ENCLOSURE 1

EXAMINATION REPORT 50-528/529/530/0L-93-02

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ENCLOSURE 1

50-528/529/530/0L-93-02

Examination Report No.:

Facility: Palo Verde Nuclear Generating Station

Docket Nos.: 50-528/529/530

Examinations administered at Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (PVNGS) Wintersburg, Arizona.

Examiners:

Thomas Meadows, Senior Operator Licensing Examiner Frank Jaggar, Operator Licensing Examiner Mark Jones, Operator Licensing Examiner

Date Signed

Approved:

Philip J./Morrill, Chief Operations Section

Summary:

Examinations on May 25-26, 1993 (Report No. 50-528/529/530/0L-93-02)

<u>Results:</u>

Two crews, staffed with 5 operators each, were administered retake simulator requalification examinations. All of the ten licensed operators involved passed their individual simulator examinations and both crews passed overall, under the criteria of NUREG-1021, "Examiner Standards," ES-601, "Administration of NRC Requalification Program Evaluations," Revision 7.

Observations:

The examiners noted that sometimes operators appeared to focus more on step by step procedural reading, rather than maintaining plant awareness. Some operators were hesitant to bring forward optimum procedural actions to mitigate events. This hesitation was particularly noticeable when the operators were using the functional recovery emergency operating procedures (FRPs).

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REPORT DETAILS

1. Examiners

T. Meadows, Chief Examiner, RV Frank Jaggar, Operator Licensing Examiner Mark Jones, Operator Licensing Examiner

2. Persons Attending the Exit Meeting on May 26, 1993

NRC:

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T. Meadows, Senior Licensing Examiner

Arizona Public Service Company (APS):

- P. Coffin, Nuclear Regulatory Affairs Engineer
- M. Baughman, Operations Training Supervisor
- R. Nunez, Operations Training Manager
- F. Riedel, Unit 1 Operations Manager
- D. Carnes, Unit 3 Shift Supervisor/Training Liaison
- P. Wiley, Unit 2 Operations Manager R. Flood, Unit 2 Plant Manager
- J. Dennis, Manager, Operations Standards
- L. Florence, Senior Advisor, Operations Standards E. Shouse, Senior Instructor, Simulator Support
- E. Firth, General Manager, Nuclear Training

3. Test Administration and Results:

a. **Requalification Retake Simulator Examinations:**

Two crews, staffed with five operators each, were administered retake simulator regualification examinations during the period of May 25-26, 1993. Each crew was administered two scenarios. All of the ten licensed operators involved passed their individual simulator examinations and both crews passed overall, under the criteria of NUREG-1021, "Examiner Standards," ES-601, "Administration of NRC Requalification Program Evaluations," Revision 7.

Overall crew performance had improved markedly. Both crews communicated effectively and worked well together as a team. For example, because of one crew's efficient actions, an anticipated critical step in one scenario involving a steam generator (SG) tube rupture (SGTR) with a stuck open safety valve never developed. During scenario pre-validation, the examiners had anticipated that an adequate crew would lose high pressure safety injection (HPSI) flow throttle criteria if the pressurizer emptied during the scenario. The crew would then have to restore full HPSI flow as soon as possible to restore RCS inventory, a critical task. However, during the actual examination the crew's more

efficient mitigating efforts prevented the loss of pressurizer level. The crew controlled the resulting primary cool down and inventory loss more efficiently than the examiner team had done during the original scenario validation. Therefore, this anticipated critical task never developed.

The other crew displayed similar strengths. Their assigned critical tasks were all accomplished successfully in a well coordinated manner.

b. <u>Observations</u>:

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1) At times, operators appeared to focus more on step by step procedural reading, rather than maintaining plant awareness. Some operators were hesitant to bring forward optimum procedural actions to quickly mitigate events. This hesitation was particularly noticeable when the operators were using the functional recovery emergency operating procedures (FRPs). A delay in event mitigation resulted but no significant safety concerns were noted with the slower response. The examiners were concerned that the potential for a safety significant event exists if some operators failed to exercise their good judgement to quickly mitigate obvious events. The examiners determined that a balance needs to be provided between very slow procedural compliance and efficient and timely procedural compliance. The examiners found that the licensee's procedures provided a contingency for operators to bring forward appropriate mitigating procedures containing optimum recovery guidance. This is so even when the particular functional recovery appendix that a crew may be implementing does not contain the optimum recovery guidance. For example, using this mechanism operators could quickly isolate an intersystem loss of coolant event or isolate a ruptured steam generator before these actions were called for by the appendix of the FRPs that they were using. Crew delays were noted during the scenarios for each of these events. Based on the licensee's implementing guidance, bringing forward a desired procedure would be done only under crew supervision direction, on a not to interfere basis with the governing procedure.

