UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

July 22, 1998

James M. Levine, Senior Vice
President, Nuclear
Arizona Public Service Company
P.O. Box 53999
Phoenix, Arizona 85072-3999

SUBJECT: ARIZONA PUBLIC SERVICE COMPANY MEETING JULY 21, 1998

Dear Mr. Levine:

This refers to the meeting conducted in the Region IV office on July 21, 1998, to discuss replacement steam generators and dry cask storage. During this meeting, your staff provided an overview regarding your plans and status for: (1) procurement and installation of replacement steam generators, and (2) establishment of an onsite dry cask storage facility. Topics discussed during the meeting included design and fabrication features, vendor oversight, and installation issues.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter will be placed in the NRC's Public Document Room.

Should you have any questions concerning this matter, we will be pleased to discuss them with you.

Sincerely,

Arthur T. Howell III, Director
Division of Reactor Safety

Enclosures:
1. Attendance List
2. Licensee Presentation

Docket Nos.: 50-528; 50-529; 50-530
License Nos.: NPF-41; NPF-51; NPF-74

IA-3

cc w/enclosures:
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ENCLOSURE 1

ATTENDANCE LIST

Licensee:

Carl Churchman, Director, Steam Generator Replacement Project
Dick Bernier, Regulatory Affairs Consultant Senior
Kevin Neese, Section Leader, RSG, Steam Generator Replacement
Mohammed Karbassian, Section Leader, Engineering, Steam Generator Replacement
Brian Hansen, Dry Cask Storage

NRC:

Arthur Howell III, Director, Division of Reactor Safety
Thomas Gwynn, Director, Division of Reactor Projects
Ian Barnes, Technical Assistant, Division of Reactor Safety
Greg Pick, Senior Project Engineer, Project Branch D

ENCLOSURE 2

LICENSEE PRESENTATION

Dry Cask Storage Update

July 21, 1998

Discussion Topics

- 1997 accomplishments
- Spent fuel pool status
- Palo Verde implementation schedule
- Plant modifications
- Affiliation with NAC International, Inc.
- Communication plans
- Dry cask storage industry issues

1997 Accomplishments

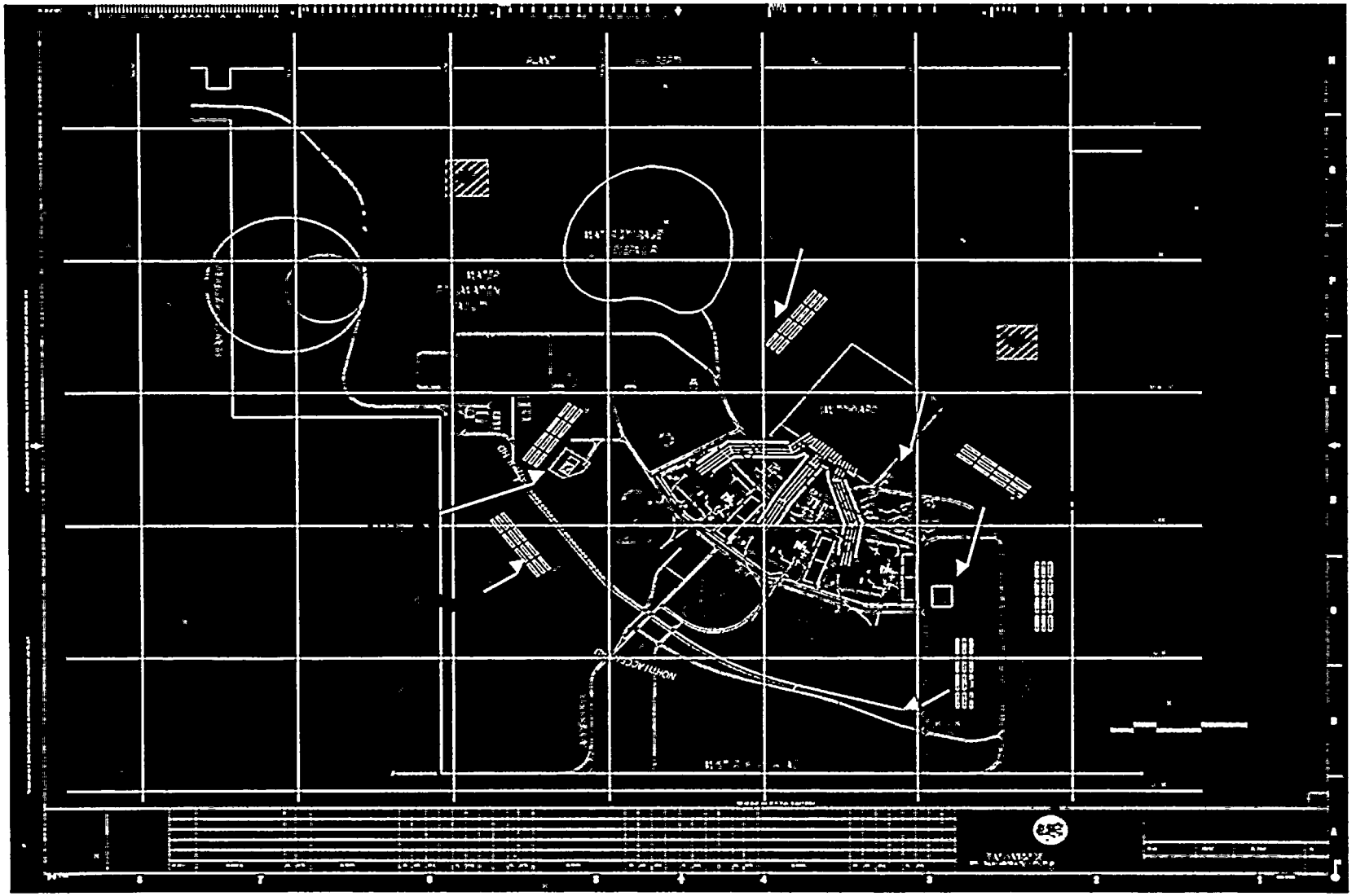
- NAC UMS SARs submitted for review
  - Transport SAR submitted in April
  - Storage SAR submitted in September
- APS "Assist Visit" at NAC complete in June
  - Cross-discipline review team
  - Issues tracked and closed formally
- Signed Letter of Intent with NAC
  - Purchase 12 systems, option for additional 12
- Onsite location for facility selected

Facility Siting Study

- Six sites considered
- Geological studies confirm similar soil structure to that of Units
- Final choice determined by:
  - Radiological limits
  - Space for 330 casks
  - Visibility

PALO VERDE

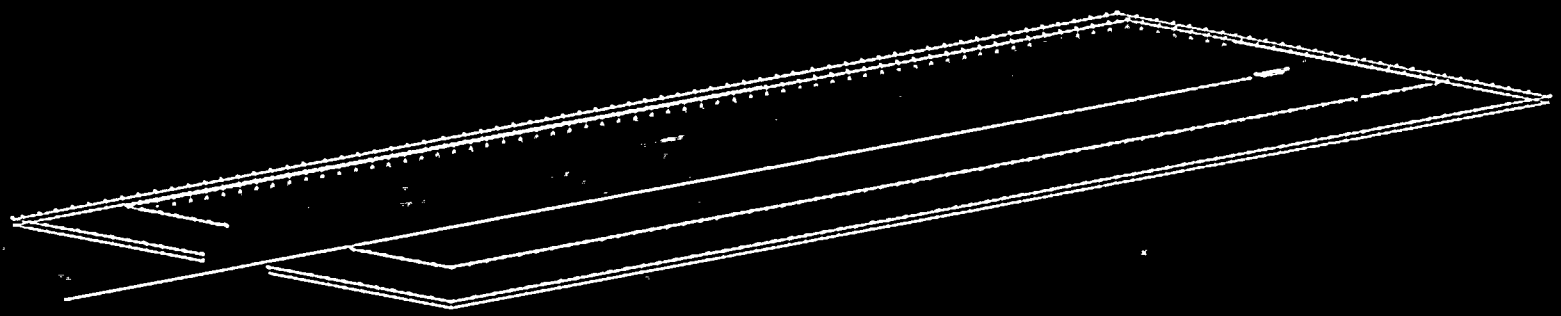
Six Potential ISFSI Sites



PALO VERDE

ISFSI Conceptual Design

- Reinforced concrete storage slab size: 35' x 220'
- Storage slab capacity: 28 casks - 2 rows with casks on 15' centers
- 50' clearance around storage slab
- Phased implementation - initial phase = 3 storage slabs.
- Total implementation: 4 phases; 12 pads
- Total acreage required - 10 acres



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Spent Fuel Pool Status

- Each pool has 1,329 spaces
- Pools zoned by enrichment vs. burnup

	w/o Boron	w/Boron
Useable spaces	1033	1205
Lead Unit	Unit 2	Unit 3
Loss of reserve	Fall 2000	Spring 2003

Soluble Boron Credit

- Criticality analysis complete
  - Enrichment to 4.8%
  - Approximately. 900 PPM boron
  - Heat load limits pool capacity
- Engineering analyses consistent with:
  - NRC letter to Duke on criticality analysis
  - Westinghouse topical report
- Submit to NRC September 1998

Implementation Milestones

- Facility siting completed Dec. 1997
- Facility and modifications design complete end of 1998
- SER for UMS storage, Fall 1999
- Rule making for UMS, mid-2000
- First casks delivered to Palo Verde Apr. 2001
- Load casks beginning Sept. 2001

PALO VERDE

Plant Modifications

- Study of cask pit gates
  - Load pit gate welded shut
  - 150T crane not single failure proof
- Roadways or rail for transport to ISFSI

NAC International

- Licensing status
  - First RAI for Yankee MPC encouraging
  - First RAI for UMS August 1998
  - Drop testing scheduled Fall 1998
- Contract negotiations
  - Target completion - September 1998
- Fabrication vendor reviews started
  - Experience
  - QA program
  - Capacity
- Initial QA qualification of NAC complete

PALO VERDE

Communications

- Communications planned with:
  - State officials (ACC, ADEQ, etc.)
  - Media: newspapers, TV, radio
  - Local residents
  - Plant visitors and special interest groups
  - NRC
- Incorporate models and videos
- Address need, safety, best option and how it will be paid for

PALO VERDE

Cask Industry Issues

- Utility involvement and oversight
- Adherence to QA programs
- Canister lid welding & inspection
- Movement of heavy loads
- Value of an owners group

Summary

- Boron credit important to our success
- APS working closely with NAC
- Finish ISFSI design work in 1998
- Resolution to spent fuel pool gate issue a significant milestone
- Plans in place to communicate with government and public

PALO VERDE

Palo Verde Steam Generator Replacement Project

Presentation
To The
Nuclear Regulatory Commission
Region IV

July 21, 1998

PALO VERDE

Palo Verde Steam Generator Replacement Project

Project Introduction And Overview

Carl Churchman
SGR Project Director

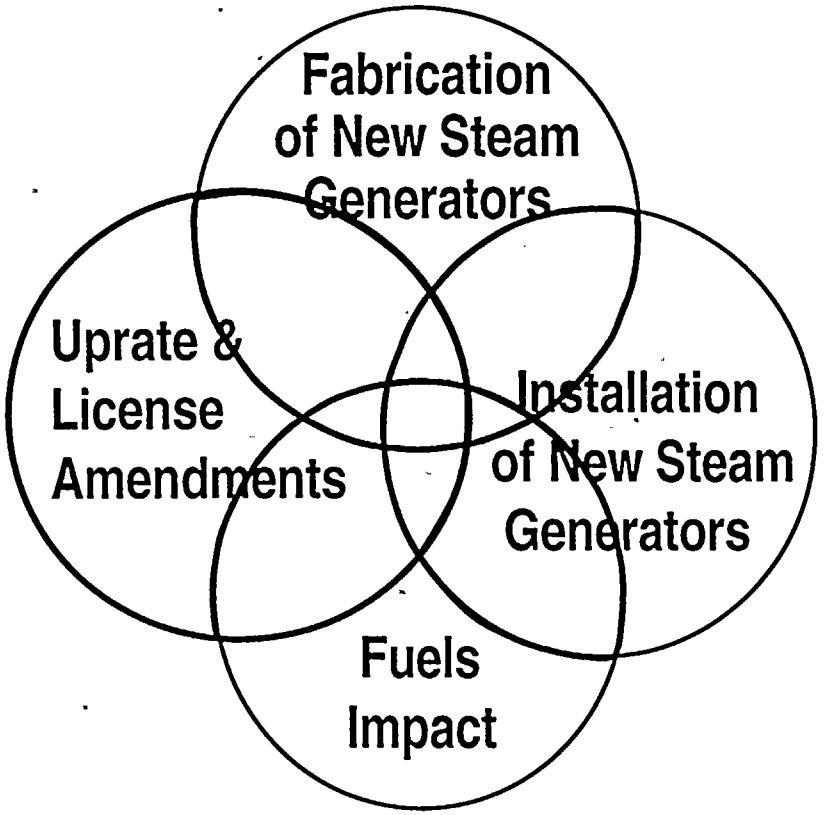
Meeting Objectives

- Introduce SGR project plan
- Introduce Palo Verde project team
- Provide overview of RSG design
- Provide overview of project responsibilities
- Establish plans for additional meetings/ presentations
- Provide summary of RSG schedule
- Discuss NRC inspection

PALO VERDE

Project Interrelationships

- Select material
  - Plate - Forging - Tubing
- Transportation to the plant



- Safety analysis
- Secondary side evaluation
- Set point analysis
- Effect on operations
- Document review

- Design changes to the plant required to install
- T.S. changes implemented before installation
- Other analysis required
- Outage schedule impacts

