance Technician, one Electrical Maintenance Technician and one I&C technician. The skills associated with the on-shift Plant Equipment Operators along with the Mechanical, Electrical and I&C Maintenance Technicians on-shift are adequate for repair of the critical safety functions warranted during the timeframe prior to facility manning.

Draft NUREG-0654, Revision 2, Alignment

APS will maintain Plant Equipment Operators on-shift to perform the actions necessary to run the ECCS and perform minor maintenance activities. The ECCS equipment at PVNGS are diverse and redundant such that Maintenance Technicians are not required on-shift. There are no differences or deviations from the draft NUREG-0654, Revision 2, guidance.

The proposed license amendment deviates from the guidance in that additional maintenance resources; one mechanic, one electrician and one I&C technician, are adding to the on-shift resources to support restoration of critical safety functions during the augmentation timeframe.

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Repair Team Activities – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• None specified	• (1) OSC Mechanical Maintenance Technician • (1) OSC Electrical Maintenance Technician • (1) OSC I&C Maintenance Technician • Additional Maintenance Technicians as needed.	• (1) Mechanic (OSC) • (1) Electrician (OSC) • (1) I&C Technician @ 90 minutes • Additional Mechanical and Electrical Maintenance Technicians as needed.

Emergency Plan Change Assessment

The PVNGS current Emergency Plan provides for two Mechanical Maintenance Technicians and three Electrical technicians and one I&C technician on-shift in the OSC. APS is revising the Maintenance response consistent with the draft NUREG-0654, Revision 2, guidance, which provides for one technician from each discipline to be augmented as Minimum Staff in the OSC. Additional technicians are available and would be called as needed depending on the nature of the emergency repairs needed. PVNGS has a proven Work Management program that has demonstrated the ability to respond to emergent work activity issues during off-hours, weekends and holidays. In an emergency situation, the Augmented Minimum Staff OSC responders from each Maintenance discipline would be available to assess the required work activities, begin preparation activities, and request the needed support in a timely manner. The proposed staffing is consistent with the draft NUREG-0654, Revision 2, guidance and provides the necessary personnel to respond to the emergency condition.

Draft NUREG-0654, Revision 2, Alignment

APS will staff one Mechanical, one Electrical and one I&C Maintenance Technician at 60/120 minutes to perform the maintenance activities from the OSC to respond to the emergency condition. Depending on the need, additional maintenance technicians will be called in to support the OSC activities. There are no differences or deviations from the draft NUREG-0654, Revision 2, guidance.

3.2.10 EP Function: Supervision of Repair Team Activities

The ability to effectively supervise repair team personnel during emergency response is important. The augmentation (support) of these functions is as follows:

- A Lead OSC Supervisor (OSC Manager) is staffed within 60/120 minutes of an Alert ECL, (or greater), and is staffed in the OSC.

- Two Repairs Coordinators (Maintenance) and a RP Supervisor are staffed within 60/120 minutes of an Alert ECL, or greater, and is staffed in the OSC.

The OSC Manager can effectively manage the maintenance resources (mechanical, electrical, or I&C) and respond as demonstrated through drills and exercises.

a. On-Shift Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Supervision of Repair Team Activities – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) Shift Manager/Emergency Coordinator	• (1) Shift Manager/Emergency Coordinator[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.	• (1) Repair Team Supervisor[1] [1]Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.

Emergency Plan Change Assessment

APS currently uses the Shift Manager/Emergency Coordinator position for the Repair Team Supervisor. APS utilizes Plant Equipment Operators and Maintenance Technicians to fulfill the requirements for on-shift Maintenance, so the Operations Shift Manager would maintain the supervision of the operators and mechanics in this capacity. An on-shift staffing analysis under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that the Supervision of Maintenance personnel function can be performed when needed by an Operations Shift Manager without any additional competing priorities.

Draft NUREG-0654, Revision 2, Alignment

There are no differences or deviations from the draft NUREG-0654, Revision 2, guidance. The proposed ERO staffing is consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654, Revision 2, guidance.

b. Augmented Minimum Staff – The table below identifies the current and proposed Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Supervision of Repair Team Activities – Augmented Minimum Staff		
Current Emergency Plan	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) OSC Manager* • (1) TSC Maintenance Manager* * Not in PVNGS Emergency Plan Table 1	• (1) OSC Manager • (2) OSC Repair Team Coordinators (Augmented) @ 60/120 minutes (OSC) • (1) RP Radiation Monitor/RP Group Leader @ 60/120 minutes (OSC)	• (1) Lead OSC Supervisor • (1) Electrical Supervisor @ 90 minutes • (1) Mechanical Supervisor @ 90 minutes • (1) I&C Supervisor @ 90 minutes • (1) Radiation Protection Supervisor @ 90 minutes

Emergency Plan Change Assessment

The PVNGS current Emergency Plan, Table 1, does not identify the Supervisory positions of OSC Manager and TSC Maintenance Manager under the Major Task of Repair and Corrective Actions. The TSC Maintenance Manager and OSC Manager effectively manages the maintenance resources upon activation of the facility.

APS is adding two Augmented Minimum Staff positions to the OSC to be staffed at 60/120 minutes. These include two Repair Team Coordinators (current positions in the PVNGS ERO). The Repair Team Coordinators come from the Maintenance Organization and can supervise the activities of mechanical and electrical/I&C technicians. The addition of the two supervisor positions enhances the ERO minimum staff response and puts in place effective supervision of repair team personnel early in the emergency response.

Draft NUREG-0654, Revision 2, Alignment

Under the PVNGS proposed Emergency Plan staffing, the OSC Manager position is staffed within 60/120 minutes to oversee the activation of the OSC facility and the maintenance craft as they arrive. The two Repair Team Coordinators and RP Radiation Monitor/RP Group Leader staff at 60/120 minutes will support coordination and supervision of repair team activities.

APS proposes one difference to the draft NUREG-0654, Revision 2, guidance. Specifically, APS proposes to allow maintenance supervision/leadership to be performed by the Repair Team Coordinators. Additionally, a RP Lead Technician may be used to fill the supervisory role at 60/120 minutes. Under the PVNGS Maintenance and RP programs, Lead technicians are qualified, experienced craft technicians who successfully demonstrate the day-to-day leadership of the technician work force and act as lead on back shifts. Duties and responsibilities include training and development of other employees in performing preventive maintenance and routine equipment service activities. Basic qualifications for a Lead technician include demonstrated reliability and

responsibility and the ability to make timely and effective technical decisions, as well as demonstrated situational leadership, environmental and safety stewardship. The experience and qualification of the PVNGS Lead technicians satisfy the requirements and the needs of the OSC for the Supervision of Repair Team Activities EP Function.

Other than the difference discussed above, the proposed ERO staffing is consistent with the draft NUREG-0654, Revision 2, guidance. The assigned major tasks are aligned with those stated in the draft NUREG-0654 guidance.

3.2.11 EP Function: Field Monitoring Teams

The ability to locate, monitor, and track a radioactive plume is important to ensure appropriate protective measures are taken in response to a radiological event. The ability to staff these teams before they may be needed (i.e., before a radiological release) greatly enhances the ability to provide timely and accurate PARs.

The augmentation (support) for these teams is as follows:

- Onsite/Offsite Field Monitoring

  An Onsite/Offsite Radiological Field Assessment Team (RFAT) is staffed consisting of one person to monitor radiation and a driver. This onsite position is responsible for radiological monitoring of the site's Protected Area (PA) and as necessary, offsite. This RP person is onsite and can support on-site out of plant or offsite field monitoring as necessary. An Onsite/Offsite Field Monitoring team will be initiated within 30 minutes of a release (actual or anticipated) for an Alert or higher emergency.

  The Onsite/Offsite Field RP Technician is qualified to assess radiation and contamination levels and may perform other RP duties as needed during the initial phase of the emergency.

- Offsite Field Monitoring

  A second Offsite RFAT is staffed, consisting of a RP Technician and a driver, within 60/120 minutes of an Alert ECL, or greater. This offsite RFAT is responsible for locating, monitoring, and tracking a radioactive plume, as well as obtaining environmental samples as necessary (e.g., air, water, vegetation, etc.). The RP Technician is qualified to assess radiation and contamination levels, but need not be an ANSI-qualified RP technician as long as the RFAT is under the direct supervision of senior staff in the STSC or EOF.

a. On-Shift Minimum Staff – APS has manned an additional RP Technician on-shift to be able to perform onsite out of plant or offsite field monitoring (as needed) until the second team is augmented at 60/120 minutes. This is a deviation from the draft NUREG-0654, Revision 2, guidance and is put in place to fulfill the field monitoring function until augmentation of the second team. The NRC guidance does not have the initial field monitoring team in place until 60 minutes following the declaration of an Alert or higher ECL. The guidance would not have the second field monitoring team in place until 90 minutes following and Alert or higher ECL.

EP Function: Field Monitoring Teams – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• Onsite/Offsite Radiological Field Assessment Team (1) RP Technician (1) RFAT Driver Note: RP staffed from on-shift RP technicians if warranted.	• Onsite/Offsite Radiological Field Assessment Team A (1) RP Technician (1) RFAT Driver Note: RP staffed from on-shift RP technicians if warranted.	• None specified

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Field Monitoring Teams – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• Offsite Radiological Field Assessment Team (1) RP Technician (1) RFAT Driver Note: RFAT is from augmented resources.	• Offsite Radiological Field Assessment Team B (1) RP Technician (Augmented) (1) RFAT Driver (Augmented)	• Onsite Radiological Field Assessment Team (1) Qualified Individual and 1 Driver) (@60 minutes) • Offsite Radiological Field Assessment Team A (1) Qualified Individual and 1 Driver) (@60 minutes) • Offsite Radiological Field Assessment Team B @ 90 minutes (1) Qualified Individual and 1 Driver)

Emergency Plan Change Assessment

On-site/Off-site Field Monitoring - The current PVNGS Emergency Plan designates one RP person as Minimum Staff for the EP function of on-site Surveys. The proposed revision to the PVNGS Emergency Plan designates one RP Technician for on-site surveys. The number of RP technicians for this function is consistent with the draft NUREG-0654, Revision 2, guidance. The reduction in RP technicians to this task is acceptable because one RP Technician dedicated to monitor and survey the site area is sufficient to provide current and timely data to the TSC/EOF in emergency conditions. At PVNGS, the on-site RP Technician is responsible for monitoring the Protected Area or off-site as necessary. The size of the PVNGS Protected Area allows traversing and a second RP Technician would not be required to perform this function. The monitoring equipment is hand-held and does not require two technicians for transport or operation. This is the current PVNGS process and has been demonstrated successfully through drills and exercises.

Off-site Field Monitoring Teams – The Offsite RFATs at PVNGS currently consist of one RFAT from on-shift resources as needed. The second Radiological Field Assessment Team is staffed at 60/120 minutes and consisting of a driver and one RP technician. The On-site RFAT can also be used offsite as necessary in the initial phases of the emergency. APS currently provides a single RFAT in the initial phase of the emergency and an additional RFAT from augmented resources. PVNGS also works in conjunction with the State of Arizona Offsite RFATs to provide offsite monitoring. The proposed revision would allow the initial RFAT to be utilized either onsite or off-site as needed.

Radiological Assessment Communicator – The EOF Radiological Assessment Communicator is being re-categorized to Full-Augmented Staff. Under the PVNGS Emergency Plan, the EOF Radiological Assessment Communicator responsibilities do not directly perform actions necessary to accomplish EP functions under NUREG-0654, but rather support other personnel at the EOF. The position, as currently defined in the Emergency Plan, would not be considered as part of the minimum ERO needed to implement the Emergency Plan (i.e., if any position or function is not staffed then the Emergency Plan may not be effectively implemented). The EOF Radiological Assessment Communicator performs support activities such as coordination, communication, monitoring, and assistance activities. Specific responsibilities include:

- *Coordinate the transfer of control of the Radiological Field Assessment Team if initially under the direction of the Radiation Protection Monitor/RP Group Lead in the CR/STSC.*

- *Ensure communications are established with the TSC to obtain information on the accident conditions, meteorological conditions and estimates of radioactive material releases.*

- *Maintain cognizance of Radiological Field Assessment Team exposure. When warranted, ask the Radiological Assessment Coordinator to initiate an evaluation of the need for administering Potassium Iodide (KI) to PVNGS nuclear workers.*

- *Determine needs of the Radiological Assessment Coordinator, the Dose Assessment Health Physicist or, the HPN Communicator and the State Agency(s) for updates on Radiological Field Assessment Team data and ensure distribution of new data to them in accordance with those needs. (task transferred to EOF RAC)*

- *Upon request, provide environmental data to Emergency Public Information personnel.*

- *Evaluate and coordinate additional equipment and personnel as necessary from unaffected stations to augment and/or relieve station* Radiological Field Assessment Team*.*

Each of these tasks above is considered support activities and is not required to directly accomplish any of the draft NUREG-0654, Revision 2, identified functions. As such, the EOF Radiological Assessment Communicator position can be deleted from the Minimum Staff and maintained as a Full-Augmented position. The EOF Radiological Assessment Communicator position and the listed responsibilities are being relocated to an EPIP.

Draft NUREG-0654, Revision 2, Alignment

The proposed ERO staffing for Onsite Field Monitoring is different than that proposed in the draft NUREG-0654, Revision 2, guidance. Specifically, for the PVNGS, Onsite Field Monitoring will be staffed by RP Technician but may be used in either an onsite or offsite capacity until augmented at the 60/120 minute timeframe. For the PVNGS units, the Owner Controlled Area supports vehicular traffic and is the responsibility of one of the Offsite Field Monitoring Teams. This has been demonstrated successfully through drills and exercises.

The augmented Offsite RFAT will staff different than the draft NUREG-0654, Revision 2, guidance. PVNGS will continue to augment at the Alert or higher ECL and within 60 minutes during normal working hours and 120 minute off-hours (consistent with the currently approved staffing times).

3.2.12 EP Function: Media Information

The Media Information function includes the following tasks:

- Manage and coordinate media information related to the event.

Media relations are an important part of effective emergency response and are consistent with the National Incident Management System (NIMS). Revision 1 of NUREG-0654 left the exact staffing composition flexible, with input from applicable OROs, and from the Federal Emergency Management Agency (FEMA).

The augmentation (support) of this function is defined for PVNGS to be that which is needed to support this function, i.e., without those positions this function could not occur.

PVNGS is supported through the Arizona Public Service and PVNGS Communication Departments at all times. The APS Communication Department responds to media inquiries initially for any ECL. The PVNGS Communication Department coordinates with Palo Verde Management and ERFs to respond to media inquiries. Press releases are issued as appropriate from the Communication Departments.

Within 60/120 minutes of an Alert ECL or higher, the PVNGS Emergency Plan is revised to describe the positions of JIC Manager as necessary to support the additional media related tasks associated with the more significant classifications. These tasks include periodic press briefings, media engagement, and coordination with State and Local Emergency Management Agencies.

a. On-Shift Minimum Staff – There are no on-shift staff assigned to this EP Function; however, the APS and PVNGS Communication Departments are available to address media inquiries around the clock. This is consistent with the draft NUREG-0654, Revision 2, guidance.

EP Function: Media Information – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• None specified	• None specified	• None specified

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG0-0654, Revision 2, guidance for this EP Function.

EP Function: Media Information – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• None specified	• (1) Joint Information Center Manager (established @ 60/120 min of an Alert or higher ECL)	• JIC/JIS staff to address media inquiries at the Alert ECL • Staff to perform JIC/JIS related tasks at SAE ECL or greater

Emergency Plan Change Assessment

The PVNGS current Emergency Plan does not identify any Augmented Minimum Staff positions to be staffed following an Alert ECL to address the Media Information EP Function. All assigned staff positions report to the JIC at an Alert or higher ECL but there is not a specific activation time or staffing level specified in the Emergency Plan. The positions consist of the Palo Verde Spokesperson, JIC Manager, ERF Communicator – JIC, Research/Writing Coordinator, Spokesperson Coordinator, Distribution Services Coordinator, and Video/Photo Coordinator. The PVNGS Emergency Plan, in contrast to other Augmented Minimum Staff positions, does not specify an activation time requirement. The PVNGS proposed Emergency Plan revision adds a single JIC position; however, the response time is being revised to activate within 60/120 minutes of an Alert ECL or higher. The revision to the Emergency Plan adds a specific facility activation time of 60/120 minutes from an Alert ECL or higher. APS and Palo Verde Nuclear Generating Station's Communication Departments are capable of responding to and addressing events prior to the arrival of the JIC Augmented Minimum Staff.

Draft NUREG-0654, Revision 2, Alignment

The proposed ERO staffing activates the JIC at a lower ECL than the draft NUREG-0654, Revision 2, guidance. APS proposes to activate the JIC within 60/120 minutes of an Alert ECL or higher. The activation time provides for a specific timeframe in the Emergency Plan to fill the JIC minimum staff positions and sooner than that stipulated in the draft guidance. The PVNGS Communication Department provides for the JIC functions until the JIC is activated and turnover of responsibility occurs.

APS will staff a facility manager at the JIC to maintain command and control of the JIC and conduct periodic briefings with the news media. The JIC Manager is staffed at the JIC to coordinate with the State, Local and Federal agencies to maintain factual consistency of information conveyed.

3.2.13 EP Function: Information Technology

The Information Technology (IT) function includes the following tasks:

- If emergency plan functions rely on computer-based equipment, provide IT support.

The ever-increasing advances in technology have led to significant enhancements in many areas of emergency response, such as communications, monitoring, displays, digital procedures, etc. APS has assessed the use of this technology as it is used to enhance the ability to protect the health and safety of the public with respect to EP.

a. On-Shift Minimum Staff – There are no on-shift staff assigned to this EP Function; however, the IT department maintains a 24 hour/day HELP desk to assist users with IT related issues.

EP Function: Information Technology – On Minimum Shift Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• None specified	• None specified	• None specified

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

c.

EP Function: Information Technology – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• (1) EOF Information Services Manager	None specified	• (1) EOF/JIC/JIS IT Lead @ SAE ECL or greater Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time. • (1) TSC IT Lead @ 90 mins Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time.