The licensee's management acknowledged that a balance between very slow procedural step by step compliance and more efficient and timely use of the procedures needed to be addressed. The Chief Examiner asked the licensee's management to ensure that the training and operations departments were consistently providing operators guidance for using more optimal event recovery methods allowed by existing procedures. The licensee's management agreed to do this. 2) Shift Technical Advisors (STAs) did not provide the same degree of operator support from one crew to the next. This indicated to the examiners that the licensee's management expectation of STA involvement may not be clear, or well communicated to the licensee's operations and training departments. The Chief Examiner noted that STAs on some crews were a significant communication and information gathering aide, while for other crews their presence appeared not to contribute to crew performance. The Chief Examiner stated that the unused STA was a significant resource loss to the crew.

The licensee's management acknowledged this and agreed to evaluate the STA training and to clarify their expectations for STA training and crew interaction during emergencies.

4. <u>Followup on Procedure for Terminating Boration (Examination Report 50-528/529/530/0L-93-01)</u>:

During the March 1993 program evaluation, the examiners determined that neither the licensee's technical specifications (TS) (TS 3.1.1.1 or 3.1.1.2), the applicable abnormal procedure (4xAO-1ZZO1, Emergency Boration), or EOPs (41EP-1EOO1 - Emergency Procedures) specified when to terminate boration operations - even in a scenario with the pressurizer (PZR) going solid. All available guidance (including guidance from the CE Owners Group) required boration to continue until the specified boration worth of shutdown margin (SDM) is reached in the RCS; which is determined by chemical analysis. The licensee determined that: a) This was not possible for the operators to accomplish within the time requirements of the EOPs (the primary safeties would lift when the PZR went solid, and SDM goals would still not be met) and b) It may not be possible to achieve the required SDM at PVNGS under EOP conditions since PVNGS does not have a concentrated source of borated water (>20,000 ppm). PVNGS sources are 4000 ppm Boron, which would require continuous boration under current CE guidance for some EOP scenarios (stuck rod with loss of feed event). The licensee said that they will seek to deviate from this guidance to allow operators to secure charging when reactor power is less than 10 E-4 and PZR level is above 70% high range. The operators would continue to control the RCS around these two parameters until the event mitigation end point. The licensee stated that their engineering analysis and necessary procedural changes would be completed a soon as possible, and that they would keep the NRC informed of the progress to resolve this issue.

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Subsequently, on a June 6, 1993 conference call, the licensee's Operations Standards Group informed the Chief Examiner that the Engineering Evaluation Request (EER) on this issue was completed by their engineering organization. The EER recommendation is summarized as follows:

At Palo Verde, termination of immediate boration procedures based solely on reactor power at or below 10 E-4 percent, provided adequate assurance that the reactor would remain under control. This policy was also consistent with similar CE designs as Palo Verde's, such as San Onofre, Waterford, and St. Lucie. Also, the bases for this already exits in the current emergency operating procedure FRP technical guidelines. Palo Verde would only need to bring forward the existing FRP bases into the appropriate optimum recovery EOP bases. This would constitute a deviation from the CE owner's group generic basis document (CEN-152).

Therefore, the licensee stated that they planned on implementing an EOP deviation to allow operators to terminate immediate boration when reactor power was controlled at or less than 10 E-4 percent for appropriate EOP events. The licensee stated that the resulting EOP revision would be approved for operator training by September 1, 1993, and implemented by the end of October 1993. They further stated that operators had adequate flexibility in their current FRPs to terminate immediate boration as necessary until the EOP revision could be implemented in October 1993.

The Chief Examiner stated that these actions appeared appropriate. This issue is closed.

5. <u>Exit Meeting</u>

An exit meeting was held by the NRC with representatives of the licensee's staff on May 26, 1993 to discuss the NRC examination results and observations previously described in this report.

The licensee acknowledged the NRC's observations.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the examiners during the examination.

ENCLOSURE 2 SIMULATION FACILITY REPORT 50-528/529/530/0L-93-02

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Enclosure 2

SIMULATION FACILITY REPORT

Facility Licensee: Palo Verde Nuclear Generating Station, Units 1, 2, & 3

Facility Docket No: 50-528/529/530

Operating Tests Administered on: May 25-26, 1993

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of non-compliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required in response to these observations.

During the conduct of the simulator portion of the operating tests, the following items were observed (if none, so state):

This simulator presented no significant problems during this examination.