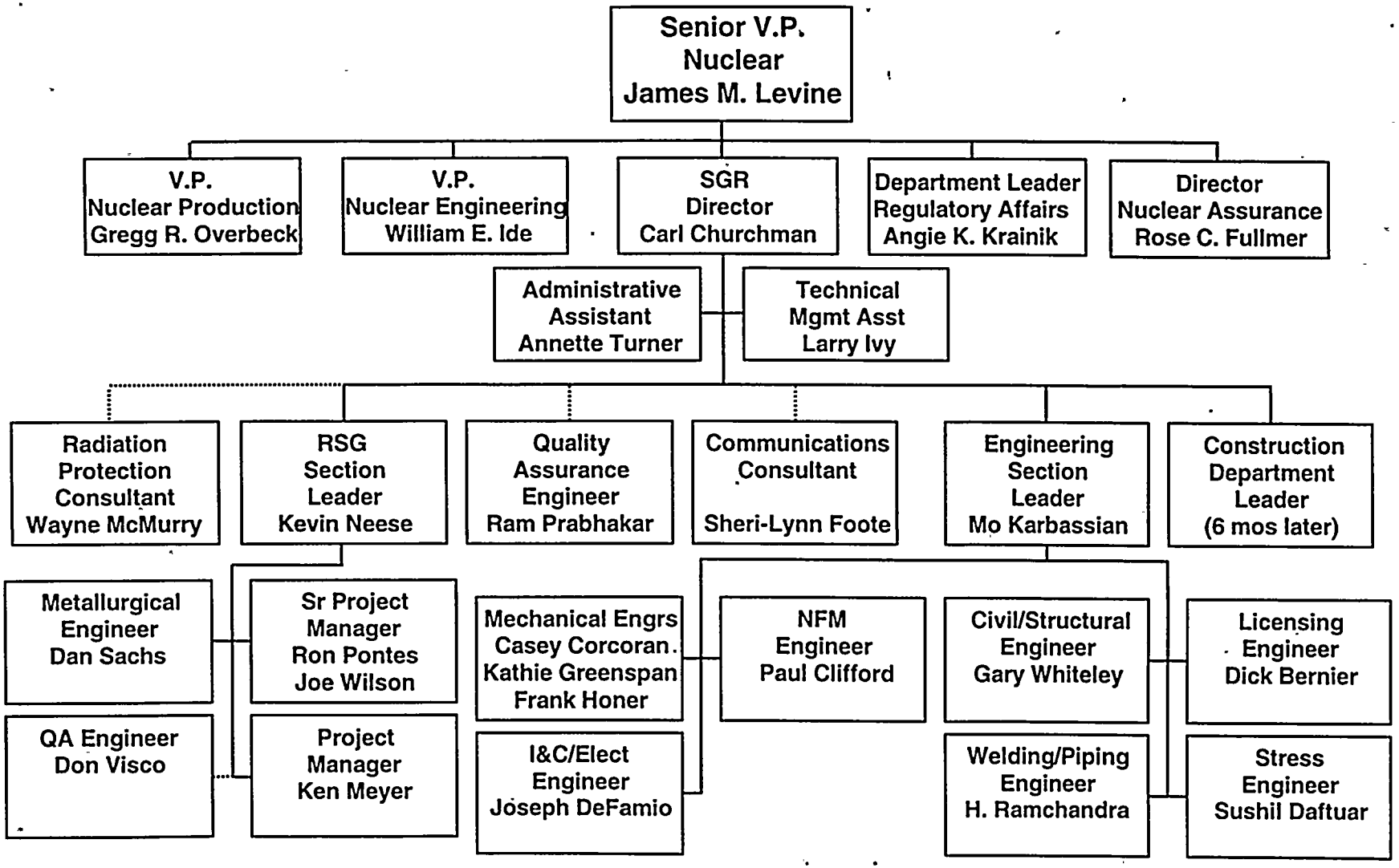
- Fuel optimization
- Chapter 6 and 15 analysis

PALO VERDE

Project Goals

- Nuclear safety and quality
- Industrial safety
- Excellent communications
- No impact on Units 1 & 3
- Improved plant performance
  - Uprate

Project Team



PALO VERDE

RSG Fabrication/Design Features

- Inconel 690 thermally treated tubing
  - –Higher resistance to cracking
- Full tubesheet depth hydraulically expanded tubing
  - –Low residual stress
  - –Minimal crevice at top of tubesheet
- Stainless steel grid tube support
  - –Minimizes corrosion concerns
  - –Minimizes accumulation of contaminants
- Increases recirculation ratio

PALO VERDE

RSG Fabrication/Design Features

- Improved steam dryer design
  - Low moisture carry-over
- Increased number of handholes and inspection ports
  - Facilitates access for inspection and maintenance
- RSG is functionally similar - physically different
  - RSG is heavier - different seismic response
  - RSG has 26% more heat transfer area
  - RSG is approximately 40" taller

PALO VERDE

Responsibilities

Palo Verde

- Overall project management
  - Fabrication
    - Resident metallurgical and quality assurance engineers
  - Design/safety analysis
  - Transportation
  - Installation
- Quality assurance
- Document review and approval
- Licensing
- Baseline NDE

Responsibilities Fabrication

Ansaldo

- Replacement SG design
  - Subcontracted to ABB-CE
- Material procurement (including tubing)
- Vessel fabrication
- Delivery to Venice
- Export requirements
- Startup support

PALO VERDE

Responsibilities
Design/Safety Analysis

ABB-CE

- NSSS Safety Analysis & licensing support
  - Transient & Safety Analysis
  - UFSAR revision & Design Basis Manual updates
  - Draft of licensing report
  - Installation & startup support
- Design of RSGs (subcontract to Ansaldo)

PALO VERDE

Responsibilities - Transportation

Transporter

- Shipping arrangements
  - Seaborne
  - Overland
- Vessel loading / lashing & analysis
- Permits, duties, tariffs, insurance
- Route upgrade
- International interface

PALO VERDE

Responsibilities - Installation

Installer

- Design change packages
- Installation 10CFR50.59 report
- Installation, rigging and handling
- Cutting and welding
- Piping reroute
- Additional facilities construction
- Old vessel storage building

PALO VERDE

Quality Assurance

- NUPIC audit of Ansaldo completed in 1996
- Ansaldo auditing their suppliers
- APS has review and approval of quality requirements for tubing vendors
- NUPIC audit of Ansaldo scheduled in 1999
- Lessons learned from other utilities

PALO VERDE

Power Uprate Plans

- Presently scoping for uprate
  - Safety Analysis review
  - Second power uprate for PVNGS
  - Determine equipment limitations
  - Establish operating parameters
  - Determine impact on plant documentation
  - Assess modifications needed

PALO VERDE

Potential Plant Modifications
Power Uprate

- Helper cooling tower
- High pressure turbine nozzles
- Main transformer cooling
- Spray pond level indicator
- Feedwater heaters
- Heater drain tank level control valve
- Evaluating HPSI requirements for LOCA

Potential Plant Modifications
Steam Generator Replacement

- Main steam piping at top of steam generator
- New downcomer blowdown line
- Steam generator supports

PALO VERDE

Potential Licensing Actions

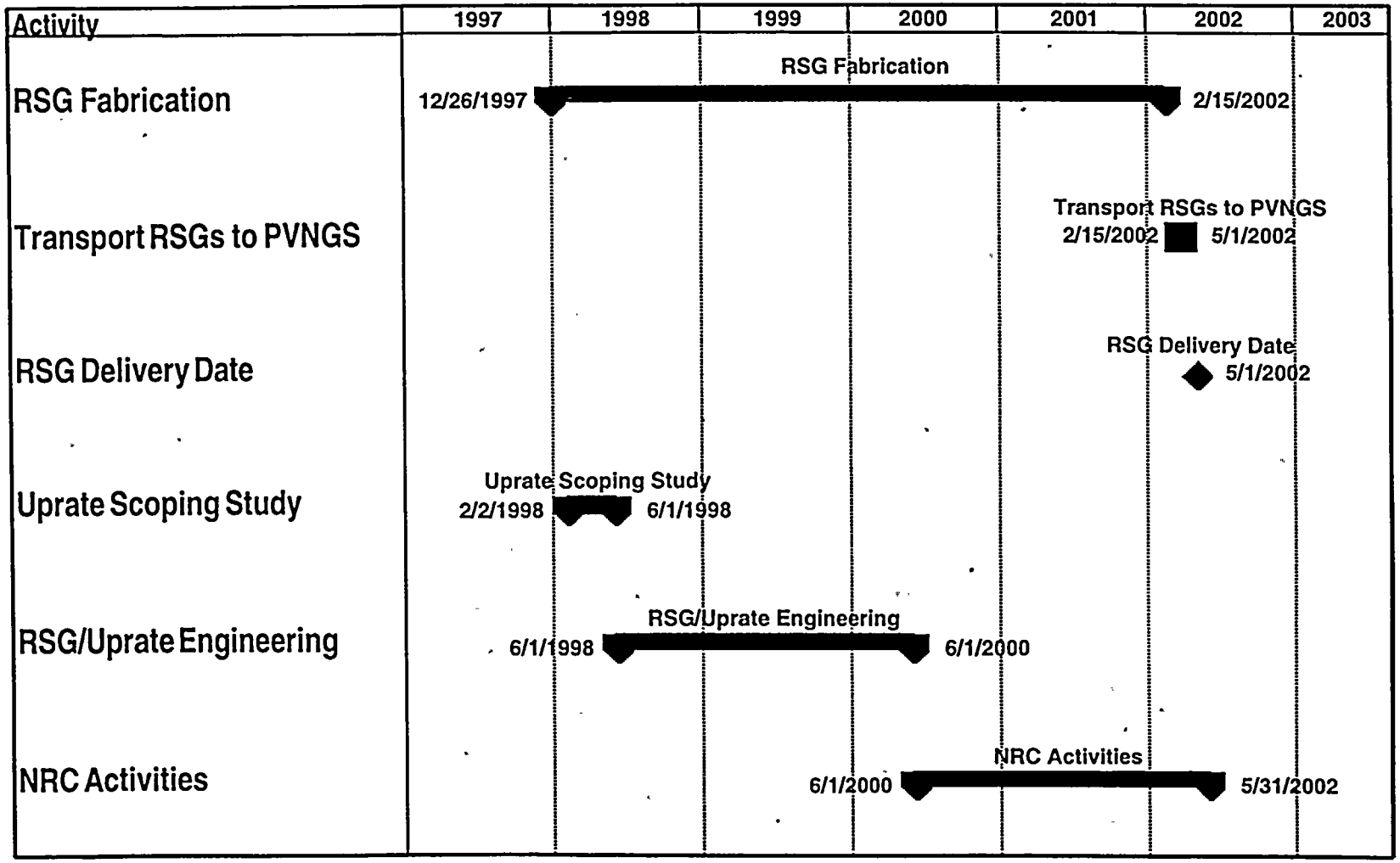
- Evaluating changes to Technical Specifications
- Operator Licensing

Licensing Strategy

- License amendment requiring NRC approval for restart at uprate power
- 10CFR50.59 Safety Evaluation approach for SG replacement
- Timely communication with NRC
  - Single points of contact
  - Schedule meetings with NRC
- Communicate with other utilities planning uprate or replacement

PALO VERDE

Project Schedule



Project Milestones

- Dec. 1997 — Signed fabrication contract
- Oct. 1998 — Commence fabrication
- Dec. 1998 — Sign transportation contract
- Jan. 1999 — Sign installation contract
- June 2000 — Submit licensing package
- May 2002 — RSG delivery to Palo Verde
- Sept. 2003 — SGR outage U2R11

PALO VERDE

NRC Inspection

- Design and planning
  - RSG design has been finalized
  - Procurement specifications have been developed
  - Procurement contract has been issued
  - Fabrication of SGs to begin October 1, 1998
  - Finalizing applicability of 10CFR50.59
  - Security boundaries

PALO VERDE

NRC Inspection

- SG removal and replacement
  - Existing containment equipment hatch will accommodate removal and replacement
  - Steam generator girth welds will be completed in fabricator's shop
  - Hydrostatic test will be performed in fabricator's shop
  - Ansaldo representative will be on site during installation
- Post installation verification and testing

50-528
3/31/2000

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IE40 - Systematic Assessment of Licensee Performance (SALP) Report

Docket: 05000528
Docket: 05000529
Docket: 05000530

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

March 31, 2000

Gregg R. Overbeck, Senior Vice
President, Nuclear
Arizona Public Service Company
P.O. Box 52034
Phoenix, Arizona 85072-2034

SUBJECT: PLANT PERFORMANCE REVIEW - PALO VERDE NUCLEAR GENERATING STATION

Dear Mr. Overbeck:

The purpose of this letter is to communicate our assessment of your performance and to inform you of our planned inspections at your facility. On March 2, 2000, we completed a Plant Performance Review (PPR) of Palo Verde Nuclear Generating Station (Palo Verde). We conduct these reviews to develop an integrated overview of the safety performance of each operating nuclear power plant. We use the results of the PPR in planning and allocating inspection resources and as inputs to our senior management meeting (SMM) process. This PPR evaluated inspection results and safety performance information for the period from January 25, 1999, through February 11, 2000, but emphasized the last 6 months to ensure that our assessment reflected your current performance. Our most recent summary of plant performance at Palo Verde was provided to you in a letter dated September 16, 1999.

The NRC has been developing a revised reactor oversight process that will replace our existing inspection and assessment processes, including the PPR, SMM, and Systematic Assessment of Licensee Performance (SALP). We recently completed a pilot program for the revised reactor oversight process at nine participating sites and are making necessary adjustments based on feedback and lessons learned. We are beginning initial implementation of the revised reactor oversight process industry-wide, including your facility, on April 2, 2000.

This PPR reflects continued process improvements as we make the transition into the revised reactor oversight process. You will notice that the following summary of plant performance is organized differently from our previous performance summaries. Instead of characterizing our assessment results by SALP functional area, we are organizing the results into the strategic performance arenas embodied in the revised reactor oversight process. Additionally, in assessing your performance, we have considered the historical performance indicator data that you submitted in January 2000 in conjunction with the inspection results. The results of this PPR were used to establish the inspection plan in accordance with the new risk-informed inspection program (consisting of baseline and supplemental inspections). Although this letter incorporates some terms and concepts associated with the new oversight process, it does not reflect the much broader changes in inspection and assessment that will be evident after we have fully implemented our revised reactor oversight process.