Emergency Plan Change Assessment

The PVNGS current Emergency Plan identifies an IS position as a Full-Augmented position. Performance of digital equipment at EOF and TSC has shown to be acceptable during drills and exercises. With the built-in redundancy for communication systems and digital EP assets, APS has not identified a need to maintain as a Minimum Staff position at either the TSC or EOF facility.

Draft NUREG-0654, Revision 2, Alignment

APS does not propose to staff an IT Lead position as minimum staff at the EOF or TSC. The draft NUREG-0654, Revision 2, Guidance states:

> *"IT staff is only required to be described in the emergency plan if the emergency response is reliant on IT equipment to the extent where failure of IT equipment would prevent the effective implementation of the emergency plan. In other words, if the failure of IT equipment prevents the effective implementation of the emergency plan (i.e., redundant methods/options are unavailable or not timely), then this EP function should be developed as described."*

The PVNGS EOF and TSC contain multiple computers and programs in the facility which support EP functions. This includes Plant Parameter Display Systems, Core Damage Assessment and Dose Assessment programs, as well as WebEOC, fax and copy machines. Performance during drills and exercises indicates consistent performance of these assets in the facilities. The communications, dose assessment and core damage assessment equipment is periodically tested and issues, if any identified, are promptly addressed. The facilities and respective digital equipment are frequently used through administration of training for each team, as well as drills and exercises. Additionally, an IT HELP Desk is available 24 hours per day, 7 days a week. Many computer issues can be addressed remotely with an IT specialist. If additional help is needed, an IT Specialist will be dispatched promptly to address the issue.

In addition, each of these EP related digital assets in the TSC and EOF were evaluated as part of implementation of the Cyber Security Rule, 10 CFR 73.54(b). Under NEI 13-10, *Cyber Security Control Assessments*, EP Critical Digital Assets at the TSC and EOF have been assessed and controls have been put in place to protect the assets against cyber-attack. In conjunction with these controls, alternate administrative, non-digital, or adequately independent means have been put in place for performing each EP function, should the digital component or program fail for any reason. For example, both the Core Damage Assessment program and the Dose Assessment program have a redundant; non-network laptop computer at their respective facility to maintain the EP function should the designated computer fail. ERO position procedures have written instructions for backup communication measures should the primary means fail.

Finally, performance of digital assets is monitored through either the corrective action program or the EP Drill and Exercise critique process. Performance trends are monitored and corrective actions are implemented as necessary.

Note that PVNGS maintains an IS Manager position at the EOF as a Full-Augmented position.

3.2.14 EP Function: Resource Allocation and Administration

a. On-Shift Minimum Staff – There are no on-shift staff assigned to this EP Function; however, the Palo Verde IT department maintains a 24 hour/day HELP desk to assist users with IT related issues.

EP Function: Resource Allocation and Administration – On Minimum Shift Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• None specified	• None specified	• None specified

b. Augmented Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: Resource Allocation and Administration – Augmented Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• None specified	• Positions managed under Emergency Plan Implementing Procedures (EPIP)	• None specified

Emergency Plan Change Assessment

EOF Administrative and Logistics Coordinator - The EOF Administrative and Logistics Coordinator is a Full-Augmented Staff position. Under the PVNGS Emergency Plan, the EOF Administrative and Logistics Coordinator responsibilities do not directly perform actions necessary to accomplish EP functions under NUREG-0654, but rather support other personnel at the EOF. The position, as currently defined in the Emergency Plan, would not be considered as part of the minimum ERO needed to implement the emergency plan (i.e., if any position or function is not staffed then the emergency plan may not be effectively implemented). The EOF Admin and Logistics Coordinator performs support activities such as monitoring, advising, validations, coordination, and assistance activities. Specific responsibilities include:

- Ensure contact is made and communications are maintained with appropriate Non-PVNGS personnel whose assistance may be required to terminate the emergency conditions and to expedite the recovery.

- Ensure shift relief and continual staffing for the EOF.

Each of these tasks above are considered support activities and are not required to directly accomplish any of the draft NUREG-0654 identified functions. As such, the EOF Admin and Logistics Coordinator position is maintained as a Full-Augmented position. The EOF Administrative and Logistics Coordinator position and the listed responsibilities are being relocated to an EPIP.

Draft NUREG-0654, Revision 2, Alignment

The Resource Allocation and Administration EP Functions do not exist in the draft NUREG-0654, Revision 2, guidance. Retaining the EOF Administrative and Logistics Coordinator as Full-Augmented is consistent with the draft NUREG-0654, Revision 2, guidance.

3.2.15 EP Function: First Aid and Rescue Operations

The First Aid and Rescue Operations EP Function no longer exists in the draft NUREG- 0654, Revision 2, guidance.

a. On-Shift Minimum Staff – The table below identifies the current and proposed PVNGS Emergency Plan On-Shift ERO, as well as the draft NUREG-0654, Revision 2, guidance for this EP Function.

EP Function: First Aid and Rescue Operations – On-shift Minimum Staff		
Current Emergency Plan, Table 1	Proposed Emergency Plan, Table 1	Draft NUREG-0654, Revision 2, Guidance
• Plant Fire Department/Emergency Medical Technicians - At least 2 Fire Team Members are EMT qualified (May be performed by personnel assigned other functions)	• None specified	• None specified

Emergency Plan Change Assessment

The PVNGS Emergency Plan identifies the EP Function of First Aid and Rescue Operations as collateral duties. PVNGS utilizes members of the Fire Department/Emergency Medical Technicians (EMTs) to satisfy this responsibility. First Aid and Rescue is no longer identified as an EP Function under the draft NUREG-0654, Revision 2, Table B-1, guidance. First Aid is still maintained as part of the draft NUREG-0654, Revision 2, guidance under Section II.L, *Planning Standard for Medical and Public Health Support.* As such, PVNGS will continue to maintain qualified First Aid and Rescue personnel on-shift; however, the personnel resources are no longer listed on the Emergency Plan, Table 1, *Staffing Table*, consistent with the draft NUREG-0654 guidance.

Draft NUREG-0654, Revision 2, Alignment

The First Aid and Rescue Operations EP Function does not exist in the draft NUREG-0654, Revision 2, Table B-1, guidance. Therefore, removing the Function from the Emergency Plan is consistent with the draft NUREG-0654, Revision 2, guidance.

b. Augmented Minimum Staff – There are no ERO resources assigned to First Aid and Rescue Operations under the current PVNGS Emergency Plan. Additionally, the First Aid

and Rescue Operations EP Function does not exist in the draft NUREG-0654, Revision 2, guidance. No revision is required to the PVNGS Emergency Plan.

3.3 Full-Augmented Staff Assessment

The table below identifies the current PVNGS Emergency Plan, Table 1, Full-Augmented ERO for each of the EP Functions. These positions are either:

- Unchanged (Remain minimum on-shift or augmented staff)
- Re-categorized as minimum on-shift or augmented staff
- No longer minimum on-shift or augmented staff and relocated to an EPIP

EP Function: Communications – Full-Augmented Staff	
Current	Proposed
• (1) STSC Communicator	• Remains On-shift Minimum Staff
• (1) STSC ENS Communicator	• Remains On-shift Minimum Staff
• (1) TSC ENS Communicator	• Remains Augmented Minimum Staff
• (1) EOF NAN Communicator	• Remains Augmented Minimum Staff
• (1) EOF HPN Communicator	• Relocate to Emergency Plan Implementing Procedures (EPIP)
• (1) EOF Radiological Assessment Communicator	• Relocate to Emergency Plan Implementing Procedures (EPIP)
• (1) TSC ERF Communicator	• Relocate to Emergency Plan Implementing Procedures (EPIP)
• (1) OSC ERF Communicator	• Relocate to Emergency Plan Implementing Procedures (EPIP)
• (1) EOF ERF Communicator	• Relocate to Emergency Plan Implementing Procedures (EPIP)
• (1) JIC ERF Communicator	• Relocate to Joint Public Information Procedure (EPIP)
EP Function: Radiation Protection – Full-Augmented Staff	
Current	Proposed
• (3) Radiation Protection Technicians (OSC) • (1) Radiation Protection Monitor (performs dose assessment and RP Supervision from Control Room until TSC and EOF are manned, then transition to OSC) • (1) RFAT Driver • (1) Survey Qualified Position • (6) Radiation Protection Technicians (Augmented) • (1) Radiation Protection Technician or Radiation Monitoring Technician • (1) Radiation Monitoring Technician • (2) Chemistry Technicians	• Radiation Protection Technicians remain On-shift Minimum Staff, but added an additional Radiation Protection Technician • Radiation Protection Monitor/ RP Group Leader performs Dose Assessment and RP Supervision on-shift. • RFAT Driver remains On-shift Minimum Staff • (6) RP Technicians @ 60 minutes during normal working hours/120 minutes off-hours (OSC) remains Augmented Minimum Staff Positions Eliminated from On-shift Minimum

	Staff: • (1) Radiation Protection Technicians or Radiation Monitoring Technician • (1) Survey Qualified Position • (2) Chemistry Technicians
EP Function: Dose Assessments/Projections – Full-Augmented Staff	
Current	Proposed
• (1) Radiation Protection Monitor[1] (performed from Control Room until TSC and EOF are manned, then transition to OSC) • EOF Dose Assessment Health Physicist	• Radiation Protection Monitor/RP Group Leader remains On-shift Minimum Staff • Added as Augmented Minimum Staff
EP Function: Engineering – Full-Augmented Staff	
Current	Proposed
• (1) Unaffected Unit Shift Technical advisor • (1) Reactor Analyst • (1) Mechanical Engineer • (1) Electrical Engineer • (1) EOF Engineering Director	• Remain On-shift Minimum Staff • Remains Augmented Minimum Staff • Remains Augmented Minimum Staff • Remains Augmented Minimum Staff • EOF Engineering Director relocated to Emergency Plan Implementing Procedures (EPIP)
EP Function: Security – Full-Augmented Staff	
Current	Proposed
• (1) Security Director on-shift • EOF Security Manager	• Remains On-shift Minimum Staff • Manage under Emergency Plan Implementing Procedures (EPIP)
EP Function: Repair Team Activities – Full-Augmented Staff	
Current	Proposed
• (12) Plant Equipment Operators • (2) Mechanical Technicians (OSC) • (3) Electrical Technicians (OSC) • (1) I&C Technician (OSC) • (1) Mechanical Maintenance Technician (OSC) (Augmented) • (1) Electrical Maintenance Technician (OSC) (Augmented) • (1) I&C Maintenance Technician (OSC) (Augmented)	• Remain On-shift Minimum Staff • Reduce Mechanical Technicians by one for On-shift Minimum Staff • Reduce Electrical Technicians by two On-shift Minimum Staff • I&C Technician remains On-shift Minimum Staff • Added Mechanical/Electrical/I&C Maintenance Technicians to Augmented Minimum Staff Palo Verde Nuclear Generating Station will identify the additional maintenance personnel

	available to support the Emergency Condition under the Emergency Plan Table 1.
EP Function: Supervision of Repair Team Activities – Full-Augmented Staff	
Current	Proposed
• (1) Shift Manager/Emergency Coordinator • (1) OSC RP Monitor/Group Leader • (2) OSC Repair Team Coordinators • (1) OSC Manager	• Remains On-shift Minimum staff • OSC RP Monitor/Group Leader remains On-shift Minimum Staff • Added OSC Repair Team Coordinators to Augmented Minimum Staff • Added OSC Manager to Augmented Minimum Staff
EP Function: Radiation Field Assessment Teams – Full-Augmented Staff	
Current	Proposed
• (1) Radiological Assessment Communicator • Additional Offsite Field Monitoring Teams (Personnel numbers depend on the type and extent of the emergency.) • Additional Onsite Field Monitoring Teams (Personnel numbers depend on the type and extent of the emergency.)	• Manage positions under Emergency Plan Implementing Procedures (EPIP)
EP Function: Media Information – Full-Augmented Staff	
Current	Proposed
• (1) Palo Verde Spokesperson • (1) Distribution Services Coordinator • (1) Research/Writing Coordinator • (1) Spokesperson Coordinator • (1) Video/Photo Coordinator	• Manage positions under Joint Public Information Procedure (EPIP)
EP Function: Information Technology – Full-Augmented Staff	
Current	Proposed
• (1) EOF IS Manager	• Manage positions under Emergency Plan Implementing Procedures (EPIP)
EP Function: Resource Allocation and Administration – Full-Augmented Staff	
Current	Proposed
• EOF Administrative & Logistics Coordinator • Administrative Support (TSC/EOF/JIC) (Personnel numbers depend on the type	• Manage positions under EPIP

and extent of the emergency)	
EP Function: First Aid and Rescue Operations – Full-Augmented Staff	
Current	Proposed
• First Aid and Rescue Operations (Personnel numbers depend on the type and extent of the emergency.)	• Manage positions under EPIP

Neither NUREG-0654, Revision 1, nor the draft Revision 2 document discuss Full-Augmented positions under Table B-1. In the draft NUREG-0654, Revision 2, Table B-1, Note iii addresses the required minimum staffing as compared to other staff not critical to the effective Emergency Plan implementation. Note iii states:

> *iii. The minimum ERO staffing plan is that which is required to effectively implement the site-specific emergency plan (i.e., the emergency plan cannot be effectively implemented without this staff). The emergency plan should describe the minimum ERO staffing plan, while supporting implementing procedures can describe any other staff response desired by the licensee as long as this staff is not critical to effective emergency plan implementation The augmentation times listed are intended to provide a model for applicants and licensees to consider in the development of their site-specific emergency plan.*

The intent of this note is to emphasize the distinction between ERO minimum staffing and ERO members who serve in a supporting capacity.

The PVNGS Emergency Plan describes the Minimum Staff ERO that is the minimum needed to implement the station's Emergency Plan (i.e., if any position or function is not staffed, then the Emergency Plan cannot be effectively implemented). PVNGS utilizes additional Full-Augmented ERO staff that is trained, qualified, and available to ensure all available licensee resources are used when a radiological emergency occurs and to provide for staff relief on a 24-hour/7-day a week extended basis. The Full-Augmented staff performs support functions such as intra-facility communications, organization liaisons, and expert advisors. This description of the additional Full-Augmented ERO staff is being relocated from the PVNGS Emergency Plan to an EPIP.

The PVNGS Emergency Plan shall be effectively implemented utilizing the Minimum Staff positions. However, most Full-Augmented Staff will still be assigned ERO teams and be notified to respond to their ERF at the Alert or higher ECL. Their presence will not be required however to activate the respective ERFs.

The complete list of Full-Augmented Staff relocated from the PVNGS Emergency Plan; along with their respective EP tasks are listed in Attachment 3 of this submittal. Each EP position assigned under the Emergency Plan is evaluated and dispositioned in this attachment.

3.4 Impact of Proposed Changes on State Emergency Plan

Potential Impact of ERO Changes on Off-Site Emergency Response Organizational Interfaces

APS provided a draft copy of the proposed changes to representatives from the Arizona Department of Emergency and Military Affairs (DEMA) to ensure the revision had no adverse impact on the ability of State and Local response organizations to effectively implement their FEMA-approved RERP plans.

DEMA provided a letter dated July 8, 2019, stating DEMA completed its initial review of a draft copy of the License Amendment Request. The objective of the review was to identify any potential impacts off-site emergency preparedness and response. DEMA concluded that based upon the review of the document and proposed changes there is no basis for denial of approval. DEMA concurs and recommends approval of the LAR. See Attachment 4, *State of Arizona Review of Proposed Changes to Emergency Plan,* for a copy of the referenced correspondence.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

The proposed change has been evaluated to determine whether applicable regulations and requirements continue to be met.

Section 50.47, *Emergency Plans*, of Title 10 of the *Code of Federal Regulations* (10 CFR) sets forth the U.S. Nuclear Regulatory Commission's (NRC) emergency plan requirements for nuclear power plant facilities. The regulation in 10 CFR 50.47(a)(1)(i) states, in part:

> *…no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.*

Section 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

Planning Standard (2) of this section requires that:

> *On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.*

Section IV.A of Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities,* to 10 CFR Part 50, states:

> *The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization and the means for notification of such individuals in the event of an emergency. Specifically, the following shall be included:*

1. *A description of the normal plant operating organization.*

2. *A description of the onsite emergency response organization (ERO) with a detailed discussion of:*

   a. *Authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency;*

   b. *Plant staff emergency assignments;*

   c. *Authorities, responsibilities, and duties of an onsite emergency coordinator who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures.*

3. *A description, by position and function to be performed, of the licensee's headquarters personnel who will be sent to the plant site to augment the onsite emergency organization.*

4. *Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities.*

5. *Identification, by position and function to be performed, of other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are n o t employees of the licensee and who may be called upon for assistance for emergencies shall also be identified. The special qualifications of these persons shall be described.*

6. *A description of the local offsite services to be provided in support of the licensee's emergency organization.*

7. *By June 23, 2014, identification of, and a description of the assistance expected from, appropriate State, local, and Federal agencies with responsibilities for coping with emergencies, including hostile action at the site. For purposes of this appendix, "hostile action" is defined as an act directed toward a nuclear power plant or its personnel that include the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force.*

8. *Identification of the State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.*

9. *By December 24, 2012, for nuclear power reactor licensees, a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.*

Revision 1 to NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,* dated November 1980, was intended to aid licensees, applicants for licenses, or State and Local emergency response organizations in the development of their Radiological Emergency Response Plans. The NRC endorsed this document for use in this effort via Revision 2 to Regulatory Guide (RG) 1.101, *Emergency Planning and Preparedness for Nuclear Power Reactors,* dated October 1981. RG 1.101 allowed for licensees to submit alternatives to the guidance provided in NUREG-0654/FEMA-REP-1 for staff review and approval if necessary.

Section II.B of NUREG-0654/FEMA-REP-1, Revision 1, states, in part:

> *On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.*

Evaluation Criterion 5 of Section II.B of NUREG-0654/FEMA-REP-1, Revision 1, states, in part:

> *Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.*

- 10 CFR 50.54(q)

  10 CFR 50.54(q) establishes requirements that all holders of a nuclear power reactor operating license must follow and maintain in effect emergency plans which meet the planning standards in 10 CFR 50.47(b) and the requirements in 10 CFR 50, Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities.* 10 CFR 50.47 of 10 CFR, *Emergency plans,* sets forth emergency plan requirements for nuclear power plant facilities.

- NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,* provides guidance and acceptance criteria to provide a basis for NRC licensees, State and Local governments to develop radiological emergency plans and improve emergency preparedness.

- Regulatory Guide 1.219, *Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors,* provides guidance related to emergency preparedness and specifically to making changes to emergency response plans.

- NRC Regulatory Issue Summary (RIS) 2005-02, Revision 1, *Clarifying the Process for Making Emergency Plan Changes,* which provides guidance to (1) clarify the meaning of a "decrease in effectiveness," as stated in 10 CFR 50.54(q); (2) clarify the process for evaluating proposed changes to emergency plans; (3) provide a method for evaluating proposed changes to emergency plans; and (4) provide clarifying guidance on the appropriate content and format of applications submitted to the NRC for approval prior to implementation.

- NSIR/DPR-ISG-01, *Interim Staff Guidance, Emergency Planning for Nuclear Power Plants* (Reference 6.1)*,* provides guidance for addressing emergency planning requirements for nuclear power plants. This guidance is based on changes to Emergency preparedness regulations 10 CFR 50.47 and 10 CFR 50 Appendix E, that were published in the Federal Register (FR) on November 23, 2011 (i.e., reference 76FR 72560). The guidance should be used by licensees and applicants for implementing changes to onsite EP programs based on the revised emergency preparedness requirements and by NRC for reviewing the adequacy of the revised onsite emergency preparedness programs.

In addition, PVNGS also reviewed draft NUREG-0654, Revision 2 (NUREG-0654/FEMA-REP-1, Revision 2*), Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,* dated May 2015 and draft RIS 201X-XX, *License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation* (ADAMS accession number ML15338A291) in support of this submittal.

APS has evaluated the proposed changes against the applicable regulatory requirements and guidance criteria. The proposed PVNGS Emergency Plan changes continue to assure that regulatory requirements and emergency planning standards associated with emergency response are met.

4.2 Precedent

APS has reviewed the following two license amendment requests in support of this submittal:

1. In a letter dated January 31, 2018, (ADAMS accession number ML18053A159) and May 10, 2018 (ADAMS accession number ML18149A290), Exelon Generation Company, LLC (Exelon) submitted License Amendment Requests (LARs) to support changes to the Emergency Plans for their Midwest facilities to revise certain Emergency Response Organization (ERO) positions. The proposed ERO staffing changes were being made in accordance with guidance specified in the *Alternative Guidance for Licensee Emergency Response Organizations,* finalized in a letter from the U.S. Nuclear Regulatory Commission (NRC) to Nuclear Energy Institute (NEI), dated June 12, 2018. The NRC proposes to include this guidance in Revision 2 of NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.*

   On June 28, 2018, Exelon received an NRC Request for Additional Information (RAI) (ADAMS accession number ML18180A077). In support of the LAR submitted for the Exelon Midwest sites (Braidwood, Byron, Clinton, Dresden, LaSalle, and Quad Cities), Exelon responded to the RAI on July 27, 2018 (ADAMS accession number ML18208A405). That

amendment request was approved by the NRC on March 21, 2019 (ADAMS accession number ML19036A586)

2. In a letter dated May 10, 2018 (ADAMS accession number ML18149A290), Exelon Generation Company, LLC (Exelon) submitted LARs to support changes to the Emergency Plans for their Limerick and Peach Bottom facilities to revise certain Emergency Response Organization (ERO) positions. The proposed ERO staffing changes were being made in accordance with guidance specified in the *Alternative Guidance for Licensee Emergency Response Organizations,* finalized in a letter from the U.S. Nuclear Regulatory Commission (NRC) to Nuclear Energy Institute (NEI), dated June 12, 2018. The NRC proposes to include this guidance in Revision 2 of NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.*

   On October 2, 2018, Exelon received an NRC Request for Additional Information (RAI) (ADAMS accession number ML18276A020). In support of the LAR submitted for Limerick and Peach Bottom, Exelon responded to the RAI by letter dated November 1, 2018 (ADAMS accession number ML18305B270). Exelon updated the submittal by letter on November 29, 2018 (ADAMS accession number ML18337A004), based on information gained during the Midwest facility application process.

4.3 No Significant Hazards Consideration

Arizona Public Service (APS) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, *Issuance of amendment*, as discussed below:

The requested amendments to the licenses support changes to the PVNGS Emergency Plan based upon completion of a supporting evaluation of onsite Emergency Response Organization (ERO) staffing. The revision will generally align the the PVNGS minimum staff ERO with the draft NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,* Revision 2, guidance and interim staff guidance. The specific differences from the draft NUREG-0654 guidance are evaluated in detail in the license amendment request.

The proposed changes have been reviewed considering the applicable requirements of 10 CFR 50.47, 10 CFR 50 Appendix E, and other applicable NRC guidance criteria. APS has evaluated the proposed changes to the PVNGS Emergency Plan and determined that the changes do not involve a Significant Hazards Consideration. In support of this determination, an evaluation of each of the three standards, set forth in 10 CFR 50.92, *Issuance of amendment,* is provided below.

1. *Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?*

   Response: No.

   The proposed changes to the PVNGS Emergency Plan do not increase the probability or consequences of an accident. The proposed changes do not impact the function of plant Structures, Systems, or Components (SSCs). The proposed changes do not affect accident initiators or accident precursors, nor do the changes alter design assumptions. The

proposed changes do not alter or prevent the ability of the onsite ERO to perform their intended functions to mitigate the consequences of an accident or event.

Therefore, the proposed changes to the PVNGS Emergency Plan do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?*

   Response: No.

   The proposed changes have no impact on the design, function, or operation of any plant SSCs. The proposed changes do not affect plant equipment or accident analyses. The proposed changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed), a change in the method of plant operation, or new operator actions. The proposed changes do not introduce failure modes that could result in a new accident, and the proposed changes do not alter assumptions made in the safety analysis.

   Therefore, the proposed changes to the PVNGS Emergency Plan do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. *Does the proposed amendment involve a significant reduction in a margin of safety?*

   Response: No.

   Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel cladding, reactor coolant system pressure boundary, and containment structure) to limit the level of radiation dose to the public.

   The proposed changes do not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analyses. There are no changes being made to safety analysis assumptions, safety limits, or limiting safety system settings that would adversely affect plant safety as a result of the proposed changes. Margins of safety are unaffected by the proposed changes to the ERO staffing.

   The proposed changes are associated with the PVNGS Emergency Plan staffing and do not impact operation of the plant or its response to transients or accidents. The proposed changes do not affect the Technical Specifications. The proposed changes do not involve a change in the method of plant operation, and no accident analyses will be affected by the proposed changes. Safety analysis acceptance criteria are not affected by these proposed changes. The proposed changes to the Emergency Plan will continue to provide the necessary on-site ERO response staff.

   Therefore, the proposed changes to the PVNGS Emergency Plan do not involve a significant reduction in a margin of safety.

APS concludes that operation of the facility in accordance with the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed above: 1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, 2) such activities will be conducted in compliance with the Commission's regulations, and 3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed changes are applicable to emergency planning standards for PVNGS involving proposed ERO staffing changes. The proposed changes do not reduce the capability to meet the emergency planning standards established in 10 CFR 50.47 and 10 CFR 50, Appendix E. The proposed changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed changes.

6.0 REFERENCES

6.1 NSIR/DPR-ISG-01, *Interim Staff Guidance, Emergency Planning for Nuclear Power Plants,* Revision 0, November 2011

6.2 NEI 10-05, Revision 0, *Assessment of On-Shift Emergency Response Organization Staffing and Capabilities,* dated June 2011

6.3 NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,* Revision 1, U.S. Nuclear Regulatory Commission and Federal Emergency Management Agency, Washington, DC, November 1980

6.4 10 CFR 50.47, *Emergency plans*

6.5 10 CFR 50, Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities*

6.6 Regulatory Issue Summary 2005-02, Revision 1, *Clarifying the Process for Making Emergency Plan Changes,* dated April 19, 2011

6.7 Regulatory Guide 1.219, *Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors,* dated November 2011

6.8 NUREG 0857, *Safety Evaluation Report related to the operation of Palo Verde Nuclear Generating Station Units 1, 2, and 3* (Dockets Nos. STN 50-528, STN 50-529, and STN 50-530), dated November 1981

6.9 NUREG 0857, *Safety Evaluation Report related to the operation of Palo Verde Nuclear Generating Station Units 1, 2, and 3* (Dockets Nos. STN 50-528, STN 50-529, and STN 50-530), Supplement 1, Appendix C, dated November 1981

6.10 NUREG 0857, *Safety Evaluation Report related to the operation of Palo Verde Nuclear Generating Station Units 1, 2, and 3* (Dockets Nos. STN 50-528, STN 50-529, and STN 50-530), Supplement 4, 5, 7, and 8, Section 13, *Emergency Planning* (various dates)

6.11 Palo Verde 1, 2, & 3 *Amendment to Remove or Correct Outdated Administrative Information, and Remove Completed Licensing Conditions From The Licenses*, dated October 10, 2000

6.12 PVNGS Correspondence 102-02733, dated November 16, 1993, *Submittal of Revision 13 of Emergency Plan*

6.13 NRC Correspondence dated February 25, 1994, *Proposed Revision 13 to the (PVNGS) Emergency Plan* (Legacy ADAMS Accession No. 9403090086)

6.14 PVNGS Units 1, 2, and 3 - *Emergency Plan Change to Reduce Number of Shift Technical Advisors in Emergency Response Organization Staffing,* dated March 19, 2004 (ADAMS Accession No. ML040860125)

6.15 *Alternative Guidance for Licensee Emergency Response Organizations,* finalized in a letter from the U.S. Nuclear Regulatory Commission (NRC) to Nuclear Energy Institute (NEI), dated June 12, 2018

ATTACHMENT 1

Palo Verde Nuclear Generating Station

Emergency Plan Marked-up Pages

PVNGS EMERGENCY PLAN

Revision ~~64~~ LAR

Originator: Williams, Todd B(Z05663)
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Effective Date: August 08, 2019

Complete rewrite of section 4.2.1, Table 1 and facility organization charts.

4.0 ORGANIZATIONAL CONTROL OF EMERGENCIES

In the event of an emergency, the normal station operational organization is supplemented with an organization specifically designed to respond to emergency situations. Depending on the severity of the emergency, the Emergency Organization may consist of an on-shift emergency response organization, or of an augmented emergency response organization. This section describes the On-shift, On-site and Off-site Emergency Organizations.

4.1 NORMAL ORGANIZATIONS

The Executive Vice President & Chief Nuclear Officer, reports to the APS President & Chief Executive Officer. The Executive Vice President & Chief Nuclear Officer has the overall responsibility and authority for the operation and technical support of PVNGS. The Executive Vice President & Chief Nuclear Officer and the nuclear organization have the overall responsibility and authority to ensure that all activities associated with APS' nuclear facilities are carried out with the highest standards of safety and ensuring the station is operated in accordance with (IAW) the licenses granted by the NRC, the Technical Specifications, and the requirements and commitments stated in the UFSAR.

The onsite station organization is divided into four main groups which report to the Executive Vice President & Chief Nuclear Officer.

Each group is divided into subordinate departments and sections. The four groups are as follows:

- Nuclear Site Operations
- Regulatory Affairs Oversight and Performance Improvement
- Operations Support
- Engineering

4.2 THE EMERGENCY RESPONSE ORGANIZATION [Ref. INPO IER L1 13-10, Recommendation 5g, IER L2 11-39, Recommendation 3]

The Emergency Response Organization (ERO) consists of personnel staffing in the Control Room/STSC, Operations Support Center (OSC), Technical Support Center (TSC), Emergency Operations Facility (EOF) and the Joint Information Center (JIC).

The PVNGS ERO is supported by designated facilities as described in Section 7.0, Emergency Facilities and Equipment. The on-shift emergency response organization is augmented at declaration of an Alert or higher emergency classification level.

In the event a member of the ERO minimum staff becomes incapacitated or is otherwise unavailable, they shall be replaced as soon as reasonably possible. Operating unit staff who are ERO members are governed by PVNGS Technical Specification 5.2 and its exceptions.

During normal station work hours, notification of on-site ERO may occur via PA announcement, emergency evacuation system and/or mobile devices.

During off-hours, notification of ERO is accomplished by activating the automated callout system. A manual system is also available if the automated system is not available.

For an Unusual Event classification, on-shift personnel respond to the emergency and the event is directed from the affected unit Control Room/ STSC. Command of the situation remains there with the on-shift Emergency Coordinator (EC) until termination/recovery or reclassification to a higher level emergency occurs. For events affecting all three units, command and control is in Unit 1. APS/Palo Verde Communications provides media interface during an Unusual Event.

In the event of an Alert or higher classification level, the on-shift EC orders the activation of the TSC, OSC, EOF, and JIC. The on-site ERO is directed by the EC-TSC. The EOD in the EOF provides overall coordination of the event and direction of the ERO.

~~4.2.1 ON-SHIFT EMERGENCY ORGANIZATION~~

~~Palo Verde Nuclear Generating Station on shift emergency organization is sufficient to permit the required mitigation response and effectively implement the Emergency Plan as required in 10CFR50 Appendix E.~~

~~Table 1 of the Emergency Plan reflects the results of the Palo Verde On-Shift Emergency Response Organization Staffing and Capabilities analysis as required by 10 CFR 50, Appendix E. The Palo Verde On-Shift Emergency Response Organization Staffing and Capabilities analysis is retained as Correspondence #090-05063 (RCTSAI 4164598).~~

~~The On-shift Emergency Organization (Figure 1) consists of the following positions:~~

~~4.2.1.1 Emergency Coordinator (EC) [Ref. INPO IER L1 13-10, Recommendation 5i]~~

~~The affected unit Shift Manager (SM) or designee initially assumes the responsibilities of the EC and is responsible for direction and~~

coordination of the response. Members of the normal shift organization assume emergency positions to carry out actions as described below.

The EC has the responsibility and authority to immediately and unilaterally initiate emergency actions, including providing notification and Protective Action Recommendations (PAR) to governmental agencies responsible for implementing off-site emergency measures. The EC is also responsible for communication of plant status and radiological conditions including dose projection results as appropriate.

Procedures provide for accelerated calls and verbal notification to the NRC using the Emergency Notification System (ENS) of Security-based events considered to be a credible imminent threat or Hostile Action.

The affected unit Shift Manager may be relieved as EC by another qualified EC. At an Alert or higher emergency classification level, the EC directs the Security Director to initiate callouts to the ERO in accordance with the associated implementing procedure. Upon arrival of the designated EC-TSC, the EC-STSC conducts a briefing and is relieved as the Emergency Coordinator.

At the onset of an incident, the EC has the following responsibilities:

- Notification of offsite emergency response agencies and off-site emergency organizations (non-delegable duty until relieved by EOD)
- Making protective action recommendations as necessary to off-site emergency response agencies (non-delegable duty until relieved by EOD)
- Classification of emergency events (non-delegable)
- Determination of the necessity for site evacuation authorization for emergency workers to exceed 10CFR20 exposure limits
- Activation of on-site and off-site ERO organizations for an alert or higher emergency classification level

4.2.1.2 Control Room Supervisor

The Control Room Supervisor (CRS) located in the unit control rooms, reports to the EC. The CRS performs initial assessment and evaluation of any abnormal or emergency conditions. After the EC declares an

emergency, the CRS maintains the normal duties of directing the Nuclear Operators and assisting the EC.

4.2.1.3 Fire Team

The Fire Team (minimum of 5 individuals) reports to the CRS and is maintained on-site at all times. The Leader of Fire Protection Department is responsible for ensuring sufficient members of the Fire Team are Emergency Medical Technician (EMT) qualified and available at all times.

4.2.1.4 Fire Team Advisor

The Fire Team Advisor is a Licensed Nuclear Operator that supports the Fire Team during a fire. The Fire Team Advisor should have no collateral duties that interfere with the ability to support the Fire Team.

4.2.1.5 Control Room Operators

The Control Room Operators report to the CRS and conduct the safe and proper operation of the unit at all times, and respond to emergency conditions, as necessary.

4.2.1.6 Radiation Monitoring Technician

The Radiation Monitoring Technician reports to the Radiation Protection Monitor (RPM) and establishes a response area in the Radiation Monitoring office and conducts in-plant area surveys as necessary.

4.2.1.7 Radiation Protection Monitor (RPM)

The Radiation Protection Monitor (RPM) is an ANSI 3.1 Senior Radiation Protection Technician that responds to the STSC and reports to the EC. The RPM conducts offsite dose calculations until relieved. The RPM authorizes exposures up to 10CFR20 Limits, recommends potassium iodide administration to the EC and directs in-plant, onsite and offsite Radiation Monitoring Teams.

4.2.1.8 STSC Communicator

The STSC Communicator is filled by an Auxiliary Operator. Upon direction from the EC, the STSC Communicator makes the initial notifications to state and local agencies and the ERO.

4.2.1.9 Emergency Notification System (ENS) Communicator

The ENS Communicator is filled by an individual knowledgeable of the plant (e.g., RO, SRO, STA, previously licensed individual, etc.) and keeps an open line of communications with the NRC, as requested. This communicator should not have any other E-Plan collateral duties (or other duties that interfere with the communicator function).

4.2.1.10 Security Director

The Security Director initially reports to the Shift Manager/EC and then reports to the EC in the TSC. The Security Director (assumed by the on-shift Security Section Leader) provides for continued personnel accountability, site access control and requests offsite emergency assistance, upon direction from the EC.

4.2.1.11 Security Force

The Security Force reports to locations as directed by the Security Director and assists in performing assigned duties.

4.2.1.12 Shift Manager

The Shift Manager is also the EC-STSC until relieved by the EC-TSC. Following turnover the Shift Manager reports to the EC. The Shift Manager performs initial classification and declaration of an emergency, maintains control of unit operations, and mitigates accident conditions.

4.2.1.13 Shift Technical Advisor

The Shift Technical Advisor (STA) responds to the Control Room or STSC of the affected unit and reports to the EC. The affected unit STA advises the EC on activities that impact the safe operation of the unit, and independently verifies emergency classifications, as time permits. For events classified as an Alert or higher emergency classification level, the affected unit STA activates ERDS.