Template RGN-001

ML003699033

During the last 6 months, Unit 1 operated at or near full power, with the exception of a plant shutdown for a refueling outage. Unit 2 operated at or near full power, with the exception of an automatic reactor trip as a result of a malfunctioning control element assembly calculator and a plant shutdown to repair extraction steam expansion joints inside the main condenser. Unit 3 operated at or near full power, with the exception of a power reduction to repair a main feedwater pump. Although the NRC identified some performance issues during this assessment period, Palo Verde continues to operate in a safe manner.

Palo Verde's implementation of programs in the reactor safety strategic performance arena demonstrated overall safe plant operations. However, concerns regarding the implementation of the emergency preparedness program were noted. These concerns dealt with your inability to effectively correct past weaknesses. This area of concern will be a focus for baseline inspections conducted during the next assessment period.

We did not identify any significant performance issues in the radiation safety or safeguards strategic performance areas. As a result, only baseline inspections are planned.

Enclosure 1 contains a historical listing of plant issues, referred to as the Plant Issues Matrix (PIM), that were used during this PPR process to arrive at our integrated view of your performance trends. The PIM for this assessment is grouped by the prior SALP functional areas of operations, maintenance, engineering, and plant support, although the future PIM will be organized along the cornerstones of safety as described in the revised reactor oversight process. The attached PIM includes items summarized from inspection reports or other docketed correspondence regarding Palo Verde. We did not document all aspects of licensee programs and performance that may be functioning appropriately. Rather, we only documented issues that we believe warrant management attention or represent noteworthy aspects of performance. In addition, the PPR may also have considered some predecisional and draft material that does not appear in the enclosed PIM, including observations from events and inspections that had occurred since our last inspection report was issued but had not yet received full review and consideration. We will make this material publically available as part of the normal issuance of our inspection reports and other correspondence.

Enclosure 2 lists our planned inspections for the period April 2000 through March 2001 at Palo Verde to allow you to resolve scheduling conflicts and personnel availability in advance of our inspector arrival onsite. The inspection schedule for the latter half of the period is more tentative and may be adjusted in the future due to emerging performance issues at Palo Verde or other Region IV facilities. Routine resident inspections are not listed due to their ongoing and continuous nature.

We will inform you of any changes to the inspection plan. If you have any questions, please contact me at (817) 860-8250.

Sincerely,

Kris M. Kennedy for

P. Harrell, Chief
Project Branch D
Division of Reactor Projects

Docket Nos.: 50-528
50-529
50-530
License Nos.: NPF-41
NPF-51
NPF-74

Enclosures:
1. Plant Issues Matrix
2. Inspection Plan

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United States Nuclear Regulatory Commission
PLANT ISSUE MATRIX
By Primary Functional Area

Region IV
PALO VERDE

Date	Source	Functional Area	ID	Type	Template Codes	Item Title / Item Description
01/14/2000	1999018-01	Pri: OPS Sec: Ter:	NRC	NCV	Pri: 4C Sec: Ter:	**Failure to follow procedure** The licensee's failure to follow the procedure governing design engineering routing design modifications to the nuclear training department for training impact reviews was a Severity Level IV violation. This violation is being treated as a noncited violation (50-528;-529;-530/9918-01), consistent with Section VII.B.1 of the NRC Enforcement Policy. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
01/08/2000	1999022	Pri: OPS Sec: Ter:	NRC	POS	Pri: 1C Sec: Ter:	**Y2K preparedness** The licensee was well prepared for the potential adverse events that may have occurred from the rollover to Year 2000. This was demonstrated, in part, by having comprehensive checklists for pre- and post-rollover actions, a person stationed at a similar plant in Korea, and emergency plan staffing and other personnel onsite during the rollover. There was no impact to unit operation or license compliance as a result of the rollover. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
01/08/2000	1999022	Pri: OPS Sec: Ter:	NRC	POS	Pri: 5B Sec: 5C Ter:	**Operations self-assessments** Self-assessments of operations were critical, as evidenced by the number of issues and recommendations documented in the reports. Also, the scope and depth of the assessments was good. The value of these assessments was demonstrated by management's use of one issue to form a project to address the status control complexity issue. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
11/27/1999	1999020	Pri: OPS Sec: Ter:	NRC	POS	Pri: 5B Sec: 5C Ter:	**Corrective Action Review Board** The Corrective Action Review Board was appropriately staffed with experienced personnel that provided a thorough and critical review of the resolution to significant conditions adverse to quality. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
10/16/1999	1999019	Pri: OPS Sec: Ter:	NRC	POS	Pri: 1A Sec: 1C Ter: 3A	**Performance during Unit 1 plant shutdown** The Unit 1 reactor shutdown for the eighth refueling outage was well planned and conducted in accordance with approved procedures. Supervisory oversight and direction of the operating crew and operator performance during the shutdown were excellent. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3

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Date	Source	Functional Area	ID	Type	Template Codes	Item Title / Item Description
10/16/1999	1999019	Pri: OPS	NRC	POS	Pri: 1A	**Operator oversight of Unit 1 draindown to midloop was excellent**
		Sec:			Sec: 1C	Operator oversight and direction of the evolution to drain Unit 1 to the midloop condition, and decisions to take conservative actions during the evolution, were excellent.
Dockets Discussed:					Ter: 3A	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
10/16/1999	1999019-04	Pri: OPS	Licensee	NCV	Pri: 2B	**Failure to properly calibrate NIs**
		Sec:			Sec: 3A	In Dec. 1998, the licensee identified that incorrect acceptance criteria had been used for the calibration of nuclear power channels during power ascension testing on three occasions. Three examples of a violation of TS Surveillance Requirement 4.3.1.1 were identified for not calibrating nuclear power indications to within the acceptance criteria during power ascension testing. These violations were reported in LER 50-528,-529/96-008-00. This severity Level IV violation is being treated as a NCV consistent with Appendix C of the NRC Enforcement policy. These issues are in the licensee's corrective action program as CRDR 9-8-1874.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
09/04/1999	1999016	Pri: OPS	NRC	POS	Pri: 1B	**Response to MFW Transient**
		Sec:			Sec:	Unit 3 control room operators appropriately tripped main feedwater Pump B in response to increasing pump vibration. Their response to the resultant automatic reactor power cutback was good. Support from the Systems and Reactor Engineering groups was good.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
09/03/1999	1999301	Pri: OPS	NRC	POS	Pri: 3A	**All initial operator licensing applicants passed with strong performance observed**
		Sec:			Sec:	All five applicants for senior operator licenses passed the licensing examinations and were issued the appropriate licenses. Strong applicant performance with good communication techniques, peer checking, and crew briefings was observed during the operating test.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
09/03/1999	1999301	Pri: OPS	NRC	POS	Pri: 3A	**A high quality initial operator licensing exam was submitted to the NRC**
		Sec:			Sec:	The licensee developed and submitted a high quality examination, which was administrated with only minor changes
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						

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07/24/1999	1999014	Pri: OPS Sec:	NRC	POS	Pri: 1A Sec: Ter:	**Good operator performance during the June 18, 1999 Unit 2 reactor trip** Operator performance during the Unit 2 reactor trip caused by failure of Control Element Assembly Calculator 2 was good. The Management Response Team meeting and subsequent Plant Review Board meeting that authorized restart of the unit covered the required areas with the appropriate emphasis on plant safety. **Dockets Discussed:** 05000529 Palo Verde 2
06/12/1999	1999012	Pri: OPS Sec:	NRC	NEG	Pri: 1A Sec: 3A Ter:	**Failure to evaluate TS LCO prior to making a mode change.** Inattention to details was demonstrated by the operations shift manager when he failed to evaluate a Technical Specification limiting condition for operation prior to making a mode change (Section O1.1). **Dockets Discussed:** 05000529 Palo Verde 2
05/18/1999	1999006	Pri: OPS Sec:	NRC	POS	Pri: 1A Sec: Ter:	**Operator oversight and direction of the Unit 2 draindown to midloop evolution were excellent.** Operator oversight and direction of the Unit 2 draindown to midloop evolution were excellent. Licensee activities related to midloop operation demonstrated a strong safety focus. **Dockets Discussed:** 05000529 Palo Verde 2
05/01/1999	1999006-01	Pri: OPS Sec:	NRC	NCV	Pri: 5C Sec: Ter:	**Inadequate corrective action for previously identified surveillance procedure inadequacy** The licensee failed to take actions to correct an inadequate procedure that was used to verify the position of valves in the Unit 1 essential chilled water system. This deficiency was again identified during operation of the system for maintenance, which resulted from mispositioned valves in the essential chilled water system. This is a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 9-9-Q0107. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
05/01/1999	1999006-02	Pri: OPS Sec:	Licensee	NCV	Pri: 3A Sec: Ter:	**Two examples of failure to bypass parameters as required by TS Section 3.3** Two examples of a violation of Technical Specification 3.3 were identified for not placing an instrument in the bypass or tripped condition within 1 hour from the time the instrument was identified as inoperable. These events were reported in Licensee Event Reports 50-528/98-001-00, 50-529/98-003-00, and 50-529/98-003-01. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. These issues are in the licensee's corrective action program as Condition Report/Disposition Requests 1-8-0044 and 9-8-0931. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2
05/01/1999	1999006-03	Pri: OPS Sec:	Licensee	NCV	Pri: 3A Sec: Ter:	**Failure to store a spent fuel assembly in the correct spent fuel pool location as required by TS 3.7.17** Personnel error in preparing a material balance transfer sheet form and inadequate independent verification of the form resulted in Assembly P1B241 being stored in an incorrect location in the Unit 2 spent fuel pool since August 1997. This is a violation of Technical Specification 3.7.17. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 2-9-0048. **Dockets Discussed:** 05000529 Palo Verde 2

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03/20/1999	1999004	Pri: OPS Sec:	NRC	NEG	Pri: 1B Sec: Ter:	**Operator misdiagnosis of plant conditions results in Unit 1 trip.** Misdiagnosis of plant conditions and unnecessarily hurried operator actions in response to a failure in the main turbine electrohydraulic control system caused a Unit 1 reactor trip on high pressurizer pressure. Posttrip operator actions were good. **Dockets Discussed:** 05000528 Palo Verde 1
02/06/1999	1998010	Pri: OPS Sec:	NRC	POS	Pri: 1B Sec: 3A Ter:	**Actions taken by the operations staff to mitigate instrument air header leak were effective.** A failed gasket at a flanged connection caused a substantial leak in the Unit 3 instrument air header. Operator actions to isolate the leak, combined with the proper functioning of the backup nitrogen supply, stabilized the instrument air header pressure to allow the unit to remain stable throughout this event. Actions taken by the operations staff to mitigate this event were effective. **Dockets Discussed:** 05000530 Palo Verde 3
02/06/1999	1998010	Pri: OPS Sec:	NRC	POS	Pri: 1B Sec: 3A Ter:	**Operator response to the unexpected loss of the Unit 1 120-Vac Bus PND-D28 was good.** Control room operator response to the unexpected loss of the Unit 1 120-Vac Instrumentation Bus PND-D28 was good . **Dockets Discussed:** 05000528 Palo Verde 1
01/31/1999	1999016-01	Pri: OPS Sec:	Licensee	NCV	Pri: 1C Sec: 3A Ter:	**PDIL Alarm Inoperable Due to Inattentive Operators** A lack of attention to detail and inadequate independent verification by control room operators when entering a point into the plant computer rendered the Unit 2 Power Dependent Insertion Limit alarm inoperable and is a violation of Technical Specification 3.1.7.D. This event was reported in Licensee Event Report 50-529/99-001-00. This Severity Level IV violation is being treated as a noncited violation consistent with Appendix C of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 2-9-0009. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
01/29/1999	1999002	Pri: OPS Sec:	NRC	STR	Pri: 1A Sec: 1B Ter: 3B	**Good performance by shift and staff crews in operator requal exams.** The licensed operators on both shift and staff crews demonstrated strong capability to respond to and mitigate a variety of abnormal and emergency conditions to protect the public health and safety. Operators exhibited improved performance in several behavioral skills including communication, self-verification, concurrent or peer verification, and supervisory oversight. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
01/29/1999	1999002	Pri: OPS Sec:	NRC	STR	Pri: 1C Sec: 3B Ter:	**Good performance by licensed operator requal training organization.** The operations training organization exhibited a sustained high level of performance in implementing a systems approach to training for the licensed operator requalification program. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3

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11/27/1999	1999020-00	Pri: MAINT Sec:	NRC	NCV	Pri: 5C Sec: Ter:	**Failure to promptly correct a condition adverse to quality** Cancellation of a work order implementing the corrective action for a condition adverse to quality resulted in the failure to promptly correct the condition. As a result, both 42-inch containment purge valves in Unit 1 were inoperable for a short time. This is a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CRDR 101502.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
10/16/1999	1999019	Pri: MAINT Sec:	Licensee	NEG	Pri: 2A Sec: 2B Ter:	**Inadequate PM on control room humidifier** Inadequate preventive maintenance on the humidifier in the Unit 2 control room normal ventilation system caused the humidifier reservoir to overflow into the essential control room filtration unit. This resulted in the Train B essential control room filtration unit becoming inoperable. The licensee's actions to address the issue were appropriate.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
10/16/1999	1999019	Pri: MAINT Sec:	Licensee	NEG	Pri: 2B Sec: Ter:	**Procedural deficiency** The licensee identified a procedural deficiency that caused a failure to demonstrate the capability of the remote shutdown control circuit for Essential Air Cooling Unit HAB-Z06 to isolate from the control room during remote shutdown operation. The licensee effectively addressed this issue.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
09/04/1999	1999016	Pri: MAINT Sec:	NRC	POS	Pri: 2A Sec: Ter:	**Plant Material Condition was Good** Observable material condition of the three units was good.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
09/04/1999	1999016	Pri: MAINT Sec:	NRC	POS	Pri: 2B Sec: Ter:	**Effective Implementation of Predictive Maintenance Program** The licensee effectively implemented a predictive maintenance program to identify and investigate issues to resolution. This was evidenced by the resolution of the predictive maintenance alert status of Unit 2 Emergency Diesel Generator A for the increasing trend of iron and chromium identified in lube oil samples. The licensee's actions represented a good example of an integrated effort to resolve a potentially significant emerging maintenance issue.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						