4.2.1.14 Shift Technical Advisor (Unaffected Unit)

The unaffected unit STA assesses core damage, and provides electrical and mechanical technical support until relieved by the TSC. The STA also monitors various data displays throughout the course of the emergency and provides assistance to the Control Room personnel.

4.2.1.15 Technicians

Technicians report to the EC and if necessary, may be assigned to Emergency Repair or Survey teams. The Chemistry Technicians, Maintenance Technicians (Mechanics, Electrical, Instrument and Control) respond to the OSC for assignment.

4.2.1.16 Operations Advisor

The Operations Advisor responds to the STSC and reports to the EC. The Operations Advisor provides technical and operational advice to the EC-STSC. Following TSC activation, the Operations Advisor maintains the flow of information between the EC-TSC and Control Room.

4.2.1.17 Survey/Environmental Teams

A Survey/Environmental Team is formed and responds to the OSC, upon request from the Radiation Protection Monitor (RPM). The team performs radiological monitoring activities and at least one member of the team is a Radiation Protection Technician.

4.2.1.18 Emergency Repair Teams

The Emergency Repair Team conducts repairs and may consist of Chemistry and Maintenance Technicians, Plant Operators and a Radiation Protection Technician, and reports to the EC.

4.2.2 TECHNICAL SUPPORT CENTER (TSC) ORGANIZATION (ONSITE)

The TSC Organization (Figure 2) is located on-site and consists of the following positions.

4.2.2.1 Emergency Coordinator TSC (EC-TSC)

The EC-TSC responds to the TSC and is responsible for direction and coordination of the onsite Emergency Organization.

4.2.2.2 Emergency Coordinator (EC) Technical Assistant

The EC Technical Assistant responds to the TSC and reports to the EC. The EC Technical Assistant makes announcements over the Site Evacuation and Public Address systems as directed by the EC-TSC. The EC Technical Assistant has no counterpart in the on-shift Emergency Organization.

4.2.2.3 Maintenance Manager

The Maintenance Manager responds to the TSC and reports to the EC. The Maintenance Manager coordinates the repair and damage control for all plant systems and directs the emergency response activities of the Emergency Repair Teams. The Maintenance Manager directs the OSC Manager to form and dispatch any team that is required and maintains communication with the OSC concerning repair team efforts.

4.2.2.4 Engineering Manager

The Engineering Manager responds to the TSC and reports to the EC. The Engineering Manager directs systems analysis, engineering, establishes contact with the NSSS vendor and architect engineer to discuss issues, technical status of the plant as needed. The Engineering Manager directs any procedure development as required by the emergency and maintains liaison with the Engineering Director in the EOF.

4.2.2.5 Mechanical Engineer

The Mechanical Engineer responds to the TSC and reports to the Engineering Manager. The Mechanical Engineer assumes the duties of Technical Support Mechanical from the STA in the STSC and provides mechanical engineering analyses.

4.2.2.6 Operations Manager

The Operations Manager responds to the TSC and reports to the EC. The Operations Manager follows procedures that the Control Room is using, and keeps the EC informed of the operational impact of events in progress. The Operations Manager receives technical and operational input from the Operations Advisor and maintains the flow of information between the TSC and Control Room.

4.2.2.7 Radiation Protection Coordinator

The Radiation Protection Coordinator (RPC) responds to the TSC and reports to the EC. The RPC provides overall control and direction of inplant monitoring teams and radiological controls. The Radiation Protection Coordinator relieves the RPM of these responsibilities. The RPC maintains communications with the Radiation Protection Group Lead, the RPM (prior to Command and Control transfer) and the Radiological Assessment Coordinator in the EOF. The RPC is responsible for recommending ways to reduce the radiological consequences of the event with the support of Engineering.

4.2.2.8 Security Director

The Security Director responds to the TSC and reports to the EC. The on-shift Security Section Leader assumes the duties and responsibilities as the Security Director. The Security Director requests emergency off-site assistance upon direction of the EC and directs the onsite security force in the areas of personnel accountability, access control, site security, evacuation, medical transportation, and personnel and equipment security control.

4.2.2.9 Reactor Analyst

The Reactor Analyst responds to the TSC and reports to the Engineering Manager. The Reactor Analyst assumes responsibilities from the STA. The Reactor Analyst performs detailed analyses of core physics and heat transfer parameters to assess reactor core status and to evaluate the integrity of fuel cladding.

4.2.2.10 Radiation Protection Support Technician

The Radiation Protection Support Technician responds to the TSC and reports to the Radiation Protection Coordinator. The Radiation Protection Support Technician performs habitability surveys of the TSC.

4.2.2.11 Administrative Staff

The Administrative Staff responds to the TSC and assists the TSC Emergency Organization in all matters requiring clerical support.

4.2.2.12 Chemistry Coordinator

The Chemistry Coordinator responds to the TSC and reports to the Engineering Manager. The Chemistry Coordinator provides analysis and evaluation of coolant samples and air samples to aid in determination of reactor core conditions and release potentials, and provides chemical analyses for evaluation of plant systems.

4.2.2.13 ERF Communicator

The ERF Communicator responds to the TSC and reports to the Emergency Coordinator Technical Assistant. The ERF Communicator maintains communications with the ERF Communicators in the OSC, EOF and JIC. This position also monitors ERFDADS data displayed through PI, provides information to the Emergency Coordinator Technical Assistant regarding the overall emergency activities and maintains Plant Status electronic media display and/or status boards.

4.2.2.14 Electrical Engineer

The Electrical Engineer responds to the TSC and reports to the Engineering Manager. The Electrical Engineer provides electrical engineering analyses and assumes the duties of Technical Support Electrical from the STA in the STSC.

4.2.2.15 ENS Communicator

The ENS Communicator responds to the TSC and reports to the Operations Manager. The ENS Communicator maintains continuous phone communications with the NRC, when requested, concerning operational events and reactor plant status. The ENS Communicator monitors ERDS.

4.2.3 OSC ORGANIZATION

The OSC Organization (Figure 3) is located onsite and consists of the following positions.

4.2.3.1 OSC Manager

The OSC Manager responds to the STSC for a briefing and reports to the EC. Following the briefing, the OSC Manager responds to the OSC, coordinates available resources and upon direction from the

Maintenance Manager in the TSC, assembles and dispatches emergency teams.

4.2.3.2 Radiation Protection Group Lead

The Radiation Protection Group Lead reports to the OSC Manager and provides overall control and direction of in-plant monitoring teams and radiological controls.

4.2.3.3 Repairs Coordinator

The Repairs Coordinator ensures that Maintenance Technicians and Repair Teams are dispatched at the direction of the OSC Manager. The Repairs Coordinator reports to the OSC Manager.

4.2.3.4 Repair Teams

Teams are formed if emergency repair operations are necessary. The teams may consist of Chemistry Technicians, Maintenance Technicians (Mechanical, Electrical, Instrumentation and Control), or Radiation Protection Technician as required to address conditions and Plant Operators.

4.2.3.5 RFAT Driver

The RFAT Driver responds to the RFAT vehicles and serves as a driver for the RFAT vehicle.

4.2.3.6 Radiation Protection Technicians

Radiation Protection Technicians respond to the OSC and report to the Radiation Protection Group Lead. As required, the RP Technicians may be assigned to Repair or Survey/Environmental Teams.

4.2.3.7 Chemistry Technicians

Chemistry Technicians respond to the OSC and report to the Radiation Protection Group Lead. As required, Chemistry Technicians may be assigned to Repair or Survey Teams, or to conduct sampling activities.

4.2.3.8 Mechanics

Mechanics respond to the OSC and report to the Repairs Coordinator. Mechanics may be assigned to repair teams as needed.

4.2.3.9 Electricians

Electricians respond to the OSC and report to the Repairs Coordinator. Electricians may be assigned to repair teams as needed.

4.2.3.10 I&C Technicians

I&C Technicians respond to the OSC and report to the Repairs Coordinator. I&C Technicians may be assigned to repair teams as needed.

4.2.3.11 ERF Communicator

The ERF Communicator responds to the OSC and reports to the OSC Manager. The ERF Communicator maintains communications with his counterparts in the TSC, EOF, and JIC, and provides information to the OSC Manager regarding the overall emergency activities.

4.2.3.12 Administrative Staff

The Administrative Staff responds to the OSC and assists the OSC Emergency Organization in all matters requiring clerical support.

4.2.4 EOF ORGANIZATION

The EOF Emergency Organization is illustrated in Figure 4. The interfaces between the Onsite and Offsite Emergency Organizations are shown in Figure 6.

4.2.4.1 Emergency Operations Director

The Emergency Operations Director (EOD) is in command of emergency operations and is responsible for:

- Overall coordination of onsite and offsite emergency functions.
- Interfacing with federal/state/county emergency response agencies.
- Communication of plant status updates and radiological release data including dose projection results as appropriate to NRC, State/County EOCs, TOC, and JIC personnel.
- Notification of state and county agencies concerning recommended protective actions.
- Directs administrative, technical, and logistical support to station emergency operations.

- Ensuring continuity of emergency organization resources.
- Establishing a recovery organization when appropriate.

Upon the assumption of this position, the EOD accepts from the EC-STSC, the following non-delegable offsite organizational responsibilities:

- Notification of offsite emergency management agencies.
- Making protective action recommendations as necessary to offsite emergency management agencies.

4.2.4.2 Assistant Emergency Operations Director

The Assistant Emergency Operations Director (AEOD) responds to the EOF and reports to the EOD to assist with duties and responsibilities as assigned.

4.2.4.3 Radiological Assessment Coordinator

The Radiological Assessment Coordinator responds to the EOF and reports to the EOD. The Radiological Assessment Coordinator is the principal liaison of the emergency response organization with the AZDHS. The Radiological Assessment Coordinator receives and evaluates dose projection information from the EOF Staff and provides protective action recommendations to the EOD.

4.2.4.4 Engineering Director

The Engineering Director responds to the EOF and reports to the EOD. The Engineering Director evaluates projected occurrences, coordinates engineering analysis with the TSC, recommends corrective actions and ensures the equipment status board is updated.

4.2.4.5 Security Manager

The Security Manager responds to the EOF and reports to the EOD. The Security Manager provides overall security support and coordinates closely with the Security Director in the TSC. The Security Manager also coordinates with the Administrative/Logistics Coordinator in providing site support to facilitate arrivals of offsite personnel.

4.2.4.6 ERF Communicator

The ERF Communicator responds to the EOF and reports to the Engineering Director. The ERF Communicator maintains communications with his counterparts in the TSC, OSC, and JIC. This position also monitors ERFDADS data displayed through PI, provides information to the Engineering Director regarding the overall emergency activities and maintains Plant Status boards.

4.2.4.7 Radiological Assessment Communicator

The Radiological Assessment Communicator responds to the EOF and reports to the Radiological Assessment Coordinator. The Radiological Assessment Communicator communicates with radiological assessment personnel at the TSC and directs the activities of the onsite/offsite Survey/Environmental Teams.

4.2.4.8 Administrative/Logistics Coordinator

The Administrative / Logistics Coordinator responds to the EOF and reports to the AEOD. The Administrative/Logistics Coordinator mobilizes offsite resources and obtains logistical support for the Emergency Organization.

4.2.4.9 Dose Assessment Health Physicist

The Dose Assessment Health Physicist responds to the EOF and reports to the Radiological Assessment Coordinator to perform radiological dose projections and other calculations or evaluations as directed.

4.2.4.10 Administrative Staff

The Administrative Staff reports to the Administrative/Logistics Coordinator in the EOF and assists the Emergency Organization in all matters requiring clerical support.

4.2.4.11 HPN Communicator

The HPN Communicator responds to the EOF and reports to the Radiological Assessment Coordinator. The HPN Communicator will maintain an open line with the NRC upon request.

4.2.4.12 NAN Communicator

The NAN Communicator responds to the EOF and reports to the AEOD. The NAN Communicator makes offsite notifications once the EOF is activated and relieves the STSC Communicator of this responsibility.

4.2.4.13 Information Services (IS) Manager

The Information Services Manager responds to the EOF and reports to the AEOD. The Information Services Manager ensures that IT equipment located in the EOF remains in good working order and provides assistance to EOF personnel with IT equipment operation when needed.

4.2.4.14 RFAT Team

The RFAT Teams respond to the RFAT vehicle parking area and report to the Radiological Assessment Communicator in the EOF.

4.2.4.15 Offsite Technical Representative

The Offsite Technical Representative responds to the State EOC in Phoenix and reports to the AEOD. The Offsite Technical Representative interfaces with state response agency personnel at the State EOC, provides up-to-date information on plant status, and clarifies how plant systems operate, via briefings and face-to-face contact with EOC staff.

4.2.5 JIC ORGANIZATION

The JIC Organization (Figure 5) is located offsite and consists of the following positions.

4.2.5.1 JIC Manager

The JIC Manager is the PVNGS representative that oversees public information activities at the JIC including preparation of media statements, media briefings and the flow of information to the Rumor Control Unit. The JIC Manager approves the technical content of media statements.

4.2.5.2 Spokesperson Coordinator

The Spokesperson Coordinator is the PVNGS representative in the JIC who coordinates the Spokespersons and advises and prepares materials for the Palo Verde Spokesperson in the preparation for media briefings.

4.2.5.3 Palo Verde Spokesperson

The Palo Verde Spokesperson is the representative within the JIC organization authorized to speak about actual emergency conditions at PVNGS.

4.2.5.4 ERF Communicator

The ERF Communicator is the JIC Palo Verde representative that provides any necessary technical explanations to the JIC Manager and the Palo Verde Spokesperson. The JIC ERF Communicator interfaces with the ERF Communicator in the EOF. The ERF Communicator, maintains communications with his counterparts in the TSC, OSC, and EOF, and provides information to the JIC Spokesperson Coordinator and the Palo Verde Spokesperson regarding the overall emergency activities.

4.2.5.5 Distribution Services Coordinator

The Distribution Services Coordinator coordinates the timely dissemination of accurate incident information to the media through electronic communication pathways (e.g., e-mail or fax) and the public via the Arizona Emergency Information Network Web site; and provides translation and other services for special needs and multilingual populations.

4.2.5.6 Rumor Control/Public Inquiry

The Rumor Control/Public Inquiry is operated by the Arizona Public Service Customer Care Center (CCC) Operators and augments State Public Inquiry and Rumor Control initiatives. CCC Operators provide information from approved media statements transmitted to the CCC from the JIC.

4.2.5.7 Video/Photo Coordinator

The Video/Photo Coordinator operates audio/video equipment at the JIC, including the EEC Auditorium. The Video/Photo Coordinator maintains copies of media briefings for archives.

4.2.5.8 Research/Writing Coordinator

The Research/Writing Coordinator writes materials such as media statements, fact sheets, flyers, and talking points for use by the JIC staff as needed.

4.3 NON-LICENSEE SUPPORT

Support from outside PVNGS consists of local service companies, institutions agencies, INPO, and contractor support.

4.3.1 LOCAL SERVICES SUPPORT

In emergency situations, PVNGS may need supplementary assistance from outside companies and service agencies. Such assistance may include transportation of injured and/or contaminated personnel, medical treatment and hospital facilities for station personnel, and fire suppression assistance.

4.3.2 CONTRACT SUPPORT

Contract support may include the Nuclear Steam Supply System (NSSS) supplier, the Architect Engineer, dosimetry, laboratory contractors, and decontamination and radwaste disposal firms. PVNGS has arranged for selected contract support firms to provide this assistance upon request.

4.4 COORDINATION WITH PARTICIPATING GOVERNMENT AGENCIES

For a complete discussion of authority, assigned responsibilities, capabilities, and activation and communication arrangements refer to the Offsite Emergency Response Plan for Palo Verde Nuclear Generating Station. PVNGS personnel coordinate emergency operations with state/ county government Emergency Operations Centers. The state, county, and city Emergency Operations Center Organization is shown in Figure 7. Safeguards and security team response are described in the PVNGS Security Plan and its implementing procedures.

SHIFT STAFFING (Immediate Response)

MAJOR FUNCTIONAL AREA	POSITION/FUNCTION TITLE	Staffing/Unit	Shared Site Staffing	Site Staffing Totals
Plant Operations and Assessment of Operational Aspects	Shift Manager/Emergency Coordinator	1		**3**
	Control Room Supervisor	1		**3**
	Control Room Operators	2		**6**
	Fire Team Advisor		1	**1**
	Auxiliary Operators	4		**12**
	Radiation Protection Monitor		1	**1**
	Shift Technical Advisor		2	**2**
Notifications/ Communications	STSC Communicator (Covered by Affected Unit)	See AO above		
	ENS Communicator		1	**1**
Support Staff	Chemistry Technician (OSC)		2	**2**
	Electrical Technician (OSC)		3	**3**
	Mechanical Technician (OSC)		2	**2**
	I&C Technician (OSC)		1	**1**
	RFAT Driver (Water Res Facility)		1	**1**
	Radiation Protection Technician (OSC)		3	**3**
	Radiation Monitoring Technician		1	**1**
	RM or RP Technician (OSC)		1	**1**
	Survey Qualified Position (OSC)		1	**1**
	Security Section Leader/Director (TSC) (not committed to armed response)		1	**1**
Fire Suppression/ Rescue Operations and First Aid	Plant Fire Department/Emergency Medical Technicians (At least 2 Fire Team Members are EMT qualified)		5	**5**
Site Access Control and Personnel Accountability	Plant Security		Staffing per Security Plan	Staffing per Security Plan
	TOTALS	**8/Unit = 24**	**26 Shared**	**Total 50**

AUGMENTATION STAFFING

Major Functional Area	Position Title	ON SHIFT	Normal Hours 60 MINUTES	Off Hours 120 MINUTES
Emergency Direction and Control	Emergency Coordinator (TSC)		1	1
	Emergency Operations Dir (EOF)		1	1
Plant System Engineering/ Repair and Corrective Actions Protective Actions	Technical Support Electrical (TSC)		1	1
	Technical Support Mechanical (TSC)		1	1
	Reactor Analyst (TSC)		1	1
	Radiation Protection Technicians (OSC)		6 – Immediate During Normal Hours	**6**
	Engineering Director (EOF)		1	1
Communications	NAN Communicator (EOF)		1	1
Fire Suppression	Offsite Fire Department		Offsite Support 45 Minutes from time of request	
Rescue Operations and First Aid	Offsite Ambulance		Offsite Support 45 Minutes from time of request	
	TOTALS		**13**	**13**

TABLE 1 MINIMUM SHIFT STAFFING FOR EMERGENCIES

CONTROL ROOM/STSC

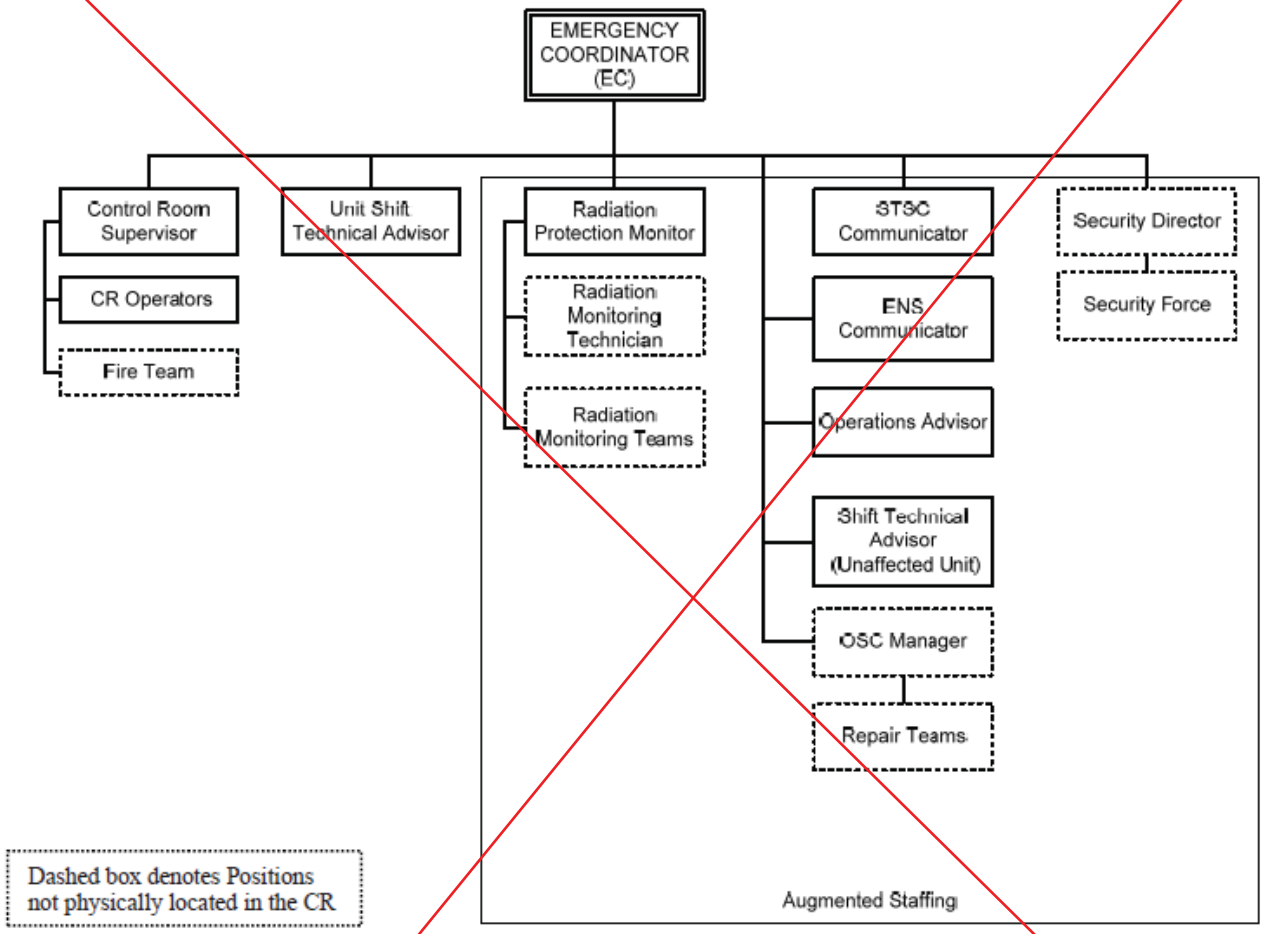


FIGURE 1 ONSHIFT EMERGENCY ORGANIZATION

TECHNICAL SUPPORT CENTER (TSC)

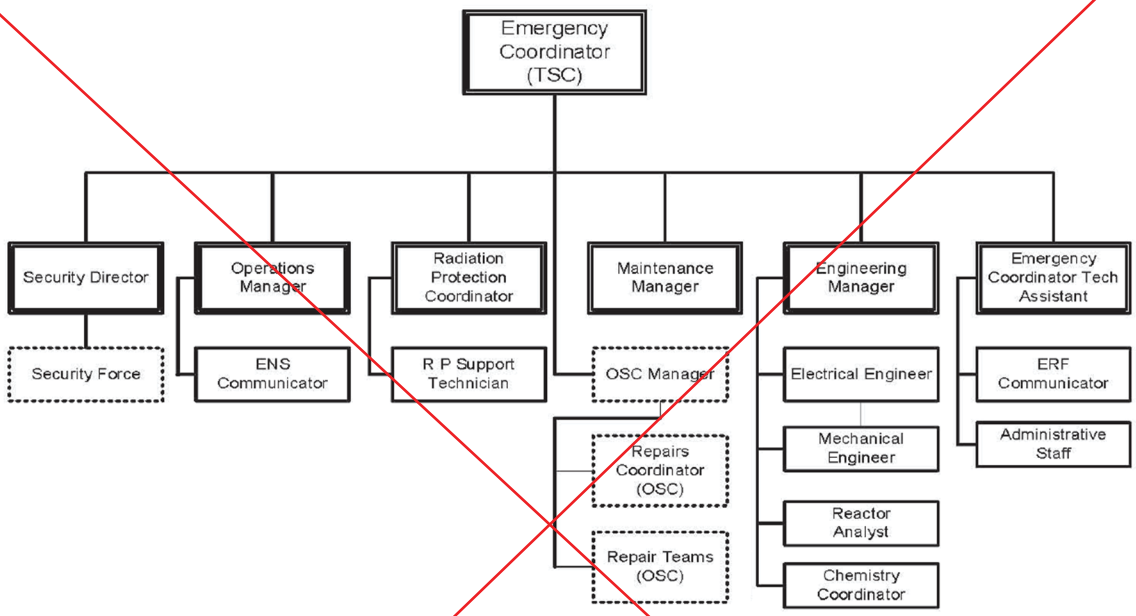


FIGURE 2 TECHNICAL SUPPORT CENTER ORGANIZATION

OPERATIONS SUPPORT CENTER (OSC)

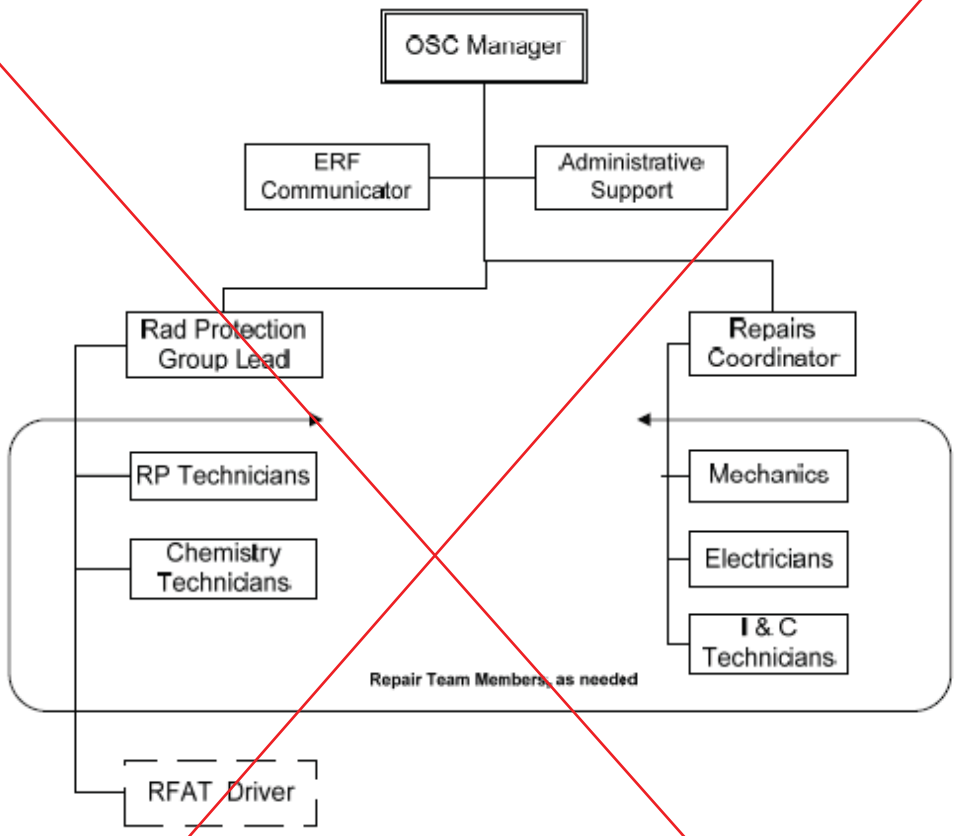


FIGURE 3 OPERATIONS SUPPORT CENTER ORGANIZATION

EMERGENCY OPERATIONS FACILITY (EOF)

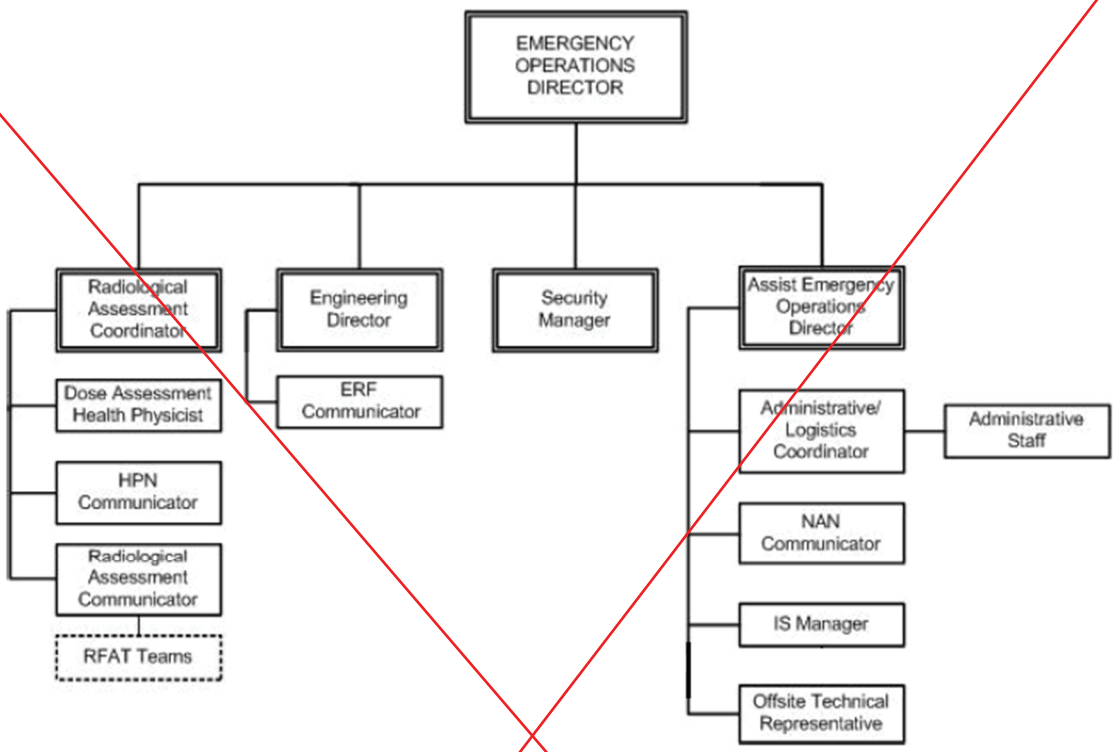


FIGURE 4 EMERGENCY OPERATIONS FACILITY ORGANIZATION

JOINT INFORMATION CENTER (JIC)

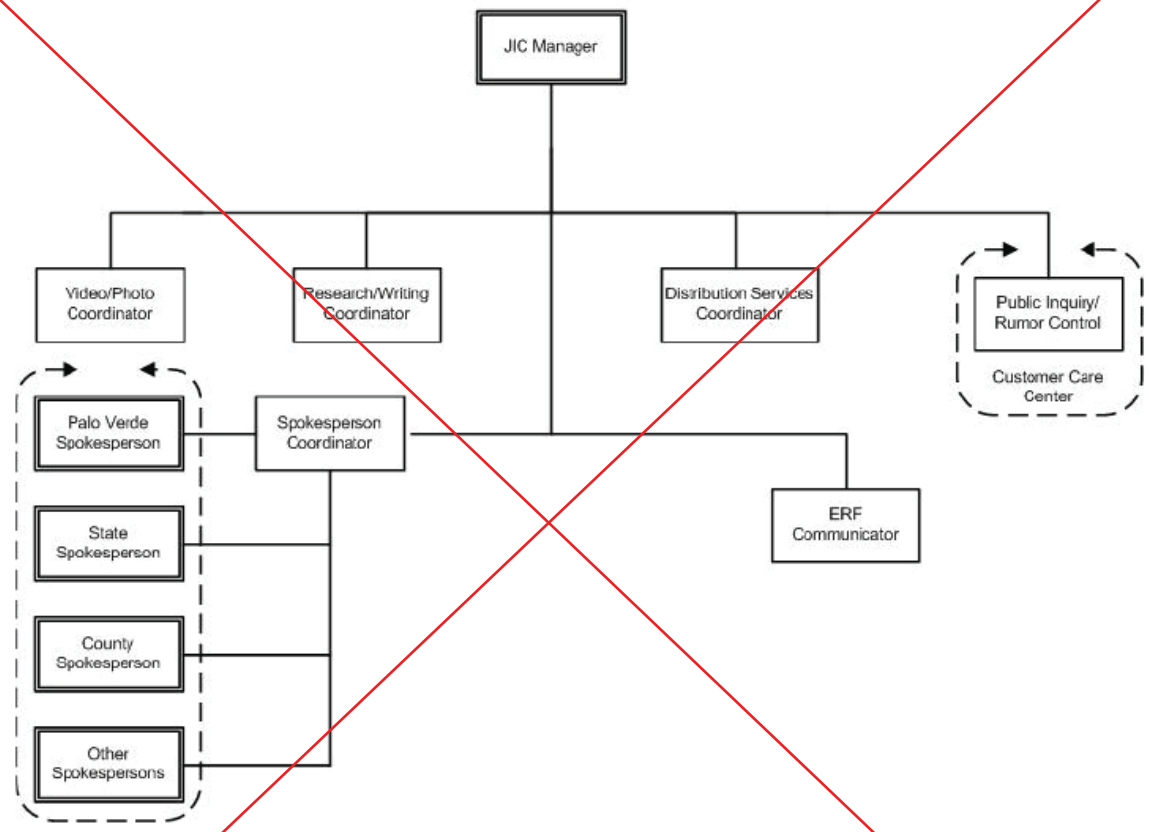


FIGURE 5 JOINT INFORMATION CENTER ORGANIZATION

ATTACHMENT 2

Palo Verde Nuclear Generating Station

Emergency Plan Clean Copy Pages

4.2 THE EMERGENCY RESPONSE ORGANIZATION

[Ref. INPO IER L1 13-10, Recommendation 5g, IER L2 11-39, Recommendation 3]

The Emergency Response Organization (ERO) consists of personnel staffing in the Control Room/STSC, Operations Support Center (OSC), Technical Support Center (TSC), Emergency Operations Facility (EOF) and the Joint Information Center (JIC).

The PVNGS ERO is supported by designated facilities as described in Section 7.0, Emergency Facilities and Equipment. The on-shift emergency response organization is augmented at declaration of an Alert or higher emergency classification level.

In the event a member of the ERO minimum staff becomes incapacitated or is otherwise unavailable, they shall be replaced as soon as reasonably possible. Operating unit staff who are ERO members are governed by PVNGS Technical Specification 5.2 and its exceptions.

During normal station work hours, notification of on-site ERO may occur via PA announcement, emergency evacuation system and/or mobile devices.

During off-hours, notification of ERO is accomplished by activating the automated callout system. A manual system is also available if the automated system is not available.

For an Unusual Event classification, on-shift personnel respond to the emergency and the event is directed from the affected unit Control Room/ STSC. Command of the situation remains there with the on-shift Emergency Coordinator (EC) until termination/recovery or reclassification to a higher level emergency occurs. For events affecting all three units, command and control is in Unit 1. APS/Palo Verde Communications provides media interface during an Unusual Event.

In the event of an Alert or higher classification level, the on-shift EC orders the activation of the TSC, OSC, EOF, and JIC. The on-site ERO is directed by the EC-TSC. The EOD in the EOF provides overall coordination of the event and direction of the Palo Verde ERO.

4.2.1 ON-SHIFT EMERGENCY ORGANIZATION

Palo Verde Nuclear Generating Station on-shift emergency organization is sufficient to permit the required mitigation response and effectively implement the Emergency Plan as required in 10CFR50 Appendix E.

Table 1 of the Emergency Plan reflects the results of the Palo Verde On-Shift Emergency Response Organization Staffing and Capabilities analysis as required by 10 CFR 50, Appendix E. The Palo Verde On-Shift Emergency Response Organization Staffing and Capabilities analysis is retained as Correspondence # 090-05063 (RCTSAI 4164598).

The On-shift Emergency Organization (Figure 1) consists of the following positions:

4.2.1.1 Emergency Coordinator (EC-STSC)

[Ref. INPO IER L1 13-10, Recommendation 5i]

The affected unit Shift Manager (SM) or designee initially assumes the responsibilities of the EC and is responsible initially for the command and control of the plant emergency response. Members of the normal shift organization assume emergency positions to carry out actions as described below.

The EC has the responsibility and authority to initiate emergency actions, including providing notification and Protective Action Recommendations (PAR) to governmental agencies responsible for off-site emergency measures. The EC is also responsible for communication of plant status and radiological conditions including dose projection results as appropriate.