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07/30/1999	1999022-03	Pri: MAINT	NRC	NCV	Pri: 2B	**Failure to perform test of EGD output breaker**
		Sec:			Sec:	A violation of Technical Specification Surveillance Requirement 3.8.1.13 was identified for failing to perform a test of the emergency diesel output breaker. This event was reported in Licensee Event Report 50-528; -529; -530/99-002-00. This Severity Level IV violation is being treated as a noncited violation consistent with Section VII.B.1.a of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 97-0078.
					Ter:	
Dockets Discussed: 05000528 Palo Verde 1; 05000529 Palo Verde 2; 05000530 Palo Verde 3						
07/24/1999	1999014	Pri: MAINT	NRC	NEG	Pri: 2A	**Equipment obsolescence and limited availability of spare parts negatively impacted the licensee**
		Sec:			Sec: 2B	Equipment obsolescence and limited availability of spare parts negatively impacted the licensee's efforts to repair the Unit 2 Core Element Assembly Calculator 2 in that it limited the number of parts that were replaced after a failure of indeterminate cause. A subsequent similar failure of Core Element Assembly Calculator 2 resulted in the control room operators removing it from service to prevent another reactor trip. A strategic plan for replacement of this equipment has been developed by the licensee, but no firm milestones have been established.
					Ter:	
Dockets Discussed: 05000529 Palo Verde 2						
05/11/1999	1999008	Pri: MAINT	NRC	POS	Pri: 2A	**Observable material condition of Unit 2 pumps, valves, piping and component supports was good.**
		Sec:			Sec:	The external material condition of the observed Unit 2 pumps, valves, piping, and component supports was good, in that, no visible oil or water leaks were noted. The observed equipment was properly identified.
					Ter:	
Dockets Discussed: 05000529 Palo Verde 2						
05/11/1999	1999008	Pri: MAINT	NRC	POS	Pri: 3A	**NDE procedures were good.**
		Sec:			Sec:	The nondestructive examination procedures used to perform the inspector-observed inservice inspections contained sufficient detail and inspection acceptance criteria to enable the performance of the intended examinations. The procedures were in compliance with Sections V and XI of the ASME Code
					Ter:	
Dockets Discussed: 05000528 Palo Verde 1; 05000529 Palo Verde 2; 05000530 Palo Verde 3						
05/11/1999	1999008	Pri: MAINT	NRC	POS	Pri: 4C	**Licensee personnel were effective in their oversight and control of contractor inservice inspection activities.**
		Sec:			Sec:	Licensee personnel were effective in their oversight and control of contractor inservice inspection activities. Contractor inservice inspection personnel were properly certified and knowledgeable of applicable nondestructive examination procedures and ASME Code requirements. Very good performance was demonstrated by contractor inservice inspection personnel during conduct of equipment calibration and examinations (three-liquid penetrant, four-ultrasonic, and four-magnetic particle) observed by the inspectors.
					Ter:	
Dockets Discussed: 05000528 Palo Verde 1; 05000529 Palo Verde 2; 05000530 Palo Verde 3						

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05/11/1999	1999008	Pri: MAINT Sec:	NRC	WK	Pri: 4C Sec: Ter:	**The licensee implemented an ISI program which had not been approved by the NRC.** The licensee's inservice inspection program implemented the 1992 Edition of the ASME Code, which had not been approved for use by the NRC. While the licensee determined that they had not deviated from the 1989 Edition of the ASME Code, they did however, identify the need for immediate submittal of two requests for relief that dealt with examination of bolted connections and corrective actions associated with detected leaks of bolted connections. The licensee appeared to have not recognized the differences between the 1980 Edition and Winter 1981 Addenda, the 1989 Edition, and the 1992 Edition and 1992 Addenda. This was considered by the inspectors as a programmatic weakness.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
05/11/1999	1999008-02	Pri: MAINT Sec:	NRC	NCV	Pri: 2B Sec: Ter:	**Technical Specification 5.4.1 violation for inadequate test procedure** A noncited violation was identified regarding an inadequate surveillance test procedure.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
05/01/1999	1999006	Pri: MAINT Sec:	Licensee	NEG	Pri: 3A Sec: Ter:	**An improperly written surveillance procedure results in water discharge to the containment sump.** Knowledgeable technicians and operators used approved procedures to conduct surveillance activities in a satisfactory manner. However, during Unit 2 integrated safeguards testing of the containment spray actuation signal, operators overlooked a caution note in the procedure providing for the isolation of nuclear cooling water relief valves. The relief valves inadvertently lifted during the test, which resulted in approximately 80 gallons of water being discharged to the containment sump. The caution note contained guidance that should have been included as a procedure sign-off step. Licensee actions to correct the procedure deficiency were acceptable.
Dockets Discussed: 05000529 Palo Verde 2						
05/01/1999	1999006	Pri: MAINT Sec:	NRC	POS	Pri: 2A Sec: Ter:	**Observable material condition of the three units was good.** Observable material condition of the three units was good. During a postshutdown walkdown of the Unit 2 containment, licensee inspection of Inconel 600 resistance temperature detector nozzles revealed no evidence of leakage. The licensee's actions to address the boron accumulation were good.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
04/13/1999	1999012-02	Pri: MAINT Sec:	Licensee	NCV	Pri: 1C Sec: Ter:	**Violation of TS 5.4.1 for failure to implement procedures for control of lubricants.** The failure to properly implement procedures for control of lubricants used in the facility is a violation of Technical Specification 5.4.1. The concerns with the control of lubricants included adding the incorrect oil and grease to safety-related components and not ensuring that the requirements of the program were applied to all appropriate personnel within the maintenance department. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. These issues are in the licensee's corrective action program as Condition Report/Disposition Request 9-9-0443.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						

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03/20/1999	1999004	Pri: MAINT Sec:	NRC	POS	Pri: 2A Sec: Ter:	**Observable material condition of the three units was good.** Observable material condition of the three units was good. During a posttrip walkdown of the Unit 1 containment, the licensee discovered a moderate amount of boron crystals on carbon steel components of Reactor Coolant Pump 2A. The licensee's actions to address the boron accumulation were good. Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
03/20/1999	1999004-01	Pri: MAINT Sec:	Licensee	NCV	Pri: 3A Sec: Ter:	**Missed 18-month surveillance of trisodium phosphate baskets** A violation of Technical Specification 4.5.2.d.3 was identified for the failure to perform the required surveillance test on the trisodium phosphate baskets. This Severity Level IV violation is being treated as a noncited violation per the guidance provided in Appendix C of the Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 9-8-Q047. Dockets Discussed: 05000529 Palo Verde 2
03/20/1999	1999004-02	Pri: MAINT Sec:	Licensee	NCV	Pri: 5B Sec: 5C Ter:	**Failure to correct a deficient condition in the auxiliary feedwater pump governors** The licensee failed to take actions to ensure that a deficient condition was appropriately corrected on all affected components. As a result, the deficiency was not corrected for all turbine-driven auxiliary feedwater pumps in all units. This deficiency was identified again by an overspeed trip of the Unit 2 turbine-driven auxiliary feedwater pump. This is a violation of 10 CFR Part 50, Appendix B, Criterion III. This Severity Level IV violation is being treated as a noncited violation consistent with Appendix C of the NRC Enforcement Policy. The licensee took prompt actions to assess transportibility and correct the conditions. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 2-9-0019. Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
03/20/1999	1999004-03	Pri: MAINT Sec:	Licensee	NCV	Pri: 2A Sec: 2B Ter: 4C	**Failure to provide sufficient instructions for torqueing the EDG air-start header bolts** The licensee failed to provide sufficient design basis information in the appropriate procedures. As a result, missing and/or loose bolts were identified on the Units 1,2, and 3 emergency diesel generator air-start headers. The torque value for the bolts was increased from 25 to 50 foot-pounds, and the bolts that required torqueing were not identified in the appropriate maintenance instructions. This is a violation of 10 CFR Part 50, Appendix B, Criterion III, for not implementing design basis information. This Severity Level IV violation is being treated as a noncited violation consistent with Appendix C of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 3-9-0026. Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
03/20/1999	1999004-04	Pri: MAINT Sec:	Licensee	NCV	Pri: 2A Sec: 2B Ter: 3A	**Inadequate postmaintenance testing of valve actuators** During routine testing of a containment isolation valve for the hydrogen control system, the valve failed to function, as designed. The failure was caused by the valve wiring being improperly installed following maintenance. The condition was not detected by postmaintenance testing because the procedure, which specified the testing requirements for the valve actuators, was inadequate. This is a violation of 10 CFR Part 50 Appendix B, Criterion XI; however, this Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This issue is in the licensee's corrective action plan as Condition Report/Disposition Request 3-9-0010. Dockets Discussed: 05000530 Palo Verde 3

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03/20/1999	1999004-05	Pri: MAINT	Licensee	NCV	Pri: 2A	**Failure to follow procedure for identification of correct replacement parts**
		Sec:			Sec: 2B	Inattention to detail led to a failure to follow procedures while retrieving and verifying replacement 480-Vac circuit breakers. This resulted in the installation of two nonsafety-related circuit breakers into safety-related motor control center cubicles affecting two high pressure safety injection valves. This is a violation of Technical Specification 5.4.1 for the failure to follow procedures. Postwork reviews also failed to prevent the discrepancies. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 1-9-0030.
Dockets Discussed:					Ter: 3A	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
02/06/1999	1998010	Pri: MAINT	NRC	POS	Pri: 2A	**During routine tours, the observed material condition of components in all three units was good.**
		Sec:			Sec:	During routine tours, the observed material condition of components in all three units was good.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
02/06/1999	1998010	Pri: MAINT	NRC	POS	Pri: 3A	**Knowledgeable technicians used approved procedures to perform routine maintenance activities.**
		Sec:			Sec: 3B	Knowledgeable technicians used approved procedures to perform routine maintenance activities in a safety conscious manner. Good work and foreign material control practices were observed.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
02/06/1999	1998010	Pri: MAINT	NRC	POS	Pri: 3A	**Knowledgeable technicians used approved procedures to conduct surveillance activities.**
		Sec:			Sec: 3B	Knowledgeable technicians used approved procedures to conduct surveillance activities in a safety-conscious manner.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
01/29/1999	1999003	Pri: MAINT	NRC	STR	Pri: 3A	**A good ventilation filter testing program was implemented for ESF filtered ventilation systems.**
		Sec:			Sec: 3B	A good ventilation filter testing program was implemented. The engineered safety feature filtered ventilation systems were routinely tested within the intervals required by technical specifications. Test procedures followed regulatory guidance. Individuals performing in-place filter testing had received related training and were knowledgeable of testing requirements and acceptance criteria. System engineers demonstrated a good knowledge of equipment status and of industry events related to air cleaning systems.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						

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12/10/1999	1999021-01	Pri: ENG Sec:	NRC	NCV	Pri: 4A Sec: Ter:	**Failure to adequately update the UFSAR. Inconsistency existed between Ch. 8 & 15 and the specific design c** The licensee determined that an inconsistency existed between Chapters 8 and 15 in the Updated Final Safety Analysis Report and the actual plant design. The inconsistency had resulted from a generic Combustion Engineering analysis that was used without necessary revision to account for the site-specific electrical system at Palo Verde. Chapter 15 assumed that 3 seconds of grid (offsite) power would be available to the reactor coolant pumps using the fast bus transfer through the start-up transformer. Chapter 8 and 15 should have identified the specific design of the plant and credited the 3 second (minimum) power pulse from the auxiliary transformer following a turbine trip as the power that was relied upon to supply the reactor coolant pumps. The licensee event report stated that the licensee had missed several opportunities to identify the discrepancy during design change and technical specification amendment reviews. The licensee failed to adequately update the Updated Final Safety Analysis Report to ensure that it was accurate and contained the latest material developed. The failure was identified as a violation of 10 CFR 50.71(e). This Severity Level IV violation is being treated as a noncited violation consistent with Section VII.B.1.a of the NRC Enforcement Policy. The violation is in the licensee's corrective action program as Condition Report/Disposition Request (CRDR) 2-8-0074.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
11/27/1999	1999020	Pri: ENG Sec:	NRC	POS	Pri: 4B Sec: Ter:	**EDG operability assessment was comprehensive** The operability assessment to disposition a leaking exhaust manifold on the Unit 1Train B diesel generator was comprehensive. The assessment was based on sound engineering analysis and referenced empirical data to support the conclusions.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
09/17/1999	1999015	Pri: ENG Sec:	NRC	POS	Pri: 3A Sec: Ter:	**The GL 96-01 review team was thorough in review of industry operating experience.** The project plan review team was aggressive in their approach to reviewing industry operating experience, and had performed a thorough and in-depth evaluation of documents in order toidentify issues and determine their applicability to the Palo Verde Nuclear Generating Station.
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09/17/1999	1999015	Pri: ENG Sec:	NRC	POS	Pri: 3B Sec: Ter:	**Licensee management provided excellent support for accomplishing GL 96-01 objectives.** Licensee managment was appropriately responsive to performing the requested actions in Generic Letter 96-01. The project plan was well formulated and the review team members were knowledgeable and well suited for their assigned tasks.
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09/04/1999	1999016	Pri: ENG	NRC	POS	Pri: 4B	**Actions to Assess Underground Piping Were Good**
		Sec:			Sec: 5B	The licensee's actions to assess degradation of underground essential spray pond system piping were good.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
09/03/1999	1999017-01	Pri: ENG	Licensee	NCV	Pri: 4A	**Failure to assure Regulatory Guide 1.75 Separation Distances for Battery Cables**
		Sec:			Sec:	A violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified for failure, during initial plant design and construction, to apply adequate design controls to ensure that cables associated with the station batteries and the emergency lighting batteries in each unit were separated in accordance with the requirements of Regulatory Guide 1.75. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. The violation is in the licensee's corrective action program as Condition Report/Disposition Request 99-100622.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
09/03/1999	1999017-02	Pri: ENG	NRC	NCV	Pri: 4B	**Failure to promptly correct electrical cable separation problem**
		Sec:			Sec: 5C	A violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for failure to take prompt corrective action in response to the licensee's discovery of an electrical cable separation nonconformance associated with the station and emergency lighting batteries in Units 1 and 3. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. The violation is in the licensee's corrective action program as Condition Report/Disposition Request 99-100622.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000530 Palo Verde 3						