Procedures provide for accelerated calls and verbal notification to the NRC using the Emergency Notification System (ENS) of Security-based events considered to be a credible imminent threat or Hostile Action.

The affected unit Shift Manager may be relieved as EC by another qualified EC.

At an Alert or higher emergency classification level, the EC directs the Security Director to initiate callouts to the ERO in accordance with the associated implementing procedure. Upon arrival of the designated EC-TSC, the EC-STSC conducts a briefing and is relieved as the Emergency Coordinator.

At the onset of an incident, the EC has the following responsibilities:

- Notification of offsite emergency management

agencies.(non-delegable duty until relieved by EOD)

- Making protective action recommendations as necessary to offsite emergency management agencies.(non-delegable duty until relieved by EOD)
- Classification of emergency events (non-delegable duty)
- Determination of the necessity for site evacuation and authorization for emergency workers to exceed 10CFR20 exposure limits
- Activation of the Palo Verde ERO for an alert or higher emergency classification level

4.2.1.2 Control Room Supervisor

The Control Room Supervisor (CRS) located in the unit control rooms, reports to the EC. The CRS performs initial assessment and evaluation of any abnormal or emergency conditions. After the EC declares an emergency, the CRS maintains the normal duties of directing the Nuclear Operators and assisting the EC.

4.2.1.3 Control Room Operators

The Control Room Operators report to the CRS and conduct the safe and proper operation of the unit at all times, and respond to emergency conditions, as necessary.

4.2.1.4 Plant Equipment Operators

Plant Operators are available to perform field activities in support of plant normal and emergency operations. The Plant Operators are responsible for initial repair activities onsite in the performance of emergency actions. Additionally, certain plant equipment operators are trained to perform the STSC and ENS Communicator duties.

4.2.1.5 Radiation Protection Monitor/RP Group Lead (RPM)

The Radiation Protection Monitor/RP Group Lead(RPM) is an ANSI 3.1 Senior Radiation Protection Technician that responds to the STSC and reports to the EC. The RPM conducts offsite dose calculations until relieved. The RPM authorizes exposures up to 10CFR20 Limits, recommends potassium iodide administration to the EC. The RPM provides RP Supervision on shift and directs in-plant, onsite and offsite Radiation Monitoring Teams. The Radiation Protection

Monitor/RP Group Lead position from the Control Room fills the Radiation Group Leader in the OSC when the EOF and TSC are manned.

4.2.1.6 STSC State / Local Communicator

The STSC Communicator is filled by an Auxiliary Operator. Upon direction from the EC, the STSC Communicator makes notifications to state and local agencies and the ERO. This communicator should not have any other E-Plan collateral duties (or other duties that interfere with the communicator function).

4.2.1.7 STSC NRC Communicator

The NRC Communicator is filled by an individual knowledgeable of the plant (e.g., RO, SRO, STA, previously licensed individual, etc.) and keeps an open line of communications with the NRC, upon request. This communicator should not have any other E-Plan collateral duties (or other duties that interfere with the communicator function).

4.2.1.8 Security Director

The Security Director initially responds to the Shift Manager/EC and then reports to the EC in the TSC. The Security Director (assumed by the on-shift Security Section Leader) provides for continued personnel accountability, site access control and requests offsite emergency assistance, upon direction from the EC.

4.2.1.9 Shift Technical Advisor (Affected Unit)

The Shift Technical Advisor (STA) responds to the Control Room or STSC of the affected unit and reports to the EC. The affected unit STA advises the EC on activities that impact the safe operation of the unit, and independently verifies emergency classifications, as time permits. For events classified as an Alert or higher emergency classification level, the affected unit STA activates ERDS.

4.2.1.10 Shift Technical Advisor (Unaffected Unit)

The unaffected unit STA assesses core damage, and provides electrical and mechanical technical support until relieved by the TSC. The STA also monitors various data displays

throughout the course of the emergency and provides assistance to the Control Room personnel.

4.2.1.11 Radiation Protection Technicians

Radiation Protection Technicians are on shift and report to the Shift Manager/Emergency Coordinator via the Radiation Protection Monitor/RP Group Lead. The on-shift RPMs are available for in plant surveys, job coverage, and on-site or offsite monitoring.

4.2.1.12 RFAT Driver

A driver for the Radiation Field Assessment Team is available on shift and can support either onsite or offsite RFAT activity as needed.

4.2.1.13 Repair Team

Maintenance personnel from the Mechanical, Electrical and I&C departments (one from each discipline) are on shift to support repair activities associated with critical plant systems needed for responding to the event.

4.2.2. Technical Support Center

The Augmented Emergency Response Organization that staffs the Technical Support Center (Figure 2) consists of the following positions:

4.2.2.1 Emergency Coordinator TSC (EC-TSC)

The EC-TSC responds to the TSC and is responsible for command and control of the onsite Emergency Organization upon transfer from the EC-STSC.

4.2.2.2 Operations Manager

The Operations Manager responds to the TSC and reports to the EC. The Operations Manager receives technical and operational input from the Operations Advisor and maintains the flow of information between the TSC and Control Room. The Operations Manager also advises the Emergency Coordinator – TSC on emergency classification.

4.2.2.3 Electrical / I&C Engineer

The Electrical Engineer responds to the TSC and reports to the Engineering Manager. The Electrical Engineer provides electrical engineering analyses and assumes the duties of

Technical Support Electrical from the STA in the STSC.

4.2. 2.4 Mechanical Engineer

The Mechanical Engineer responds to the TSC and reports to the Engineering Manager. The Mechanical Engineer assumes the duties of Technical Support Mechanical from the STA in the STSC and provides mechanical engineering analyses.

4.2.2.5 Radiation Protection Coordinator

The Radio logical Protection Coordinator (RPC) responds to the TSC and reports to the Emergency Coordinator. The RPC provides overall control and discretion of in-plant monitoring teams and radiological controls. The RPC is responsible for recommending ways to reduce the radiological consequences of the event with the support of Engineering. The Radiological Protection Coordinator relieves the RPM of these responsibilities. The RPC maintains communications with the Radiation Protection Technicians in the OSC, the RPM in the STSC, and the Radiological Assessment Coordinator in the EOF

4.2.2.6 Reactor Analyst

The Reactor Analyst responds to the TSC and reports to the Engineering Manager. The Reactor Analyst assumes responsibilities from the STA. The Reactor Analyst performs detailed analyses of core physics and heat transfer parameters to assess reactor core status and to evaluate the integrity of fuel cladding.

4.2.2.7 NRC Communicator

The NRC Communicator responds to the TSC and reports to the Operations Manager. The ENS Communicator maintains continuous phone communications with the NRC, upon request concerning operational events and reactor plant status.

4.2.3. Operations Support Center

4.2.3.1 OSC Manager

The OSC Manager responds to the STSC for a briefing and reports to the EC. Following the briefing, the OSC Manager responds to the OSC, coordinates available resources for repair team activity. The OSC Manager, upon request from the TSC, assembles and dispatches emergency teams.

4.2.3.2 Radiation Protection Group Leader

The Radiation Protection Group Leader reports to the OSC Manager and provides overall control and direction of in-plant monitoring teams and radiological controls. The Radiation Group Leader position is filled by the Radiation Protection Monitor/RP Group Lead from the Control Room when the EOF and TSC are manned and operational.

4.2.3.3 Radiation Protection Technicians

Radiation Protection Technicians respond to the OSC and report to the Radiation Protection Group Lead. As required, the RP Technicians may be assigned to Repair or Survey/Environmental Teams.

4.2.3.4 Mechanical Maintenance Technicians

Mechanics respond to the OSC and report to the Repairs Coordinator. Mechanics may be assigned to repair teams as needed.

4.2.3.5 Electrical Maintenance Technicians

Electricians respond to the OSC and report to the Repairs Coordinator. Electricians may be assigned to repair teams as needed.

4.2.3.6 I&C Maintenance Technicians

I&C Technicians respond to the OSC and report to the Repairs Coordinator. I&C Technicians may be assigned to repair teams as needed.

4.2.3.7 Repair Team Coordinators

The Repair Team Coordinators respond to the OSC and report to the OSC Manager. The Repair Team Coordinators provide leadership and supervision to the maintenance craft in the OSC.

4.2.4. Emergency Operations Facility

4.2.4.1 Emergency Operations Director

The Emergency Operations Director (EOD) is in command and control of emergency operations following turnover and is responsible for:

- Overall coordination of Palo Verde onsite and offsite emergency functions.
- Interfacing with federal/state/county emergency response agencies.
- Communication of plant status updates and radiological release data including dose projection results as appropriate to NRC, State/County EOCs, TOC, and JIC personnel.
- Notification of state and county agencies concerning recommended protective actions.
- Directs administrative, technical, and logistical support to station emergency operations.
- Ensuring continuity of emergency organization resources.
- Establishing a recovery organization when appropriate.

Upon the assumption of this position the EOD accepts from the EC-STSC, the following non-delegable offsite organizational responsibilities:

- Notification of offsite emergency management agencies.
- Making protective action recommendations as necessary to offsite emergency management agencies.

4.2.4.2 Radiological Assessment Coordinator

The Radiological Assessment Coordinator responds to the EOF and reports to the EOD. The Radiological Assessment Coordinator is the principal liaison of the emergency response organization with the AZDHS. The Radiological Assessment Coordinator receives and evaluates dose projection information from the EOF Staff and provides protective action recommendations to the EOD.

4.2.4.3 Dose Assessment Health Physicist

The Dose Assessment Health Physicist responds to the EOF and reports to the Radiological Assessment Coordinator to perform radiological dose projections and other calculations or evaluations as directed.

4.2.4.4 State / Local NAN Communicator

The NAN Communicator responds to the EOF and reports to the EOD. The NAN Communicator makes offsite notifications to state and local emergency management agencies once the EOF is activated and relieves the STSC Communicator of this responsibility.

4.2.5.4. Joint Information Center

4.2.5.1 JIC Manager

The JIC Manager is the PVNGS representative that oversees public information activities at the JIC including preparation of media statements, media briefings and the flow of information to the Rumor Control Unit. The JIC Manager reviews the technical content of media statements.

TABLE 1 MINIMUM SHIFT STAFFING FOR EMERGENCIES			
Emergency Preparedness Function	**On Shift**	**Technical Support Center (TSC)/ Operations Support Center (OSC)** **Alert or Greater Augment w/in 60/120-min Note 2**	**Emergency Operations Facility (EOF)/ Joint Information Center (JIC)** **Alert or Greater Augment w/in 60 / 120-min Note 2**
Command & Control • Provide overall ERO command and control until relieved. • Approve emergency action level (EAL) and/or PAR classifications until relieved. • Authorize personnel dose extensions until relieved.	(1) Shift Manager / Emergency Coordinator[1] Technical Specification Required Operating Crew • Control Room Supervisor (1 per unit) • Control Room Operators (2 per unit)	(1) Emergency Coordinator (TSC)	(1) Emergency Operations Director (EOF)
Communications • Communicate EAL and PAR classifications to offsite agencies, including the NRC, until relieved.	(1) State and Local Communicator (STSC)[1] (1) NRC Communicator (STSC)[1]	(1) NRC Communicator (TSC) Additional communicators will be staffed as needed	(1) State and Local NAN Communicator (EOF) Additional communicators will be staffed as needed

TABLE 1 MINIMUM SHIFT STAFFING FOR EMERGENCIES			
Emergency Preparedness Function	**On Shift**	**Technical Support Center (TSC)/ Operations Support Center (OSC)** **Alert or Greater Augment w/in 60/120-min Note 2**	**Emergency Operations Facility (EOF)/ Joint Information Center (JIC)** **Alert or Greater Augment w/in 60 / 120-min Note 2**
Repair Team Activities	(12) Plant Equipment Operators[1] (4 per unit, includes qualified STSC Communicator and STSC NRC Communicator on shift) (1) Mechanical Maintenance Technician[1] (1) Electrical Maintenance Technician[1] (1) I&C Maintenance Technician[1]	(1) Mechanical Maintenance Technician (OSC) (1) Electrical Maintenance Technician (OSC) (1) I&C Maintenance Technician (OSC) Additional Maintenance Technicians as needed	Not applicable
Supervision of Repair Team Activities	(1) Shift Manager/ Emergency Coordinator[1]	(1) OSC Manager (2) OSC Repair Team Coordinators (1) OSC RP Group Leader	Not applicable

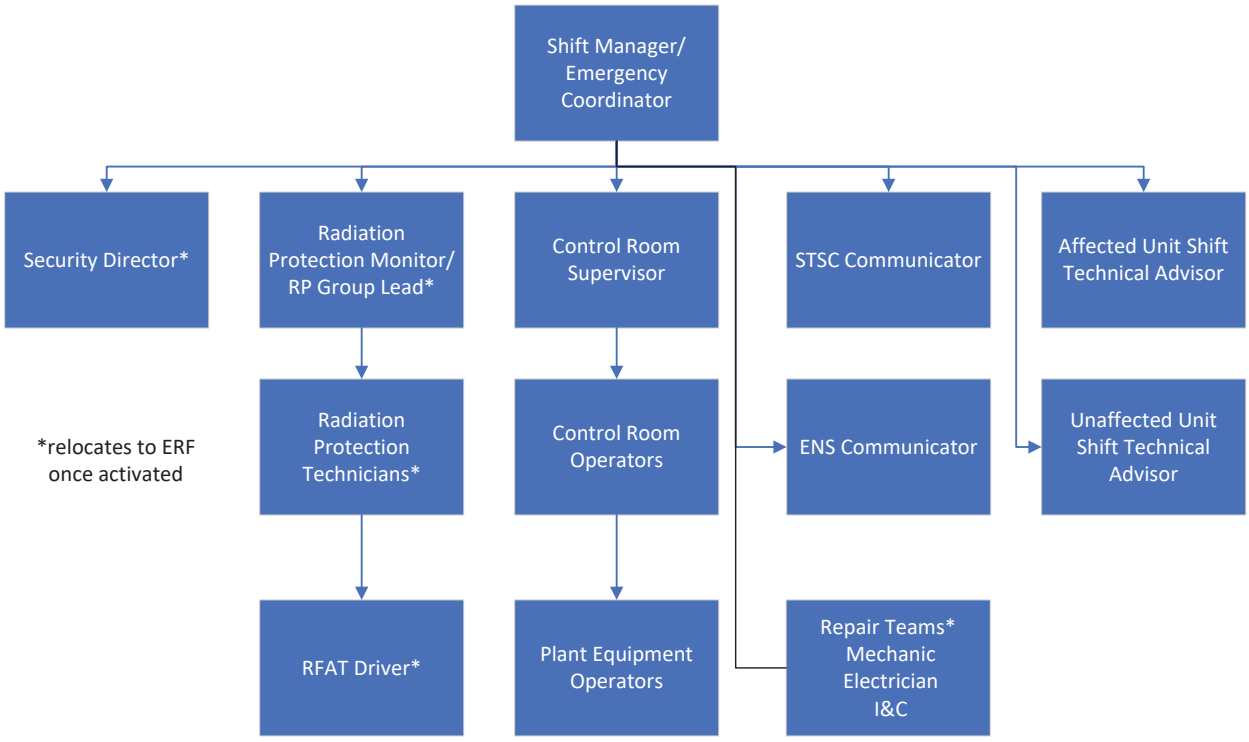
TABLE 1 MINIMUM SHIFT STAFFING FOR EMERGENCIES			
Emergency Preparedness Function	**On Shift**	**Technical Support Center (TSC)/ Operations Support Center (OSC)** **Alert or Greater Augment w/in 60/120-min Note 2**	**Emergency Operations Facility (EOF)/ Joint Information Center (JIC)** **Alert or Greater Augment w/in 60 / 120-min Note 2**
Radiation Protection / Field Monitoring • Provide qualified health physics (RP) coverage for responders accessing potentially unknown radiological environments during emergency conditions. • Provide in-plant surveys, onsite surveys, and offsite surveys. • Support offsite field monitoring teams[1]. • Radiation Monitoring.	(3) RP Technicians (1 per unit) Onsite / Offsite RFAT A • (1) RP Technician • (1) RFAT Driver	(6) Additional RP Technicians Offsite RFAT B • (1) RP Technician (from augmented RPT's) • (1) RFAT Driver	Not applicable
Supervision of Radiation Protection • Evaluate and assess plant and offsite radiological data in the development of onsite protective actions and offsite PARs, until relieved.	(1) Radiation Protection Monitor/RP Group Leader[1] (relocates to OSC as RP Group Leader once TSC/EOF manned)	(1) Radiation Protection Coordinator (TSC)	(1) Radiological Assessment Coordinator (EOF)
Dose Assessments/ Projections • Perform dose assessments/projections and provide input to applicable PAR decision-maker, until relieved by the EOF.	(1) Radiation Protection Monitor/RP Group Leader[1] (relocates to OSC as RP Group Leader once TSC/EOF manned)	Not applicable in TSC	(1) Dose Assessment Health Physicist (EOF)

TABLE 1 MINIMUM SHIFT STAFFING FOR EMERGENCIES			
Emergency Preparedness Function	**On Shift**	**Technical Support Center (TSC)/ Operations Support Center (OSC)** **Alert or Greater Augment w/in 60/120-min Note 2**	**Emergency Operations Facility (EOF)/ Joint Information Center (JIC)** **Alert or Greater Augment w/in 60 / 120-min Note 2**
Emergency Classifications • Evaluate plant conditions and recommend emergency classifications, until relieved.	Affected Unit Shift Technical Advisor (1 of 2 per site)[1]	(1) Operations Manager (TSC)	Not applicable
Engineering • Provide engineering coverage related to the specific discipline of the assigned engineer, until relieved	Unaffected Unit Shift Technical Advisor* (1 of 2 per site)[1] *Core/Thermal Hydraulics Engineer	TSC Engineering Staff: (1) Electrical/ I&C Engineer (1) Mechanical Engineer (1) Reactor Analyst*	Not applicable
JIC • Manage and coordinate media information related to the event.	Not applicable	Staff for handling media inquiries (may not be a TSC/ OSC function, but needs to be established at this point).	JIC Manager