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09/02/1999	1999011-01	Pri: ENG Sec:	NRC	NCV	Pri: 4A Sec: Ter:	**Failure to verify the adequacy of design basis calculations and failure to translate the design into procedure:** The team identified the following four examples of a violation of 10 CFR Part 50, Appendix B, Criterion III, each of which is described below. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Condition Report/Disposition Requests 9-9-1012, 9-9-0763, 9-9-0771, 9-9-0778, and 9-9-0800. None of these examples affected operability. 1. On three occasions, licensee engineers failed to verify and check the adequacy of a design basis change, in that, (1) they revised the maximum refueling water tank temperature in Calculation 13-MC-SI-018, but failed to revise Calculation 13-MC-SI-220, which used the maximum refueling water tank temperature as an input; (2) they revised Calculation 13-MC-SI-018, which superseded portions of Calculation 13-MC-SI-309, but failed to revise Calculation 13-MC-SI-309 to identify the superseded sections; and (3) they revised Calculation 13-MC-SI-018, which established a new minimum containment sump level, but did not revise Calculation 13-MC-SI-804 to reflect that a new minimum containment sump level was established in Calculation 13-MC-SI-018 (Section E1.1). 2. Licensee engineers failed to verify and check the adequacy of Calculation 13-JC-SI-218, in that, the calculation referenced a nonconservative tolerance, and did not consider the specific-gravity for unborated water in the containment spray header. In addition, the licensee failed to verify and check the adequacy of Calculation 13-JC-SI-215, in that, licensee engineers changed the flowrate in one section of Calculation 12-JC-SI-215, but failed to revise all affected sections of the calculation (Section E1.2). 3. Licensee engineers failed to translate the corrected indicated containment spray flowrate from Calculation 12-JC-SI-215 into Emergency Procedure 40EP-9EO03 (Section E1.2). 4. Licensee engineers prepared Modification Package PCWO 00771121, which installed Breaker 3EPKBD2218 and its associated circuit in Unit 3. The modification was canceled, the installed breaker and circuit was abandoned in place, and the breaker was labeled as spare and placed in the "off" position. Most of the affected documents and data bases, which had already been revised to reflect the installed circuit and breaker in use, were not revised to reflect the canceled modification. Licensee engineers (1) failed to verify that Calculation 03-EC-PK-207 adequately reflected installed equipment, and (2) failed to accurately translate design change information from canceled Modification Package PCWO 00771121 (which installed Breaker 3EPKBD2218) into design basis Calculation 03-E-HFB-004, Vendor Drawing E022-24-18, and the plant data management system to show the actual installed configuration
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
09/02/1999	1999011-02	Pri: ENG Sec:	NRC	NCV	Pri: 4A Sec: Ter:	**Failure to ensure that containment sump level transmitters were environmentally qualified for long-term sub** The environmental qualification for the containment sump wide range level transmitter Probes J-SIA-LE-0706A and J-SIA-LE-0707A (post-accident monitoring equipment) did not meet the requirements of 10 CFR 50.49 for post-accident monitoring, as described in Regulatory Guide 1.97 for long-term post-accident surveillance of containment sump water level, and committed to in the Updated Final Safety Analysis Report. The team identified this as a noncited violation of 10 CFR 50.49. This violation is in the licensee's corrective action program as Condition Report/Disposition Request 9-9-0730. Subsequent to the team's identification, licensee engineers performed an operability determination and concluded that the level transmitter probes were qualified for long-term submergence.
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09/02/1999	1999011-03	Pri: ENG Sec:	NRC	NCV	Pri: 4B Sec: Ter:	**Failure to revise the UFSAR to reflect the latest information** The team identified the following two examples of a noncited violation of 10 CFR 50.71(e) for failure to ensure that the Updated Final Safety Analysis Report was updated to reflect the latest information available. This violation is in the licensee's corrective action program as Condition Report/Disposition Requests 9-9-0693, 9-9-1055, and 9-9-0956. None of these examples affected operability. 1. Licensee engineers failed to update the Updated Final Safety Analysis Report to reflect (1) the calibrated range of the refueling water tank level instrument as referenced in Calculation 13-JC-CH-209; (2) the appropriate "LO" refueling water tank level setpoints determined by Calculation 13-JC-CH-206; and (3) the appropriate "LO-LO" refueling water tank level setpoints determined by Calculation 13-MC-CH-201 (Section E1.2). 2. Licensee engineers failed to revise the Updated Final Safety Analysis Report to reflect the actual installed configuration of the battery room exhaust ducts.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
09/02/1999	1999011-04	Pri: ENG Sec:	NRC	NCV	Pri: 3A Sec: 3C Ter:	**Inaequate procedure and two examples of failure to follow procedures.** The team identified the following three examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, for an inadequate procedure and failure to follow procedures. This violation is in the licensee's corrective action program as Condition Report/Disposition Requests 9-9-0765, and 9-9-0699. None of these examples affected operability. 1. On three occasions in June 1999, licensee personnel used Operability Determination 183 as justification for not entering technical specification action statements while calibrating hot-leg high pressure safety injection flow transmitters. The team found that Preventive Maintenance Task 038406 (used to calibrate these flow transmitters) was inappropriate to the circumstances. It did not satisfy the conditions in Operability Determination 183, to require technicians in attendance at the transmitter during calibration (Section E2.2.1). 2. Licensee operations personnel failed to make the proper entries in the unit logs, as required by Procedure 40DP-9OP26, when they used canceled operability determinations. Specifically, on three occasions in June 1999, operations personnel used canceled Operability Determination 183 to justify calibrating high pressure safety injection flow transmitters on line without entering technical specification action statement (Section E2.2.1). 3. Licensee personnel failed on 10 occasions to conduct and document justification reviews to determine whether safety-related temporary modifications were still necessary or if permanent plant design changes would be initiated. In addition, licensee personnel failed on 11 occasions to distribute the justification review forms, as required by Procedure 81DP-0DC17.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
07/24/1999	1999014	Pri: ENG Sec:	NRC	POS	Pri: 1C Sec: Ter:	**Thorough engineering evaluation for spray pond freeze protection requirements.** The engineering evaluation used to determine freeze protection requirements for essential spray pond header risers and spray nozzles was thorough.
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05/11/1999	1999008-01	Pri: ENG Sec:	NRC	NCV	Pri: 4A Sec: Ter:	**Failure to maintain adequate drawing design control** A noncited violation was identified for inadequate design control. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
03/20/1999	1999004	Pri: ENG Sec:	NRC	POS	Pri: 4B Sec: 4C Ter:	**A Y2K readiness plan had been developed and was being implemented by the licensee.** A Y2K readiness plan had been developed and was being implemented by the licensee. The plan was organized and contained the necessary elements to address current and potential problems from the Y2K bug. A Y2K contingency plan has been developed, but not finalized. The licensee was well positioned to complete Y2K remediation prior to the end of the year. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
03/20/1999	1999004-06	Pri: ENG Sec:	Licensee	NCV	Pri: 4A Sec: Ter:	**Failure to conduct an adequate design review of conduit penetrating flooding barriers** A violation of Criterion III was identified for not specifying the correct type of seal fittings for conduits. As a result, during flooding of a portion of the auxiliary building, water entered the conduits. This affected the operability of safety-related equipment. This Severity Level IV violation is being treated as a noncited violation consistent with Appendix C of the enforcement policy. This issue is in the licensee's corrective action program as Condition Report/Disposition Request 1-60236. **Dockets Discussed:** 05000528 Palo Verde 1
02/06/1999	1998010-01	Pri: ENG Sec:	NRC	NCV	Pri: 4B Sec: Ter:	**Failure to establish adequate measures to ensure correct parts are selected for modifications** Several deficiencies in the work control and planning process were identified by the licensee. The combination of poor planning, engineering, technical reviews, verification inspection criteria, and verification specifications were identified. In addition, a lack of periodic monitoring of modification activities and effective planner and worker training were noted. These problem areas resulted in poor work planning in the plant design modification and welding areas. Some personnel involved in the work planning process did not devote the required attention to detail to perform effective planning. Two noncited violations were identified. A violation of Criterion III occurred when a design error resulted in the installation of an improper component, which eventually failed. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3
02/06/1999	1998010-02	Pri: ENG Sec:	NRC	NCV	Pri: 3A Sec: 3C Ter:	**Failure to establish adequate measures to ensure that nondestructive testing is accomplished** Several deficiencies in the work control and planning process were identified by the licensee. The combination of poor planning, engineering, technical reviews, verification inspection criteria, and verification specifications were identified. In addition, a lack of periodic monitoring of modification activities and effective planner and worker training were noted. These problem areas resulted in poor work planning in the plant design modification and welding areas. Some personnel involved in the work planning process did not devote the required attention to detail to perform effective planning. A violation of Criterion IX occurred when code-required nondestructive examination was not performed on modification welds prior to placing the system in service. This resulted in a train of auxiliary feedwater later being declared inoperable until the examinations were performed and evaluated. **Dockets Discussed:** 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3