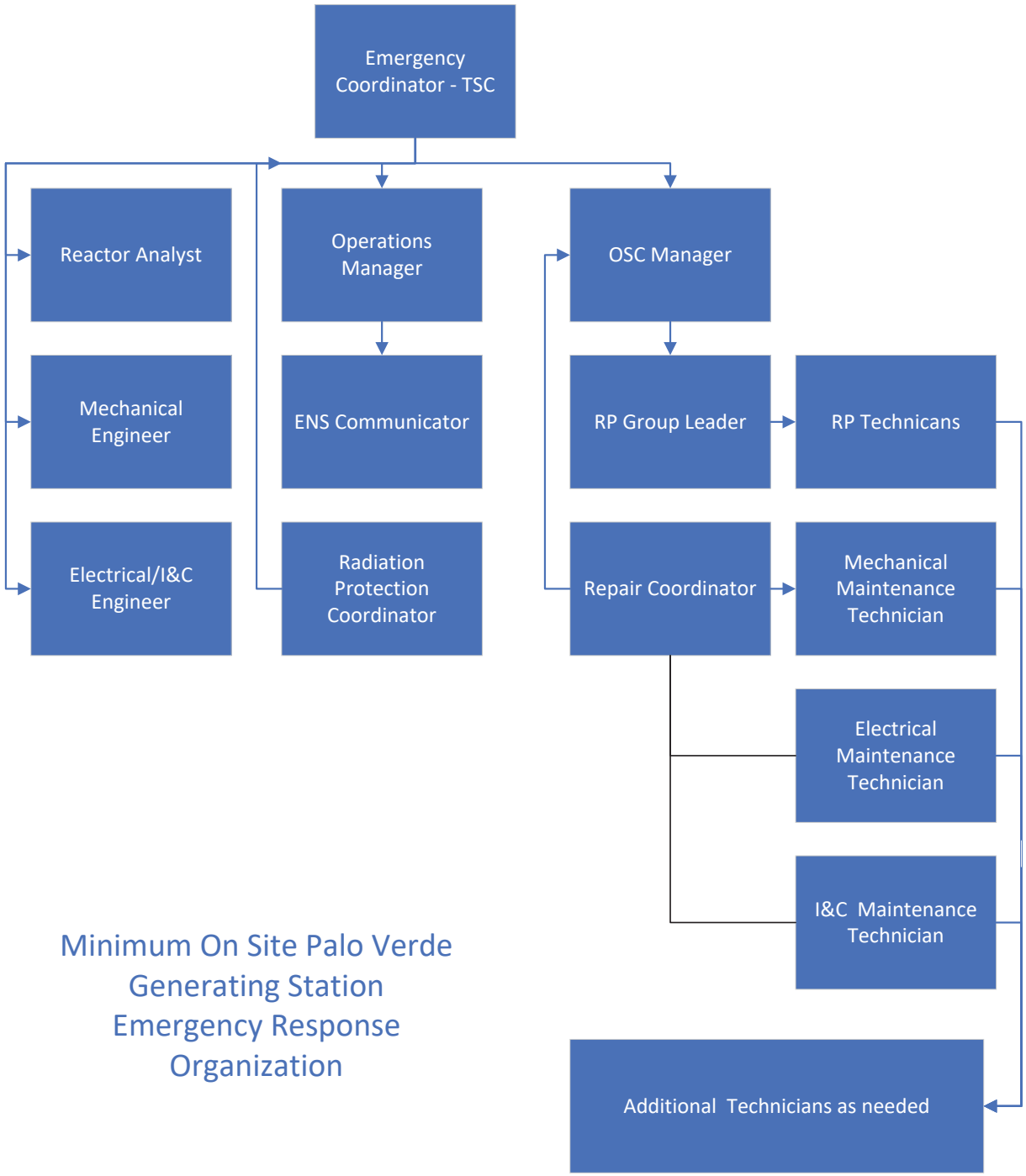
TABLE 1 MINIMUM SHIFT STAFFING FOR EMERGENCIES			
Emergency Preparedness Function	**On Shift**	**Technical Support Center (TSC)/ Operations Support Center (OSC)**	**Emergency Operations Facility (EOF)/ Joint Information Center (JIC)**
		Alert or Greater Augment w/in 60/120-min Note 2	**Alert or Greater Augment w/in 60 / 120-min Note 2**
• **Security**	(1) Security Director (TSC) Coordinate security related activities and information with the Emergency Coordinator. Security staffing is per the site Security Plan.	Not applicable	Not applicable
Fire Team	Fire Team staffing per site Fire Protection Program		

[1] Other personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time. A 10 CFR Part 50, Appendix E shift staffing evaluation must be performed to support assignment of multiple roles to individual responder's on-shift. For augmented ERO positions, a similar approach is acceptable for evaluating whether personnel can adequately perform multiple functions without having competing priorities.

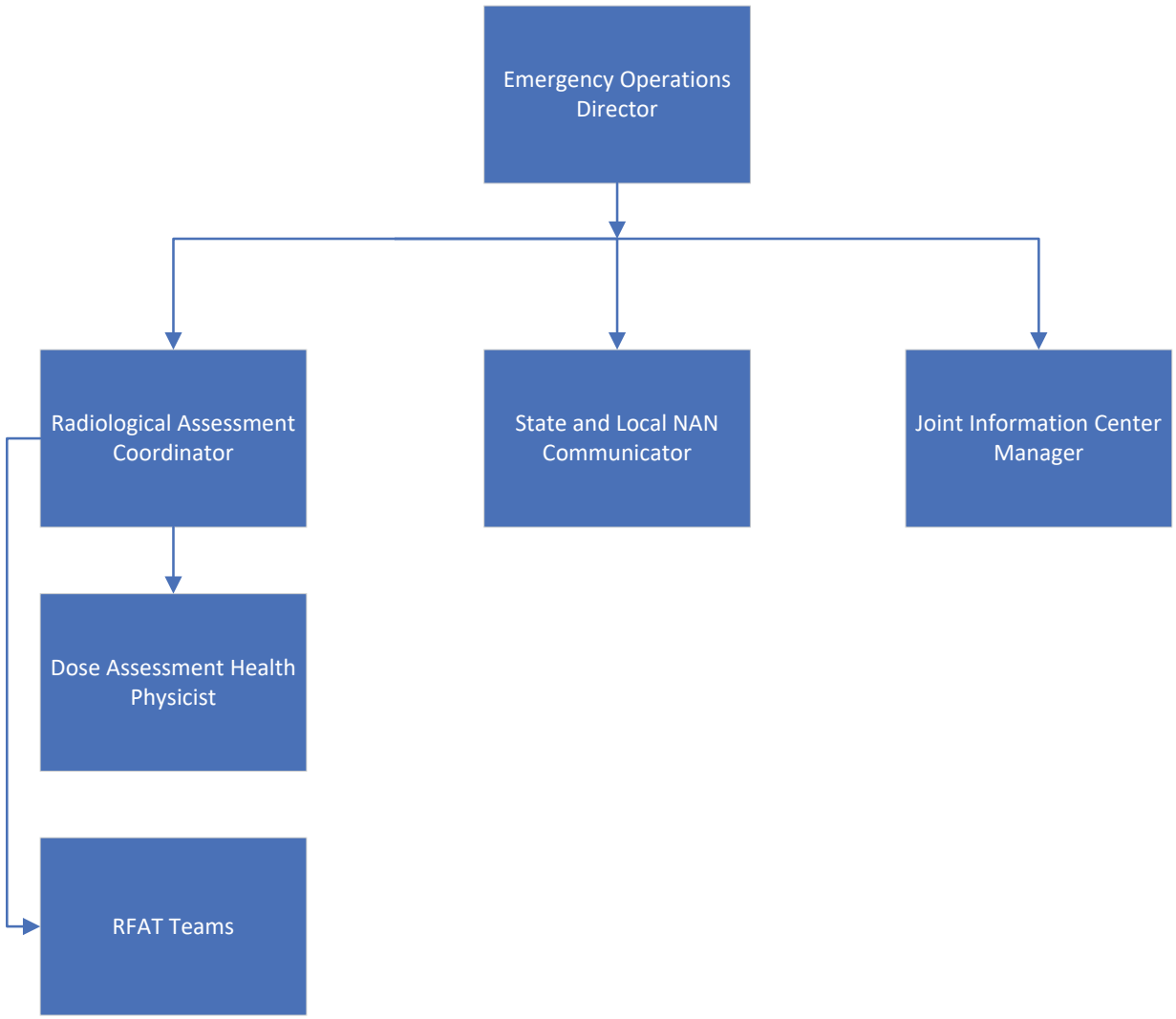
[2] Augmentation during normal working hours is normally from resources onsite but within 60 minutes, off hours augmentation is normally 120 minutes.



On Shift Palo Verde Emergency Response Organization



Minimum On Site Palo Verde Generating Station Emergency Response Organization



Minimum Emergency Operations Facility and Joint Information Center Emergency Response Organization

ATTACHMENT 3

Assessment of ERO Minimum Staff and Full-Augmented

Staff Positions Added and Removed

1.0 SUMMARY DESCRIPTION

Attachment 3 provides a summary Table of the Emergency Response Organization (ERO) positions that are being added and removed from the Emergency Plan. The duties of the ERO positions being relocated to Emergency Plan Implementing Procedures (EPIPs) were reviewed against the PVNGS Emergency Plan. Each relocated ERO position was analyzed to ensure key tasks of the position are retained within the Emergency Plan and performed by Minimum Staff ERO members.

The following Table provides a description of each ERO position as well as the responsibilities assigned under the PVNGS Emergency Plan. Each responsibility is assessed against the key EP functions to ensure the Emergency Plan can still be implemented with the relocation of the responsibility to an EPIP. In some cases, a responsibility is identified as needed to support an EP Function and subsequently reassigned to a Minimum Staff position. The reassignment of the responsibility is annotated in the Table in the Column entitled Justification / Implementing action.

The Full Augmented staff will continue to be available and respond to emergency conditions. The Full Augmented Staff continue to be notified to respond to their respective Emergency Response Facilities at an Alert or higher ECL. They will be notified at the same time as the Minimum Staff personnel; however, the Full Augmentation ERO response is not required to activate the Emergency Response Facility. Additionally, some ERO Full Augmentation positions are designated as "as needed." These positions are trained and qualified to perform their EP function; however, the position will be notified to report to their Emergency Response Facility (ERF) only if conditions warrant, as determined by the Emergency Coordinator or designee.

The Table is arranged in columns as described below:

Facility: This column identifies the affected Emergency Response Facility

CR CR/STSC – Control Room/Satellite Technical Support Center

TSC – Tech Support Center

OSC – Operations Support Center

EOF – Emergency Operations Facility

JIC – Joint Information Center

Current ERO Position: This column identifies the ERO Position title. Each ERO position is also identified with a unique abbreviation for reference throughout the table. For example, NAN is for Nuclear Alert Network Communicator.

Current EPlan Minimum Staff: This column identifies those positions that are currently considered Minimum Staff in the current approved E-Plan, but are being reassigned as Full Augmentation (i.e., Yes/No).

Tasks defined by PVNGS Emergency Plan: This column provides a detailed description from the Emergency Plan for the position.

Position Disposition (Eliminated/Reassigned To): This column identifies the disposition of those tasks assigned to a ERO position under this License

Amendment Request. Each ERO task was evaluated and dispositioned as either Relocated to an EPIP or Reassigned to a Minimum Staff Position. Tasks that are reassigned designate the ERO member receiving the task.

Justification / implementing action: This column provides a conclusion as to why this change is acceptable. In some cases, for tasks not being reassigned, this column provides an action needed when the change is implemented.

Facility	Current ERO Position	Current E-Plan Min Staff	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
CR	Shift Manager / Emergency Coordinator	Yes	The affected unit Shift Manager (SM) or designee initially assumes the responsibilities of the EC and is responsible for direction and coordination of the response. Members of the normal shift organization assume emergency positions to carry out actions as described below. The EC has the responsibility and authority to immediately and unilaterally initiate emergency actions, including providing notification and Protective Action (PAR) Recommendations to governmental agencies responsible for implementing off-site emergency measures. The EC is also responsible for communication of plant status and radiological conditions including dose projection results as appropriate. Procedures provide for accelerated calls and verbal notification to the NRC using the Emergency Notification System (ENS) of Security-based events considered to be a credible imminent threat or Hostile Action. The affected unit Shift Manager may choose to be relieved as EC by another individual qualified as an EC. At an Alert or higher emergency classification level, the EC directs the Security Director to initiate callouts to the ERO in accordance with the associated implementing procedure. Upon arrival of the designated ECTSC, the EC-STSC conducts a briefing and is relieved as the Emergency Coordinator. At the onset of an incident, the EC has the following responsibilities: • Notification of offsite emergency response agencies and off-site emergency organizations (non-delegable duty until relieved by EOD) • Provision of PARs as necessary to off-site emergency management agencies (non-delegable duty until relieved by EOD) • Subsequent reclassification of emergency events (non-delegable) • Determination of the necessity for site evacuation authorization for emergency workers to exceed 10CFR20 exposure limits • Initiate activation of on-site and off-site ERO organizations for an alert or higher emergency classification level	No change	Serves as on-shift Command and Control function and RP Supervision with support from the Radiation Protection Monitor/RP Group Lead (new title).
CR	Control Room Supervisor	Yes	The Control Room Supervisor (CRS) located in the unit control rooms, reports to the EC. The CRS performs initial assessment and evaluation of any abnormal or emergency conditions. After the EC declares an emergency, the CRS maintains the normal duties of directing the Nuclear Operators and assisting the EC.	No change	

Facility	Current ERO	Current E-Plan Min	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
On Site	Fire Team	Yes	The Fire Team (minimum of 5 individuals plus the Fire Team Advisor) reports to the CRS and is maintained on-site at all times. The Leader of Fire Protection Department is responsible for ensuring sufficient members of the Fire Team are Emergency Medical Technician (EMT) qualified and available at all times.	Removed from Emergency Plan and contained within the Fire Protection Program	
On Site	Fire Team Advisor	Yes	The Fire Team Advisor is a Reactor Operator/Auxiliary Operator that supports the Fire Team during a fire. The Fire Team Advisor should have no collateral duties that interfere with the ability to support the Fire Team.	Removed from Emergency Plan and contained within the Fire Protection Program	
CR	Control Room Operators	Yes	The Control Room Operators report to the CRS and conduct the safe and proper operation of the unit at all times, and respond to emergency conditions, as necessary.	No change	
CR	Radiation Monitoring Technician	Yes	The Radiation Monitoring Technician reports to the Radiation Protection Monitor (RPM) and establishes a response area in the Radiation Monitoring Office and conducts in-plant area surveys as necessary.	Removed from Emergency Plan	No longer on-shift minimum staff
CR	Radiation Protection Monitor	Yes	The Radiation Protection Monitor (RPM) an ANSI 3.1 Senior Radiation Protection Technician responds to the STSC and reports to the EC. The RPM conducts offsite dose calculations until relieved. The RPM authorizes exposures up to 10CFR20 Limits, recommends potassium iodide administration to the EC and directs in-plant, onsite and offsite Radiation Monitoring Teams.	No change	Serves as on-shift Dose Assessor. Position retitled to Radiation Protection Monitor/RP Group Lead
CR	ENS Communicator	Yes	The ENS Communicator is filled by an individual knowledgeable of the plant (e.g., RO, SRO, STA, previously licensed individual, etc.) and keeps an open line of communications with the NRC, as requested. This communicator should not have any other E-Plan collateral duties (or other duties that interfere with the communicator function).	No change	Serves as on-shift Communications to NRC
CR	Shift Manager	No	The Shift Manager is also the EC-STSC until relieved by the EC-TSC. Following turnover the Shift Manager reports to the EC. The Shift Manager performs initial classification and declaration of an emergency, maintains control of unit operations, and mitigates accident conditions	Removed from Emergency Plan and contained in plant procedures	This covers the Shift Manager after EC duties have been relinquished to the EC-TSC.
CR	Affected Unit Shift Technical Advisor	Yes	The Shift Technical Advisor (STA) responds to the Control Room or STSC of the affected unit and reports to the EC. The affected unit STA advises the EC on activities that impact the safe operation of the unit, and independently verifies emergency classifications, as time permits. For events classified as an Alert or higher emergency classification level, the affected unit STA activates ERDS.	No change	Serves as on-shift EAL Advisor
CR	Unaffected Unit Shift Technical Advisor	Yes	The unaffected unit STA assesses core damage, and provides electrical and mechanical technical support until relieved by the TSC. The STA also monitors various data displays throughout the course of the emergency and provides assistance to the Control Room personnel.	No changes	Serves as on-shift core/thermal hydraulics/engineering as well as provides support to electrical and mechanical maintenance.