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02/06/1999	1998010-03	Pri: ENG Sec:	NRC	NCV	Pri: 4A Sec: 4C Ter:	**Failure to maintain design control measures for replacement part commensurate with the original design** The licensee failed to maintain adequate design control measures when the cooling water line flexible joints for the emergency diesel generators were replaced. The replacement joints were not preapproved for use. The appropriate design measures were not taken to verify that the new joints could perform their intended safety function. Failure of these joints would render the diesels inoperable. The licensee promptly responded to address the issue and identified numerous other diesel expansion joint design discrepancies. Upon completion of an evaluation, the licensee determined that the joints would perform satisfactorily and all emergency diesel generators remained operable. This problem is a violation of Criterion III; however, this Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
01/28/2000	2000002	Pri: PLTSUP Sec:	NRC	MISC	Pri: 3B Sec: Ter:	**Exercise weakness identified in simulator walkthroughs for failure to classify emergency condition accurate** During the simulator walkthroughs, an exercise weakness was identified for failure of one crew to make an accurate declaration of an alert condition based on fission product barrier conditions. The licensee recognized the improper performance, documented it in the corrective action system, and initiated appropriate corrective actions (Section P4)
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
01/28/2000	2000002	Pri: PLTSUP Sec:	Licensee	NEG	Pri: 1B Sec: 3A Ter:	**Management expectations regarding classification verification and protective action recommendation updat** The management expectation to independently verify emergency classifications was not consistently followed. The management expectation to include previously affected sectors in protective action recommendation updates was not clearly conveyed to the crews. As a result, these activities did not consistently occur between the two crews. The licensee entered the issues into the corrective action system and took appropriate immediate corrective action. Emergency response organization members were being appropriately trained in accordance with emergency plan and implementing procedure requirements.
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01/28/2000	2000002	Pri: PLTSUP Sec:	NRC	NEG	Pri: 1C Sec: Ter:	**Ineffective procedure maintenance practices at emergency response locations** The licensee's process for controlling procedures in the emergency response facilities and vehicles was not effective, in that complete and accurate procedure copies for all response positions were not maintained. None of the discrepancies would have significantly affected response capabilities. For example, (1) two field monitoring vehicles did not have all required procedures, (2) procedure indexes used for maintaining procedure binders were not correct for all binders, and (3) two binders were inappropriately located in the technical support center. The licensee initiated a condition report to investigate the discrepancies identified by the inspector and took appropriate immediate corrective action to update the copies.
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01/28/2000	2000002	Pri: PLTSUP Sec:	Licensee	NEG	Pri: 1C Sec: 3B Ter: 5A	**Ineffective management tool to track emergency preparedness qualifications** The licensee's recently implemented site-wide management system for tracking emergency responder qualifications was not effective as a management tool to determine actual qualification status. Software problems resulted in an erroneously high number of unqualified responders on generated reports, although the actual number of qualified responders was satisfactory. The licensee identified this problem during a self-assessment and documented it in the corrective action system. The emergency planning department was sufficiently staffed with personnel who had the appropriate diverse backgrounds.
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01/28/2000	2000002	Pri: PLTSUP Sec:	Licensee	NEG	Pri: 5C Sec: Ter:	**Examples of incomplete or ineffective corrective actions identified by licensee and NRC** There were instances where corrective actions were incomplete or ineffective. The inspector identified some corrective actions for problems associated with emergency classification and emergency response facility ventilation systems that were not complete, resulting in follow-up condition reports. Incomplete or ineffective corrective actions associated with these areas were previously identified in licensee audits.
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01/28/2000	2000002	Pri: PLTSUP Sec:	NRC	POS	Pri: 5A Sec: Ter:	**Critical and probing Quality Assurance audits of emergency preparedness program** The two Nuclear Assurance Division emergency preparedness audits performed since the last NRC inspection were conducted by personnel with the necessary technical expertise. The audits were thorough and highly critical. The audits identified a number of significant issues including inadequate problem identification, ineffective corrective actions, and inadequate self-assessments. Both audits met the requirements of NRC regulations, and the appropriate sections were made available to the offsite governmental authorities. The emergency planning department's corrective action program effectively captured problem areas. Root cause determinations were appropriately performed for the most significant problems.
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01/14/2000	2000001	Pri: PLTSUP Sec:	NRC	STR	Pri: 3A Sec: Ter:	**Excellent ALARA results** The licensee achieved excellent ALARA results. The 1999 three-year, per-unit, radiation dose total was much lower than recent national averages of pressurized water reactor doses.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
01/10/2000	2000001	Pri: PLTSUP Sec:	NRC	STR	Pri: 3A Sec: Ter:	**Excellent ALARA results** The licensee achieved excellent ALARA results. The 1999 three-year, per-unit, radiation dose total was much lower than recent national averages of pressurized water reactor doses. The Nuclear Assurance audit was comprehensive and thorough. The audit team was well qualified, and the audit findings were appropriately placed into the licensee's corrective action program. The radiation protection organization identified and resolved problems effectively.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
12/10/1999	1999021	Pri: PLTSUP Sec:	NRC	STR	Pri: 2B Sec: Ter:	**The dedicated fire department was a strength** The fire department was considered a strength to the fire protection program because it's fire team staff was dedicated to fire protection and emergency responsibilities.
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11/27/1999	1999020	Pri: PLTSUP Sec:	NRC	POS	Pri: 1C Sec: Ter:	**Radiation Protection Program was effectively implemented** The radiological protection program was effectively implemented in those areas reviewed. Licensee efforts to keep personnel exposure as-low-as-is-reasonably-achievable during the Unit 1 outage were effective.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
10/16/1999	1999019	Pri: PLTSUP Sec:	NRC	POS	Pri: 1C Sec: Ter:	**Radiological controls for diving operations** Good radiological controls and prejob planning resulted in divers in the Unit 1 fuel transfer canal accomplishing repair work on the fuel transfer machine with very low radiation exposure.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
07/01/1999	1999013-01	Pri: PLTSUP Sec:	NRC	NCV	Pri: 2A Sec: Ter:	**Eight security perimeter detection zones defeated by inspectors.** A violation of Paragraphs 6.3.1 and 6.9.2.2 of the Physical Security Plan, Amendment 43, was identified when eight detection zones were defeated by the NRC inspectors and contractors. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy. The violation was placed in the licensee's corrective action program as Condition Report/Disposition Report 990660.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
06/10/1999	1999013	Pri: PLTSUP Sec:	NRC	STR	Pri: 1A Sec: 3A Ter:	**Personnel access to plant protected area effectively controlled.** Tests of the metal detection and x-ray search equipment, coupled with the performance of the guard force, indicated that the licensee effectively controlled personnel access to the plant protected area.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
06/10/1999	1999013	Pri: PLTSUP Sec:	NRC	STR	Pri: 1C Sec: 3B Ter:	**Excellent performance during two force-on-force exercises.** The licensee performed in an excellent manner during two force-on-force exercises.
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06/10/1999	1999013	Pri: PLTSUP Sec: Ter:	NRC	STR	Pri: 2A Sec: 4A	**Responses during security exercises and table top drills were effective.** The new modular vital area barriers significantly increased the time line for response personnel. The reduction in the number of armed responders assigned to each unit was evaluated during exercises and table top drills. Responses during both the exercises and the table top drills were effective.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
05/11/1999	1999008	Pri: PLTSUP Sec: Ter:	NRC	POS	Pri: 5A Sec: 5B Ter: 5C	**Inservice inspection program self-assessment was thorough, objective and insightful.** The most recent inservice inspection program self-assessment was quite thorough, objective, and insightful. Issues were identified and documented in condition reports/disposition requests, and were being tracked in the licensee's corrective action program.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
05/07/1999	1999009	Pri: PLTSUP Sec: Ter:	NRC	STR	Pri: 1C Sec: 3B	**Effective implementation of radiological enviromental monitoring and meterological monitoring programs.** Overall, effective radiological environmental monitoring and meteorological monitoring programs were implemented. Implementation of the radiological environmental monitoring program was in accordance with Technical Specifications and the Offsite Dose Calculation Manual. Sample collection, analyses, and associated analyses report forms were conducted in accordance with procedural requirements. Implementation of the meteorological monitoring program agreed with the guidance contained in Regulatory Guide 1.23 and commitments in the Updated Final Safety Analysis Report. Excellent meteorological data recovery in 1998 was noted (99.7 percent). Knowledge and performance of the radiological environmental monitoring and meteorological monitoring programs personnel were outstanding
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
05/07/1999	1999009	Pri: PLTSUP Sec: Ter:	NRC	STR	Pri: 5A Sec:	**Comprehensive audits and evaluations.** Comprehensive audits and evaluations were performed by well experienced auditors along with outside technical specialists. Audit findings were appropriately placed in the licensee's corrective action process. Corrective actions were generally timely and effective.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
05/07/1999	1999010	Pri: PLTSUP Sec: Ter:	NRC	POS	Pri: 2A Sec:	**Rad waste facilities materal conditon was good.** The material condition within the licensee's waste facilities was good. Tanks and piping in the rooms showed no signs of degradation. There were no indications of resin spillage.
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05/07/1999	1999010	Pri: PLTSUP	NRC	POS	Pri: 3A	**Good program for packaging and shipping radioactive materials and waste.**
		Sec:			Sec:	The licensee maintained a good program for packaging and shipping radioactive materials and radioactive waste.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
05/07/1999	1999010	Pri: PLTSUP	NRC	STR	Pri: 3A	**Implementation of a good solid radioactive waste management program.**
		Sec:			Sec:	The licensee implemented a good solid radioactive waste management program. Radioactive material was correctly stored and controlled. Radioactive waste was correctly classified and stabilized for burial. Waste manifests were prepared in accordance with regulatory requirements.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
05/07/1999	1999010-01	Pri: PLTSUP	Licensee	NCV	Pri: 3A	**Failure to placard a radioactive waste transport vehicle in accordance with 49CFR 172.504**
		Sec:			Sec:	The licensee failed to placard a radioactive waste transport vehicle, in violation of 49 CFR 172.504. This Severity Level IV violation is being treated as a noncited violation. This violation is in the licensee's corrective action program as Condition Report/Disposition Request 99-0287 (Section R1.2).
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
04/09/1999	1999007	Pri: PLTSUP	NRC	POS	Pri: 3A	**Good radioactive material controls were maintained.**
		Sec:			Sec:	Good radioactive material controls were maintained. Radiation workers generally used good contamination control practices. Radiation protection personnel surveyed items correctly before releasing them from the radiological controlled area. The licensee maintained a sufficient supply of calibrated radiation detection instruments. Radiation dose rates and airborne radioactivity concentrations were evaluated correctly.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
04/09/1999	1999007	Pri: PLTSUP	NRC	POS	Pri: 3A	**The licensee implemented good radiation exposure controls.**
		Sec:			Sec:	The licensee implemented good radiation exposure controls. Radiation workers were thoroughly instructed in the radiation hazards and precautions to reduce radiation dose. The radiation work permit authorization process was not implemented properly, but the licensee addressed the situation promptly. Radiation protection personnel provided good support and oversight of radiological controlled area work activities.
Dockets Discussed:					Ter:	
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04/09/1999	1999007	Pri: PLTSUP Sec:	NRC	POS	Pri: 3A Sec: 3C Ter:	**Outage preparations demonstrated strong support for ALARA.** The licensee's preparations for the outage demonstrated strong support for the ALARA concept. Radiological work packages included dose saving measures. Chemistry controls, temporary shielding, and hot spot flushing reduced dose rates in work areas. The licensee established a challenging ALARA goal for Unit 2 Refueling Outage 8.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
03/26/1999	1999005	Pri: PLTSUP Sec:	NRC	STR	Pri: 1C Sec: 2B Ter:	**Excellent security procedures.** The security procedures were excellent in that they were well written and comprehensive and provided performance-based instruction for the security organization.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
03/26/1999	1999005	Pri: PLTSUP Sec:	NRC	STR	Pri: 1C Sec: 3A Ter:	**A very good security event reporting program.** A very good security event reporting program was in place. The security staff was correctly reporting security events. The security field reports were accurate and well written.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
03/26/1999	1999005	Pri: PLTSUP Sec:	NRC	STR	Pri: 1C Sec: 3B Ter:	**Excellent implementation of security compensatory measures.** Compensatory measures were implemented in an excellent manner. The security officers were well trained on the program requirements.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
03/26/1999	1999005	Pri: PLTSUP Sec:	NRC	STR	Pri: 1C Sec: 3B Ter:	**Training and qualification for security officers program was excellent.** The licensee training program exceeded the training and qualification plan requirements. The security officers demonstrated a thorough knowledge of program requirements. Instructors observed during the inspection were very proficient. The training and qualification program was excellent.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						

United States Nuclear Regulatory Commission
PLANT ISSUE MATRIX
By Primary Functional Area

Region IV
PALO VERDE

Date	Source	Functional Area	ID	Type	Template Codes	Item Title / Item Description
03/26/1999	1999005	Pri: PLTSUP	NRC	STR	Pri: 3A	**Well trained and capable security organization.**
		Sec:			Sec: 3B	The licensee had a well trained and capable security organization.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
03/26/1999	1999005	Pri: PLTSUP	NRC	STR	Pri: 3A	**Implementation of security program by well qualified and highly professional staff.**
		Sec:			Sec: 3B	The security program was implemented by a well qualified and highly professional staff.
Dockets Discussed:					Ter: 3C	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
03/11/1999	1999001	Pri: PLTSUP	NRC	NEG	Pri: 1A	**Control room simulator staff performance was satisfactory during emergency plan drill.**
		Sec:			Sec:	Control room simulator staff performance was satisfactory. Analysis of plant conditions was acceptable; however, command and control and conduct of operations were not always effective. Three-leg communications were not used in some instances, and communications concerning plant status were delayed on some occasions.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
03/11/1999	1999001	Pri: PLTSUP	NRC	POS	Pri: 1C	**Emergency preparedness exercise performance was good.**
		Sec:			Sec: 1B	Overall exercise performance was good. The control room, satellite technical support center, technical support center, operations support center, and emergency operations facility successfully implemented key emergency plan requirements including emergency classifications, off-site notification, off-hours emergency response facility activation, emergency worker protection, dose assessment, and protective action recommendations.
Dockets Discussed:					Ter: 3B	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						
03/11/1999	1999001	Pri: PLTSUP	NRC	POS	Pri: 5A	**Effective emergency preparedness critique process.**
		Sec:			Sec:	The overall critique process was effective in identifying issues in need of corrective action and areas for improvement. The post-exercise facility critiques were conducted systematically and identified many issues with facility operations and the scenario. The management critique was thorough and self-critical.
Dockets Discussed:					Ter:	
05000528 Palo Verde 1						
05000529 Palo Verde 2						
05000530 Palo Verde 3						

United States Nuclear Regulatory Commission
PLANT ISSUE MATRIX
By Primary Functional Area

Region IV
PALO VERDE

Date	Source	Functional Area	ID	Type	Template Codes	Item Title / Item Description
03/11/1999	1999001-01	Pri: PLTSUP Sec:	NRC	IFI	Pri: 1C Sec: 5B Ter:	**Emergency plan exercise weakness-failure to set facility priorities.** An exercise weakness was identified in the technical support center for failure to establish and communicate facility priorities to the operations support center to ensure that mitigation efforts were properly accomplished. The engineering group was the only functional area that clearly established priorities. There was no integration between functional area directors to develop overall facility priorities. As a result: (1) a post-earthquake recovery plan was developed by the engineering group without input from other functional areas, (2) field activities which involved multiple disciplines were not well coordinated, and (3) the operations support center was given multiple directions. This exercise weakness was entered into the licensee's corrective action program as Item 99-0283; therefore, no response is requested.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
01/29/1999	1999003	Pri: PLTSUP Sec:	NRC	STR	Pri: 3A Sec: 3B Ter:	**The licensee implemented a good radioactive effluent management program.** The licensee implemented a good radioactive effluent management program. The licensee's radioactive effluent sampling, analysis, and dose projection program met the requirements of the Offsite Dose Calculation Manual. Releases of radioactive effluents were within regulatory requirements and did not exceed the commitments within the Final Safety Analysis Report. The licensee calibrated the effluent monitors correctly and maintained them well, particularly in view of the lack of manufacturer's support. Chemistry technicians who prepared radioactive effluent release permits were qualified in accordance to procedural requirements and regulatory guidance.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
01/29/1999	1999003	Pri: PLTSUP Sec:	NRC	STR	Pri: 5A Sec: 5B Ter: 5C	**The licensee provided good oversight of the radioactive effluent monitoring program.** The licensee provided good oversight of the radioactive effluent monitoring program. Nuclear assurance division audits were comprehensive, and the audit team had the proper technical expertise to provide insightful observations. The self-assessment of radiation monitoring activities demonstrated the licensee's ability to be self-critical and to identify areas in need of improvement.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						
01/14/2000	1999018	Pri: OTHER Sec:	NRC	POS	Pri: 1C Sec: 5A Ter: 5B	**Corrective Action Program** The team concluded that the licensee had an acceptable corrective action program with several good attributes and characteristics. The licensee's staff was aggressive and highly self-critical in identifying adverse problems and implementing action plans to correct problems. The licensees corrective action processes provided adequate guidance for identifying, classifying, and prioritizing adverse conditions. Licensee personnel were willing to initiate Condition Reports/Disposition Requests for adverse or questionable conditions.
Dockets Discussed: 05000528 Palo Verde 1 05000529 Palo Verde 2 05000530 Palo Verde 3						

United States Nuclear Regulatory Commission
PLANT ISSUE MATRIX
By Primary Functional Area

Legend

Type Codes:

BU	Bulletin
CDR	Construction
DEV	Deviation
EEI	Escalated Enforcement Item
IFI	Inspector follow-up item
LER	Licensee Event Report
LIC	Licensing Issue
MISC	Miscellaneous
MV	Minor Violation
NCV	NonCited Violation
NEG	Negative
NOED	Notice of Enforcement Discretion
NON	Notice of Non-Conformance
OTHR	Other
P21	Part 21
POS	Positive
SGI	Safeguard Event Report
STR	Strength
URI	Unresolved item
VIO	Violation
WK	Weakness

Template Codes:

1A	Normal Operations
1B	Operations During Transients
1C	Programs and Processes
2A	Equipment Condition
2B	Programs and Processes
3A	Work Performance
3B	KSA
3C	Work Environment
4A	Design
4B	Engineering Support
4C	Programs and Processes
5A	Identification
5B	Analysis
5C	Resolution

Functional Areas:

OPS	Operations
MAINT	Maintenance
ENG	Engineering
PLTSUP	Plant Support
OTHER	Other

ID Codes:

NRC	NRC
Self	Self-Revealed
Licensee	Licensee

EEIs are apparent violations of NRC Requirements that are being considered for escalated enforcement action in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Action" (Enforcement Policy), NUREG-1600. However, the NRC has not reached its final enforcement decision on the issues identified by the EEIs and the PIM entries may be modified when the final decisions are made.

URIs are unresolved items about which more information is required to determine whether the issue in question is an acceptable item, a deviation, a nonconformance, or a violation. A URI may also be a potential violation that is not likely to be considered for escalated enforcement action. However, the NRC has not reached its final conclusions on the issues, and the PIM entries may be modified when the final conclusions are made.

Item Type (Compliance,Followup,Other), From 01/25/1999 To 02/11/2000

PALO VERDE
Inspection / Activity Plan
04/02/2000 - 03/31/2001

Units	Inspection Activity	Title	No. of Staff on Site	No. assigned to Procedure	Planned Dates Start	Planned Dates End	Inspection Type
	PBD9	- ADVERSE WEATHER PREPS	6				
1,2,3	IP 7111101	Adverse Weather Protection		3	04/02/2000	05/20/2000	Baseline Inspections
	PBD27	- DRILL EVALUATION	3				
1	IP 7111406	Drill Evaluation		3	04/02/2000	07/01/2000	Baseline Inspections
	PBD26	- TEMPORARY PLANT MODIFICATIONS	3				
1,2,3	IP 7111123	Temporary Plant Modifications		3	04/02/2000	03/31/2001	Baseline Inspections
	PBD-TI	- TI-144, PI DATA REVIEW	1				
1,2,3	IP 2515/144	Performance Indicator Data Collecting and Reporting Process Review		1	05/14/2000	08/05/2000	Safety Issues
	EMB	- BAGMAN TRIP FOR 71111.05 - FIRE PROT	1				
1,2,3	IP 7111105Q	Fire Protection		1	05/30/2000	06/01/2000	Baseline Inspections
	EMB	- FIRE PROTECTION	6				
1,2,3	IP 7111105T	Fire Protection		4	06/12/2000	06/16/2000	Baseline Inspections
	PBD29	- DRILL EVALUATION	3				
2	IP 7111406	Drill Evaluation		3	07/02/2000	09/30/2000	Baseline Inspections
	PBD11	- EQUIPMENT ALIGNMENTS-SEMIANNUAL	6				
1	IP 7111104	Equipment Alignment		3	07/09/2000	08/26/2000	Baseline Inspections
	PSB-RP1	- ALARA PLANNING/CONTROL 1	1				
1,2,3	IP 7112102	ALARA Planning and Controls		1	07/17/2000	07/21/2000	Baseline Inspections
	OB-RQ	- REQUAL INSP	2				
1,2,3	IP 7111111B	Licensed Operator Requalification		2	08/14/2000	08/18/2000	Baseline Inspections
	EMB	- PERM PLANT MODS	2				
1,2,3	IP 7111117B	Permanent Plant Modifications		2	08/28/2000	09/01/2000	Baseline Inspections
	PBD10	- ADVERSE WEATHER PREPS	6				
1,2,3	IP 7111101	Adverse Weather Protection		3	10/01/2000	11/18/2000	Baseline Inspections
	PBD30	- DRILL EVALUATION	3				
3	IP 7111406	Drill Evaluation		3	10/01/2000	12/30/2000	Baseline Inspections
	EMB	- ISI	1				
1,2,3	IP 7111108	Inservice Inspection Activities		1	10/16/2000	10/20/2000	Baseline Inspections
	PSB-S1	- ACCESS AUTH/CONTROL, SEC PLAN, AND PIV	1				
1,2,3	IP 7113001	Access Authorization Program (Behavior Observation Only)		1	10/23/2000	10/27/2000	Baseline Inspections
1,2,3	IP 7113002	Access Control (Search of Personnel, Packages, and Vehicles: Identification ar		1	10/23/2000	10/27/2000	Baseline Inspections
1,2,3	IP 7113004	Security Plan Changes		1	10/23/2000	10/27/2000	Baseline Inspections
1,2,3	IP 71151	Performance Indicator Verification		1	10/23/2000	10/27/2000	Baseline Inspections
	EMB	- SAFETY SYS DESIGN & PERF CAPABILITY	6				
1,2,3	IP 7111121	Safety System Design and Performance Capability		4	11/13/2000	11/17/2000	Baseline Inspections
1,2,3	IP 7111121	Safety System Design and Performance Capability		4	12/04/2000	12/08/2000	Baseline Inspections

This report does not include INPO and OUTAGE activities.
This report shows only on-site and announced inspection procedures.

PALO VERDE
Inspection / Activity Plan
04/02/2000 - 03/31/2001

Units	Inspection Activity	Title	No. of Staff on Site	No. assigned to Procedure	Planned Dates Start	Planned Dates End	Inspection Type
	PBD12 - EQUIPMENT ALIGNMENTS-SEMIANNUAL		6				
2	IP 7111104	Equipment Alignment		3	01/07/2001	02/24/2001	Baseline Inspections
	PSB-RP2 - RAD MONITORING INSTR		1				
1,2,3	IP 7112103	Radiation Monitoring Instrumentation		1	01/08/2001	01/12/2001	Baseline Inspections
	OB-PIR - PIR INSPECT		5				
1,2,3	IP 71152	Identification and Resolution of Problems		3	01/22/2001	01/26/2001	Baseline Inspections
	PSB-RP3 - ACCESS TO RAD SIGN AREAS AND PIV		1				
1,2,3	IP 7112101	Access Control to Radiologically Significant Areas		1	01/29/2001	02/02/2001	Baseline Inspections
1,2,3	IP 71151	Performance Indicator Verification		1	01/29/2001	02/02/2001	Baseline Inspections
	PSB-RP4 - ALARA PLANNING/CONTROL 2		1				
1,2,3	IP 7112102	ALARA Planning and Controls		1	01/29/2001	02/02/2001	Baseline Inspections
	EMB - CHANGES & HEAT SINK PERF		2				
1,2,3	IP 7111102	Evaluation of Changes, Tests, or Experiments		2	03/05/2001	03/09/2001	Baseline Inspections
1,2,3	IP 7111107A	Heat Sink Performance		2	03/05/2001	03/09/2001	Baseline Inspections
	PSB-EP1 - DRILL/EXERCISE PERF, EAL/EP, AND PIV		2				
1,2,3	IP 7111401	Exercise Evaluation		2	03/12/2001	03/16/2001	Baseline Inspections
1,2,3	IP 7111404	Emergency Action Level and Emergency Plan Changes		2	03/12/2001	03/16/2001	Baseline Inspections
1,2,3	IP 71151	Performance Indicator Verification		2	03/12/2001	03/16/2001	Baseline Inspections

This report does not include INPO and OUTAGE activities.
This report shows only on-site and announced inspection procedures.

10/20/99

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Subject:
Notification of Unusual Event due to Hector Mine Earthquake Special Report 1-99-001-00.

Body:

Docket: 05000528, Notes: STANDARDIZED PLANT

Docket: 05000529, Notes: Standardized plant.

Docket: 05000530, Notes: Standardized plant.

IA44

APS

Palo Verde Nuclear Generating Station

William E. Ide
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Nuclear Production

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192-01057-WEI/DGM
October 20, 1999

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

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Units 1, 2 and 3
Docket No. STN 50-528, 50-529, 50-530
License No. NPF-41, NPF-51, NPF-74
Notification of Unusual Event due to Hector Mine Earthquake
Special Report 1-99-001-00

Attached please find Special Report 1-99-001-00 which has been prepared and submitted pursuant to Technical Requirements Manual T3.3.103 (Seismic Monitoring) Required Action C.3 to "submit a Special Report to the Commission describing the magnitude, frequency spectrum, and resultant effect upon facility features important to safety" within 10 days.

In accordance with 10 CFR 50.4, a copy of this Special Report is also forwarded to the NRC Region IV Regional Administrator and the NRC resident inspector.

No commitments are being made to the NRC by this letter.

This Special Report also satisfies the PVNGS Emergency Plan Implementing Procedures requirement that a written summary of a Notification of Unusual Event (NUE) is to be provided to state and local offsite authorities following the termination of an emergency classification. The attached Special Report discusses the conditions surrounding an NUE classification (and immediate termination) for a seismic event that occurred on October 16, 1999.

If you have any questions, please contact Daniel G. Marks, Section Leader, Nuclear Regulatory Affairs, at (623) 393-6492.

1/1

Sincerely,

IE22

281167

9910270079

WEI/DGM/dgm

Attachment

cc:

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Phoenix, Arizona 85008

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Notification of Unusual Event

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Palo Verde Nuclear Generating Station Unit 1, 2 and 3

Notification of Unusual Event

Docket No. STN 50-528, 50-529, 50-530

License No. NPF-41, NPF-51, NPF-74

Special Report 1-99-001-00

On October 16, 1999, at 03:05 MST in Palo Verde Unit 1, the Shift Manager declared (and immediately exited due to the event being over) a Notification of an Unusual Event applicable to all three units due to a seismic event.

On October 16, 1999, at approximately 02:47 MST, an earthquake, referred to as the "Hector Mine Earthquake", of approximate magnitude 7.0 occurred, its epicenter located about 32 miles north of Joshua Tree, California. Joshua Tree, California is located approximately 220 miles west of the Palo Verde Nuclear Generating Station. At approximately 02:48 MST, the vibratory ground motion reached and actuated the Palo Verde Seismic Monitoring Instrumentation switches. Specifically, the strong motion accelerometer trigger located in the Unit 1 containment building tendon gallery exceeded the threshold value of 0.01g. The vibratory ground motion also was felt by personnel in all three Palo Verde control rooms. Operations personnel immediately retrieved data from the actuated instrument and performed an analysis to determine the magnitude of the vibratory ground motion. Initial analysis of the Seismic Monitoring Instrumentation tape recordings completed at approximately 03:05 MST indicated a seismic event of 0.015g. This is well below the magnitude of the 0.10g spectra Operating Basis Earthquake (OBE) and the 0.20g spectra Safe Shutdown Earthquake (SSE). Based on the validation of the earthquake per the Emergency Action Level 6-6 Technical Bases, the Unit 1 Shift Manager declared (and immediately exited due to the event being over) a Notification of an Unusual Event (NUE) applicable to all three units due to a seismic event.

Following declaration of the NUE, the Maricopa County Sheriff's Office and the Arizona Department of Public Safety were notified at approximately 03:13 MST via the Notification and Alert Network (NAN). The Palo Verde Emergency Coordinator recommended that no protective actions be taken. No protective actions were implemented by state or county agencies. The U. S. Nuclear Regulatory Commission was notified at 03:53 MST via the Emergency Notification System (ENS). The notification criteria for the ENS notification were 10 CFR 50.72(a)(1)(i) due to the declaration of an Emergency Class and 10 CFR 50.72(b)(1)(iii) due to the natural phenomenon that poses an actual threat to the safety of the nuclear power plant. Further analysis of the seismic data concluded the measured motions of structures and components were less than or equal to 14% of the OBE and should have no effect upon facility features important to safety. Based on the low magnitude of the vibratory ground motion and satisfactory plant walkdowns, an actual threat to safety did not exist. A follow-up ENS notification on October 17, 1999 at 22:00 MST retracted criterion 10 CFR 50.72(b)(1)(iii). The initial ENS notification stated a press release was expected to be made. No media interest existed, therefore no press release was made.

At the time of the earthquake, Unit 1 was conducting a refueling outage, at 0% power with all fuel assemblies offloaded from the reactor vessel to the spent fuel pool. Units 2 and 3 were

operating at approximately 100% power in Mode 1. Plant conditions remained unchanged by the event. Operations personnel performed an immediate walkdown of plant equipment. No abnormalities caused by the seismic event were observed. There were no structures, systems, or components that were inoperable that contributed to this event. There were no failures that rendered a train of a safety system inoperable and no failures of components with multiple functions were involved. No engineered safety feature (ESF) actuations occurred and none were required. The event did not result in any challenges to the fission product barriers or result in any releases of radioactive materials. The event did not adversely affect the safe operation of the plant or health and safety of the public.

This Special Report also satisfies the Technical Requirements Manual T3.3.103 (Seismic Monitoring) Required Action C.3 to "submit a Special Report to the Commission describing the magnitude, frequency spectrum, and resultant effect upon facility features important to safety" within 10 days. The following details are provided to fulfill Required Action C.3:

The data from the seismic instrumentation was played back, producing accelerograms and response spectra for channels 2,3,4,5,and 6. In addition, the channel 1 data, which had been evaluated during the Level 1 analysis, was reviewed, and the maximum acceleration for channel 1 was increased to 0.02 g's. The following table summarizes the results:

Accelerograms:

Channel	Location	Max Horizontal Acceleration (g's)	Horizontal – Ratio to OBE DBR	Max Vertical Acceleration (g's)	Vertical – Ratio to OBE DBR
XT-1	Tendon Gallery Floor	0.02	0.11	0.0075	0.04
XT-2	RCP motor	0.0275	0.14	0.01	0.06
XT-3	Steam Generator Base	0.0175	0.10	0.015	0.09
XT-4	Control Building Floor	0.0125	0.07	0.0075	0.04
XT-5	Auxiliary Building Floor	0.0175	0.09	0.0075	0.05

Note that Channel 1 is the channel used in the Level 1 evaluation and its maximum acceleration value is used to determine if a seismic event has occurred and needs to be evaluated (PVNGS procedure 79IS-9SM01, B1.5.1.3). The response spectra from this location is used to determine if the Operating Basis Earthquake (OBE) has been exceeded (PVNGS procedure 79IS-9SM01, B1.6.2.4). The ratio of the maximum acceleration to the Operating Basis Earthquake Design Basis Response is also given to show the size of the event relative to the OBE Event at the various locations. Most locations are less than 10%. The highest acceleration and percentage is on the RCP Motor sensor, which is expected because of the way it is mounted.

Response Spectra:
The response spectra showed no accelerations above OBE, except sensor XT-3 (steam generator base) in the vertical direction. Review of the data indicates that this direction on this channel suffered some sort of instrument problem and the data is not credible. This is based on comparison of the XT-3 response spectra to the spectrograph, to the other directions, and to the other locations, including the free field sensor. Frequency spectra are included in Table 1.

Conclusion:
The measured motions of structures and components are less than or equal to 14% of the OBE and should have no effect upon facility features important to safety.