Facility	Current ERO Position	Current E-Plan Min Staff	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
Onsite	Security Director	Yes	The Security Director initially responds to the Shift Manager/EC and then reports to the EC in the TSC. The Security Director (assumed by the on-shift Security Section Leader) provides for continued personnel accountability, site access control and requests offsite emergency assistance, upon direction from the EC.	No change	Serves as Security Supervision augmented position in TSC.
Onsite	Security Force	No	The Security Force reports to locations as directed by the Security Director and assists in performing assigned duties.	Removed from Emergency Plan and instruction contained within procedures	
Onsite	Technicians	Yes	Technicians report to the EC and if necessary, may be assigned to Emergency Repair or Survey teams. The Chemistry Technicians and Maintenance Technicians (Mechanics, Electrical, Instrument and Control) respond to the OSC for assignment.	Changed in Emergency Plan to focus on specifics vs generalization.	Break out each position to support roles and timeframes. Chemistry functions relocated to procedure. No longer a on-shift minimum position.
Onsite	Survey / Environmental Teams	No	A Survey/Environmental Team is formed and responds to the OSC, upon request from the Radiation Protection Monitor (RPM). The team performs radiological monitoring activities and at least one member of the team is a Radiation Protection Technician.	Collateral on-shift duty for first team and team two an augmented function.	Initially can be from onsite resources as necessary. Additional team augmented as RP function. Not defined as a minimum staff position but remains a function. On shift Environmental teams are initiated within 30 minutes of an actual or anticipated release for an Alert or higher emergency.
On Site	Emergency Repair Teams	No	The Emergency Repair Team conducts repairs and may consist of Chemistry and Maintenance Technicians, Plant Operators and a Radiation Protection Technician, and reports to the EC.	Reduced in number but remain as minimum staff. Discussed by function.	1 mechanic, 1 electrician, I&C, along with 1 RP per unit. Plant Non Licensed Operators augment repair activities pre augmentation.
CR / STSC	Operations Advisor	No	The Operations Advisor responds to the STSC and reports to the EC. The Operations Advisor provides technical and operational advice to the EC-STSC. Following TSC activation, the Operations Advisor maintains the flow of information between the EC-TSC and Control Room.	Removed from Emergency Plan and remain in EPIP	
CR / STSC	STSC Communicator	Yes	The STSC Communicator is filled by an Auxiliary Operator. Upon direction from the EC, the STSC Communicator makes the initial notifications to state and local agencies and the ERO.	No change	Serves as on-shift Communications - ORO

Facility	Current ERO Position	Current E-Plan Min Staff	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
TSC	Emergency Coordinator TSC	Yes	The EC-TSC responds to the TSC and is responsible for command and control of the onsite Emergency Organization following turnover.	No change	
TSC	Emergency Coordinator Technical Assistant	No	The EC Technical Assistant responds to the TSC and reports to the EC. The EC Technical Assistant follows procedures that the Control Room is using, and keeps the EC informed of the operational impact of events in progress. The EC Technical Assistant has no counterpart in the on-shift Emergency Organization.	Removed from Emergency Plan and actions remain in EPIP	
TSC	Maintenance Manager	No	The Maintenance Manager responds to the TSC and reports to the EC. The Maintenance Manager coordinates the repair and damage control for all plant systems and directs the emergency response activities of the Emergency Repair Teams (4.2.1.17). The Maintenance Manager directs the OSC Manager to form and dispatch any team that is required and maintains communication with the OSC concerning repair team efforts.	Removed from Emergency Plan and actions remain in EPIP	
TSC	Engineering Manager	No	The Engineering Manager responds to the TSC and reports to the EC. The Engineering Manager directs systems analysis, engineering and any procedure development as required by the emergency and maintains liaison with the Engineering Coordinator in the EOF.	Removed from Emergency Plan and actions remain in EPIP	
TSC	Mechanical Engineer	Yes	The Mechanical Engineer responds to the TSC. The Mechanical Engineer assumes the duties of Technical Support Mechanical from the STA in the STSC and provides mechanical engineering analyses.	No change	
TSC	Operations Manager	Yes	The Operations Manager responds to the TSC and reports to the EC. The Operations Manager receives technical and operational input from the Operations Advisor and maintains the flow of information between the TSC and Control Room. The Operations Manager supports the EC in emergency classification.	No change	This position now serves as the EAL Advisor in the TSC.
TSC	Radiation Protection Coordinator	No	The Radiological Protection Coordinator (RPC) responds to the TSC and reports to the Emergency Coordinator. The RPC provides overall control and discretion of in plant monitoring teams and radiological controls. The RPC is responsible for recommending ways to reduce the radiological consequences of the event with the support of Engineering. The Radiological Protection Coordinator relieves the RPM of these responsibilities. The RPC maintains communications with the Radiation Protection Technicians in the OSC, the RPM in the STSC, and the Radiological Assessment Coordinator in the EOF.	New augmented minimum staff position.	Serves as RP Supervision onsite

Facility	Current ERO Position	Current E-Plan Min Staff	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
TSC	Security Director	Yes	The Security Director responds to the TSC once activated and reports to the EC-TSC. The on-shift Security Section Leader assumes the duties and responsibilities as the Security Director. The Security Director requests emergency off-site assistance upon direction of the EC-TSC and directs the onsite security force in the areas of personnel accountability, access control, site security, evacuation, medical transportation, and personnel and equipment security control.	No change	Serves as Security Liaison
TSC	Reactor Analyst	Yes	The Reactor Analyst responds to the TSC and reports to the Engineering Manager. The Reactor Analyst assumes responsibilities from the STA. The Reactor Analyst performs detailed analyses of core physics and heat transfer parameters to assess reactor core status and to evaluate the integrity of fuel cladding.	No change	Serves as augmented Engineering – Core/Thermal hydraulics
TSC	Radiation Protection Support Technician	Yes	The Radiation Protection Support Technician responds to the TSC and reports to the Radiation Protection Coordinator. The Radiation Protection Support Technician performs habitability surveys of the TSC.	No change	Part of the augmented RP function from the OSC
TSC	Administrative Staff	No	The Administrative Staff responds to the TSC and assists the TSC Emergency Organization in all matters requiring clerical support.	Removed from Emergency Plan and actions remain in EPIP.	
TSC	Chemistry Coordinator	No	The Chemistry Coordinator responds to the TSC and reports to the Engineering Manager. The Chemistry Coordinator provides analysis and evaluation of coolant samples and air samples to aid in determination of reactor core conditions and release potentials, and provides chemical analyses for evaluation of plant systems.	Removed from Emergency Plan and actions remain in EPIP.	
TSC	Electrical Engineer	Yes	The Electrical Engineer responds to the TSC and reports to the Engineering Manager. The Electrical Engineer provides electrical engineering analyses and assumes the duties of Technical Support Electrical from the STA in the STSC.	No change	Serves as augmented Engineering
TSC	ERF Communicator	No	The ERF Communicator responds to the TSC and reports to the Emergency Coordinator Technical Assistant. The ERF Communicator maintains communications with the ERF Communicators in the OSC , EOF and JIC, and provides information to the Emergency Coordinator Technical Assistant regarding the overall emergency activities and maintains Plant Status electronic media display and/or status boards.	Removed from Emergency Plan and actions remain in EPIP.	
TSC	ENS Communicator	Yes	The ENS Communicator responds to the TSC and reports to the Operations Manager. The ENS Communicator maintains continuous phone communications with the NRC, when requested, concerning operational events and reactor plant status.	No change	Serves as augmented Communications - NRC

Facility	Current ERO Position	Current E-Plan Min Staff	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
OSC	OSC Manager	No	The OSC Manager responds to the STSC for a briefing and reports to the EC. Following the briefing, the OSC Manager responds to the OSC, coordinates available resources and upon direction from the Maintenance Manager in the TSC, assembles and dispatches emergency teams.	New augmented minimum staff position.	Services as augmented Repair Team Supervision.
OSC	Radiation Protection Group Lead	No	The Radiation Protection Group Lead reports to the OSC Manager and provides overall control and direction of in-plant monitoring teams and radiological controls.	New minimum staff position.	RPM from on-shift performs this function once the EOF and TSC are manned. Position serves as RP Supervision in the OSC.
OSC	Repairs Coordinator	No	The Repairs Coordinator (2) ensures that Maintenance Technicians and Repair Teams are dispatched at the direction of the OSC Manager Repairs Coordinator reports to the OSC Manager.	New augmented minimum staff position.	Maintenance supervision for mechanical, electrical and I&C technicians in the OSC. Can supplement maintenance as needed.
OSC	Repair Teams	No	Teams are formed if emergency repair operations are necessary. The teams may consist of Chemistry Technicians, Maintenance Technicians (Mechanical, Electrical, Instrumentation and Control), or Radiation Protection Technician as required to address conditions and Plant Operators.	Removed from Emergency Plan positions and described by functions.	
OSC	RFAT Driver	Yes	The RFAT Driver responds to the RFAT vehicles and serves as a driver for the RFAT vehicle.	No change	
OSC	Radiation Protection Technicians	Yes	Radiation Protection Technicians respond to the OSC and report to the Radiation Protection Group Lead. As required, the RP Technicians may be assigned to Repair or Survey/Environmental Teams.	No change	
OSC	Chemistry Technicians	Yes	Chemistry Technicians respond to the OSC and report to the Radiation Protection Group Lead. As required, Chemistry Technicians may be assigned to Repair or Survey Teams, or to conduct sampling activities.	No longer a required position. Removed from Emergency Plan and actions remain in EPIP	
OSC	Mechanics	Yes	Mechanics respond to the OSC and report to the Repairs Coordinator Mechanics may be assigned to repair teams as needed.	Reduced numbers on shift and additional maintenance add in OSC	Initial maintenance performed by on-shift Auxiliary Operators and mechanical, electrical and I&C technicians (1 each).
OSC	Electricians	Yes	Electricians respond to the OSC and report to the Repairs Coordinator. Electricians may be assigned to repair teams as needed.	Reduced numbers on shift and additional maintenance add in OSC	Initial maintenance performed by on-shift Auxiliary Operators and mechanical, electrical and I&C technicians (1 each).
OSC	I&C Technicians	Yes	I&C Technicians respond to the OSC and report to the Repairs Coordinator. I&C Technicians may be assigned to repair teams as needed.	No change	Initial maintenance performed by on-shift Auxiliary Operators and mechanical, electrical and I&C technicians (1 each).
OSC	ERF Communicator	No	The ERF Communicator responds to the OSC and reports to the OSC Manager. The ERF Communicator maintains communications with his counterparts in the TSC, EOF, and JIC, and provides information to the OSC Manager regarding the overall emergency activities.	Removed from Emergency Plan and actions remain in EPIP.	
OSC	Administrative Staff	No	The Administrative Staff responds to the OSC and assists the OSC Emergency Organization in all matters requiring clerical support.	Removed from Emergency Plan and actions remain in EPIP.	

Facility	Current ERO Position	Current E-Plan Min	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
EOF	Emergency Operations Director	Yes	The Emergency Operations Director (EOD) is in command of emergency operations and is responsible for: • Overall coordination of onsite and offsite emergency functions. • Interfacing with federal/state/county emergency response agencies. • Communication of plant status updates and radiological release data including dose projection results as appropriate to NRC, State/County EOCs, TOC, and JIC personnel. • Notification of state and county agencies concerning recommended protective actions. • Directs administrative, technical, and logistical support to station emergency operations. • Ensuring continuity of emergency organization resources. • Establishing a recovery organization when appropriate. Upon the assumption of this position the EOD accepts from the EC-STSC, the following non-delegable offsite organizational responsibilities: • Notification of offsite emergency management agencies. • Making protective action recommendations as necessary to offsite emergency management agencies.	No change	Serves as augmented Command and Control function
EOF	Assistant Emergency Operations Director	No	The Assistant Emergency Operations Director (AEOD) responds to the EOF and reports to the EOD to assist with duties and responsibilities as assigned.	Removed from Emergency Plan and actions remain in EPIP.	
EOF	Radiological Assessment Coordinator	No	The Radiological Assessment Coordinator responds to the EOF and reports to the EOD. The Radiological Assessment Coordinator is the principal liaison of the emergency response organization with the ARRA. The Radiological Assessment Coordinator receives and evaluates dose projection information from the EOF Staff and provides protective action recommendations to the EOD.	New augmented minimum staff position	Serves as the augmented RP Supervision
EOF	Engineering Director	Yes	The Engineering Director responds to the EOF, reports to the EOD and provides evaluation of projected occurrences and corrective actions.	No longer a minimum staff position. Removed from Emergency Plan and actions remain in EPIP.	
EOF	Security Manager	No	The Security Manager responds to the EOF and reports to the EOD. The Security Manager provides overall security support and coordinates closely with the Security Director in the TSC. The Security Manager also coordinates with the Administrative/Logistics Coordinator in providing site support to facilitate arrivals of offsite personnel.	Removed from Emergency Plan and actions remain in EPIP	
EOF	ERF Communicator	No	The ERF Communicator responds to the EOF and reports to the Engineering Director. The ERF Communicator maintains communications with his counterparts in the TSC, OSC, and JIC. This position also monitors ERFDADS data displayed through PI, provides information to the Engineering Director regarding the overall emergency activities and maintains Plant Status boards	Removed from Emergency Plan and actions remain in EPIP.	

Facility	Current ERO Position	Current E-Plan Min	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
EOF	Radiological Assessment Communicator	No	The Radiological Assessment Communicator responds to the EOF and reports to the Radiological Assessment Coordinator. The Radiological Assessment Communicator communicates with radiological assessment personnel at the TSC and directs the activities of the onsite/offsite Survey/Environmental Teams.	Removed from Emergency Plan and actions remain in EPIP.	
EOF	Administrative / Logistics Coordinator	No	The Administrative / Logistics Coordinator responds to the EOF and reports to the AEOD. The Administrative/Logistics Coordinator mobilizes offsite resources and obtains logistical support for the Emergency Organization.	Removed from Emergency Plan and actions remain in EPIP.	
EOF	Dose Assessment Health Physicist	No	The Dose Assessment Health Physicist responds to the EOF and reports to the Radiological Assessment Coordinator to perform radiological dose projections and other calculations or evaluations as directed.	New augmented minimum staff position	Serves as the augmented Dose Assessment function.
EOF	HPN Communicator	No	The HPN Communicator responds to the EOF and reports to the Radiological Assessment Coordinator. The HPN Communicator will maintain an open line with the NRC upon request.	Removed from Emergency Plan and actions remain in EPIP.	
EOF	NAN Communicator	Yes	The NAN Communicator responds to the EOF and reports to the AEOD. The NAN Communicator makes offsite notifications once the EOF is activated and relieves the STSC Communicator of this responsibility.	No change	
EOF	Information Services Manager	No	The Information Services Manager responds to the EOF and reports to the AEOD. The Information Services Manager ensures that IT equipment located in the EOF remains in good working order and provides assistance to EOF personnel with IT equipment operation when needed.	Removed from Emergency Plan and actions remain in EPIP.	
EOF	RFAT Teams	No	The RFAT Teams respond to the RFAT vehicle parking area and report to the Radiological Assessment Communicator in the EOF.	No change	This describes a function vs a position. RFAT will be available from on-shift and augmented positions.
EOF	Offsite Technical Representative	No	The Offsite Technical Representative interfaces with state response agency personnel at the State EOC/TOC, provides up-to-date information on plant status, and clarifies how plant systems operate, via briefings and face-to-face contact with EOC staff, the TOC Shift Supervisor, and the TOC Technical Director. The Offsite Technical Representative is located at the TOC in Phoenix and reports to the AEOD.	Removed from Emergency Plan and actions remain in EPIP.	

Facility	Current ERO Position	Current E-Plan Min Staff	Tasks defined by PVNGS Emergency Plan	Position Disposition	Justification / Implementing action
JIC	Joint Information Center Manager	No	The JIC Manager is the PVNGS representative that oversees public information activities at the JIC including preparation of media statements, media briefings and the flow of information to the Rumor Control Unit. The JIC Manager reviews the technical content of media statements.	New augmented minimum staff position	Serves as the augmented Public Information function.
JIC	Spokesperson Coordinator	No	The Spokesperson Coordinator is the PVNGS representative in the JIC who coordinates the Spokespersons and advises and prepares materials for the Palo Verde Spokesperson in the preparation for media briefings.	Removed from Emergency Plan and actions remain in EPIP	
JIC	Palo Verde Spokesperson	No	The Palo Verde Spokesperson is the representative within the JIC organization authorized to speak about actual emergency conditions at PVNGS.	Removed from Emergency Plan and actions remain in EPIP	
JIC	ERF Communicator	No	The ERF Communicator is the JIC Palo Verde representative that provides any necessary technical explanations to the JIC Manager and the Palo Verde Spokesperson. The JIC ERF Communicator interfaces with the ERF Communicator in the EOF. The ERF Communicator, maintains communications with his counterparts in the TSC, OSC, and EOF, and provides information to the JIC Spokesperson Coordinator and the Palo Verde Spokesperson regarding the overall emergency activities.	Removed from Emergency Plan and actions remain in EPIP	
JIC	Distribution Services Coordinator	No	The Distribution Services Coordinator coordinates the timely dissemination of accurate incident information to the media through electronic communication pathways (e.g., e-mail or fax) and the public via the Arizona Emergency Information Network Web site; and provides translation and other services for special needs and multilingual populations.	Removed from Emergency Plan and actions remain in EPIP	
JIC	Rumor Control/ Public Inquiry	No	The Rumor Control/Public Inquiry is operated by the Arizona Public Service Customer Care Center (CCC) Operators and augments State Public Inquiry and Rumor Control initiatives. CCC Operators provide information from approved media statements transmitted to the CCC from the JIC.	Removed from Emergency Plan and actions remain in EPIP	
JIC	Video/Photo Coordinator	No	The Video/Photo Coordinator operates audio/video equipment at the JIC, including the EEC Auditorium. The Video/Photo Coordinator maintains copies of media briefings for archives.	Removed from Emergency Plan and actions remain in EPIP	
JIC	Research/Writing Coordinator	No	The Research/Writing Coordinator writes materials such as media statements, fact sheets, flyers, and talking points for use by the JIC staff as needed.	Removed from Emergency Plan and actions remain in EPIP	

ATTACHMENT 4

State of Arizona Review of Proposed Changes to Emergency Plan

STATE OF ARIZONA
DEPARTMENT OF EMERGENCY AND MILITARY AFFAIRS
DIVISION OF EMERGENCY MANAGEMENT

5636 East McDowell Road
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Douglas A. Ducey
GOVERNOR

Major General Michael T. McGuire
THE ADJUTANT GENERAL

July 8, 2019

Charlotte Shields
Emergency Preparedness Manager
Palo Verde Generating Station, MS 7868
P.O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PVGS License Amendment Request - Onsite E-Plan Staffing Changes

Dear Ms. Shields,

On May 31, 2019, the Department of Emergency and Military Affairs (DEMA) received a letter from you (Letter ID #240-02858) requesting a review of a proposed draft License Amendment Request (LAR) re: changes to the Palo Verde Generating Station (PVGS) onsite Emergency Plan staffing tables and descriptions.

DEMA has reviewed the proposed changes as described in the PVGS LAR and no adverse impacts were identified to the off-site radiological emergency response program. We also conclude that there is reasonable assurance that emergency response activities will continue to implement the planning standards described in 10 CFR 50.47(b), and the program will continue to be conducted in compliance with federal regulations.

Given the above, coupled with our determination that the LAR will not be inimical to the to the health and safety of the public, we find no basis for recommending denial of the proposed changes. If you have any questions, please contact me or Dave Crozier at 602-464-6308. Thank you for your continued partnership in this joint endeavor.

Respectfully,

Wendy Smith-Reeve
Deputy Director, DEMA
Director, AZ Division of Emergency Management