Table 1 - Frequency Spectrum Channel XT-1, Tendon Gallery Floor					
Vertical		Horizontal (East-West)		Horizontal (North South)	
Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)
32.0	.00	32.0	.00	32.0	.01
30.4	.00	30.4	.00	30.4	.01
28.8	.01	28.8	.01	28.8	.01
27.2	.00	27.2	.00	27.2	.01
25.6	.00	25.6	.00	25.6	.01
24.0	.01	24.0	.00	24.0	.01
22.4	.01	22.4	.00	22.4	.01
20.8	.00	20.8	.00	20.8	.01
19.2	.00	19.2	.00	19.2	.01
17.6	.01	17.6	.00	17.6	.01
16.0	.01	16.0	.00	16.0	.01
15.2	.01	15.2	.00	15.2	.01
14.4	.01	14.4	.01	14.4	.01
13.6	.01	13.6	.00	13.6	.01
12.8	.01	12.8	.00	12.8	.01
12.0	.00	12.0	.00	12.0	.01
11.2	.00	11.2	.00	11.2	.01
10.4	.00	10.4	.00	10.4	.01
9.6	.00	9.6	.00	9.6	.01
8.8	.00	8.8	.00	8.8	.01
8.0	.00	8.0	.00	8.0	.01
7.6	.00	7.6	.00	7.6	.01
7.2	.00	7.2	.00	7.2	.01
6.8	.00	6.8	.00	6.8	.01
6.4	.00	6.4	.00	6.4	.01
6.0	.00	6.0	.00	6.0	.01
5.6	.00	5.6	.00	5.6	.01
5.2	.00	5.2	.00	5.2	.01
4.8	.00	4.8	.00	4.8	.01
4.4	.00	4.4	.00	4.4	.01
4.0	.01	4.0	.01	4.0	.01
3.8	.00	3.8	.01	3.8	.01
3.6	.00	3.6	.01	3.6	.01
3.4	.00	3.4	.00	3.4	.00
3.2	.01	3.2	.00	3.2	.01
3.0	.01	3.0	.00	3.0	.01
2.8	.01	2.8	.01	2.8	.02
2.6	.02	2.6	.01	2.6	.02
2.4	.03	2.4	.01	2.4	.02
2.2	.03	2.2	.00	2.2	.01
2.0	.02	2.0	.01	2.0	.02
1.9	.02	1.9	.01	1.9	.02
1.8	.02	1.8	.03	1.8	.04
1.7	.01	1.7	.03	1.7	.04
1.6	.01	1.6	.04	1.6	.05
1.5	.00	1.5	.05	1.5	.06
1.4	.01	1.4	.06	1.4	.07
1.3	.01	1.3	.06	1.3	.07
1.2	.02	1.2	.04	1.2	.05
1.1	.01	1.1	.03	1.1	.03
1.0	.00	1.0	.02	1.0	.02

Table 1 - Frequency Spectrum Channel XT-2, RCP Motor					
Vertical		Horizontal (East-West)		Horizontal (North South)	
Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)
32.0	.00	32.0	.01	32.0	.03
30.4	.00	30.4	.01	30.4	.03
28.8	.01	28.8	.02	28.8	.04
27.2	.02	27.2	.01	27.2	.03
25.6	.03	25.6	.01	25.6	.03
24.0	.02	24.0	.02	24.0	.03
22.4	.01	22.4	.02	22.4	.03
20.8	.00	20.8	.02	20.8	.04
19.2	.00	19.2	.02	19.2	.04
17.6	.00	17.6	.04	17.6	.05
16.0	.00	16.0	.08	16.0	.05
15.2	.00	15.2	.09	15.2	.05
14.4	.00	14.4	.09	14.4	.06
13.6	.00	13.6	.08	13.6	.06
12.8	.01	12.8	.06	12.8	.07
12.0	.01	12.0	.04	12.0	.14
11.2	.01	11.2	.03	11.2	.17
10.4	.00	10.4	.01	10.4	.15
9.6	.00	9.6	.00	9.6	.07
8.8	.00	8.8	.00	8.8	.05
8.0	.00	8.0	.00	8.0	.04
7.6	.00	7.6	.00	7.6	.03
7.2	.00	7.2	.00	7.2	.03
6.8	.00	6.8	.00	6.8	.01
6.4	.00	6.4	.00	6.4	.02
6.0	.00	6.0	.00	6.0	.02
5.6	.00	5.6	.00	5.6	.03
5.2	.00	5.2	.00	5.2	.02
4.8	.00	4.8	.00	4.8	.02
4.4	.00	4.4	.00	4.4	.02
4.0	.00	4.0	.00	4.0	.02
3.8	.00	3.8	.00	3.8	.02
3.6	.00	3.6	.00	3.6	.02
3.4	.00	3.4	.00	3.4	.01
3.2	.00	3.2	.01	3.2	.02
3.0	.00	3.0	.00	3.0	.02
2.8	.00	2.8	.00	2.8	.03
2.6	.00	2.6	.00	2.6	.03
2.4	.01	2.4	.02	2.4	.03
2.2	.01	2.2	.03	2.2	.05
2.0	.01	2.0	.03	2.0	.07
1.9	.01	1.9	.03	1.9	.07
1.8	.01	1.8	.03	1.8	.07
1.7	.01	1.7	.01	1.7	.06
1.6	.01	1.6	.02	1.6	.06
1.5	.01	1.5	.04	1.5	.07
1.4	.01	1.4	.07	1.4	.08
1.3	.01	1.3	.07	1.3	.07
1.2	.01	1.2	.04	1.2	.05
1.1	.00	1.1	.03	1.1	.03
1.0	.00	1.0	.02	1.0	.02

Table 1 - Frequency Spectrum Channel XT-3, Steam Generator Base					
Vertical		Horizontal (East-West)		Horizontal (North South)	
Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)
32.0	.27	32.0	.04	32.0	.04
30.4	.27	30.4	.04	30.4	.04
28.8	.28	28.8	.04	28.8	.04
27.2	.27	27.2	.04	27.2	.04
25.6	.27	25.6	.04	25.6	.04
24.0	.28	24.0	.04	24.0	.05
22.4	.29	22.4	.04	22.4	.05
20.8	.29	20.8	.04	20.8	.06
19.2	.28	19.2	.04	19.2	.06
17.6	.28	17.6	.04	17.6	.05
16.0	.28	16.0	.04	16.0	.04
15.2	.27	15.2	.03	15.2	.04
14.4	.27	14.4	.03	14.4	.05
13.6	.24	13.6	.03	13.6	.04
12.8	.25	12.8	.04	12.8	.04
12.0	.25	12.0	.03	12.0	.04
11.2	.28	11.2	.03	11.2	.04
10.4	.29	10.4	.03	10.4	.04
9.6	.29	9.6	.03	9.6	.04
8.8	.28	8.8	.03	8.8	.04
8.0	.28	8.0	.03	8.0	.04
7.6	.27	7.6	.03	7.6	.04
7.2	.28	7.2	.03	7.2	.04
6.8	.28	6.8	.03	6.8	.04
6.4	.29	6.4	.03	6.4	.04
6.0	.29	6.0	.02	6.0	.04
5.6	.29	5.6	.02	5.6	.04
5.2	.27	5.2	.02	5.2	.04
4.8	.27	4.8	.03	4.8	.04
4.4	.28	4.4	.03	4.4	.04
4.0	.29	4.0	.03	4.0	.04
3.8	.28	3.8	.02	3.8	.03
3.6	.28	3.6	.02	3.6	.03
3.4	.28	3.4	.02	3.4	.04
3.2	.29	3.2	.03	3.2	.05
3.0	.28	3.0	.03	3.0	.05
2.8	.28	2.8	.03	2.8	.04
2.6	.26	2.6	.03	2.6	.03
2.4	.27	2.4	.04	2.4	.04
2.2	.27	2.2	.04	2.2	.04
2.0	.28	2.0	.05	2.0	.06
1.9	.28	1.9	.05	1.9	.06
1.8	.28	1.8	.06	1.8	.07
1.7	.28	1.7	.06	1.7	.06
1.6	.28	1.6	.06	1.6	.06
1.5	.27	1.5	.08	1.5	.06
1.4	.27	1.4	.01	1.4	.07
1.3	.27	1.3	.11	1.3	.06
1.2	.28	1.2	.09	1.2	.05
1.1	.28	1.1	.07	1.1	.04
1.0	.28	1.0	.05	1.0	.04

Note: Review of the data indicates that the vertical direction on channel XT-3 (steam generator base) suffered some sort of instrument problem and the data is not credible. This is based on the comparison of the XT-3 response spectra to the spectrograph, to the other directions, and to the other locations, including the free field sensor.

Table 1 - Frequency Spectrum Channel XT-4, Control Building Floor					
Vertical		Horizontal (East-West)		Horizontal (North South)	
Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)
32.0	.01	32.0	.00	32.0	.01
30.4	.01	30.4	.00	30.4	.01
28.8	.01	28.8	.00	28.8	.01
27.2	.01	27.2	.00	27.2	.01
25.6	.01	25.6	.00	25.6	.01
24.0	.01	24.0	.00	24.0	.01
22.4	.01	22.4	.00	22.4	.01
20.8	.01	20.8	.00	20.8	.02
19.2	.01	19.2	.00	19.2	.02
17.6	.00	17.6	.00	17.6	.01
16.0	.00	16.0	.00	16.0	.01
15.2	.00	15.2	.00	15.2	.01
14.4	.00	14.4	.00	14.4	.01
13.6	.00	13.6	.00	13.6	.01
12.8	.00	12.8	.00	12.8	.01
12.0	.00	12.0	.00	12.0	.01
11.2	.00	11.2	.00	11.2	.01
10.4	.00	10.4	.00	10.4	.01
9.6	.00	9.6	.00	9.6	.01
8.8	.00	8.8	.00	8.8	.01
8.0	.00	8.0	.00	8.0	.01
7.6	.00	7.6	.00	7.6	.01
7.2	.00	7.2	.00	7.2	.01
6.8	.00	6.8	.00	6.8	.01
6.4	.00	6.4	.00	6.4	.01
6.0	.00	6.0	.00	6.0	.01
5.6	.00	5.6	.00	5.6	.01
5.2	.00	5.2	.00	5.2	.01
4.8	.00	4.8	.00	4.8	.01
4.4	.00	4.4	.00	4.4	.01
4.0	.00	4.0	.00	4.0	.01
3.8	.00	3.8	.00	3.8	.00
3.6	.01	3.6	.00	3.6	.01
3.4	.01	3.4	.00	3.4	.01
3.2	.01	3.2	.00	3.2	.02
3.0	.01	3.0	.00	3.0	.01
2.8	.01	2.8	.01	2.8	.01
2.6	.00	2.6	.01	2.6	.01
2.4	.01	2.4	.01	2.4	.02
2.2	.01	2.2	.01	2.2	.02
2.0	.02	2.0	.02	2.0	.02
1.9	.02	1.9	.02	1.9	.02
1.8	.02	1.8	.03	1.8	.03
1.7	.01	1.7	.02	1.7	.03
1.6	.01	1.6	.02	1.6	.04
1.5	.01	1.5	.02	1.5	.04
1.4	.01	1.4	.05	1.4	.05
1.3	.01	1.3	.07	1.3	.05
1.2	.01	1.2	.06	1.2	.04
1.1	.00	1.1	.04	1.1	.03
1.0	.00	1.0	.02	1.0	.02

Table 1 - Frequency Spectrum Channel XT-5, Auxiliary Building Floor					
Vertical		Horizontal (East-West)		Horizontal (North South)	
Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)	Frequency (Hz)	Acceleration (g's)
32.0	.00	32.0	.10	32.0	.04
30.4	.00	30.4	.09	30.4	.04
28.8	.00	28.8	.08	28.8	.05
27.2	.00	27.2	.07	27.2	.04
25.6	.00	25.6	.06	25.6	.04
24.0	.00	24.0	.06	24.0	.04
22.4	.00	22.4	.06	22.4	.04
20.8	.00	20.8	.05	20.8	.04
19.2	.00	19.2	.05	19.2	.04
17.6	.00	17.6	.04	17.6	.04
16.0	.00	16.0	.05	16.0	.04
15.2	.00	15.2	.05	15.2	.03
14.4	.00	14.4	.06	14.4	.03
13.6	.00	13.6	.05	13.6	.02
12.8	.00	12.8	.05	12.8	.03
12.0	.00	12.0	.05	12.0	.03
11.2	.00	11.2	.06	11.2	.04
10.4	.00	10.4	.06	10.4	.04
9.6	.00	9.6	.06	9.6	.04
8.8	.00	8.8	.05	8.8	.04
8.0	.00	8.0	.05	8.0	.04
7.6	.00	7.6	.05	7.6	.04
7.2	.00	7.2	.05	7.2	.04
6.8	.00	6.8	.05	6.8	.04
6.4	.00	6.4	.05	6.4	.04
6.0	.00	6.0	.05	6.0	.04
5.6	.00	5.6	.05	5.6	.04
5.2	.00	5.2	.05	5.2	.04
4.8	.00	4.8	.05	4.8	.04
4.4	.00	4.4	.05	4.4	.04
4.0	.00	4.0	.05	4.0	.04
3.8	.00	3.8	.05	3.8	.04
3.6	.00	3.6	.05	3.6	.04
3.4	.00	3.4	.05	3.4	.04
3.2	.01	3.2	.05	3.2	.04
3.0	.00	3.0	.05	3.0	.04
2.8	.00	2.8	.05	2.8	.04
2.6	.01	2.6	.05	2.6	.03
2.4	.02	2.4	.05	2.4	.04
2.2	.02	2.2	.04	2.2	.04
2.0	.02	2.0	.05	2.0	.05
1.9	.02	1.9	.06	1.9	.05
1.8	.02	1.8	.07	1.8	.06
1.7	.01	1.7	.06	1.7	.06
1.6	.01	1.6	.06	1.6	.06
1.5	.01	1.5	.08	1.5	.06
1.4	.01	1.4	.10	1.4	.06
1.3	.01	1.3	.10	1.3	.05
1.2	.01	1.2	.08	1.2	.05
1.1	.00	1.1	.07	1.1	.04
1.0	.00	1.0	.06	1.0	.04