10 CFR 50.90

Palo Verde Nuclear Generating Station

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102-05433-CDM/TNW/DWG
March 7, 2006

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

Reference: 1) Letter 102-05286-CDM/TNW/JAP, dated June 3, 2005, "Request for Operating License Amendment – Modification to Diesel Generator Jacket Water Makeup System," from C. D. Mauldin to USNRC

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Units 1, 2 and 3
Docket Nos. STN 50-528/529/530
Response to NRC Request for Additional Information Regarding Request for Operating License Amendment – Modification to Diesel Generator Jacket Water Makeup System (TAC Nos. MC7288, MC7289 AND MC7290)

Dear Sirs:

In Reference 1, Arizona Public Service Company (APS) requested a license amendment pertaining to a modification to the Diesel Generator (DG) jacket water makeup system. On October 25, 2005, NRC provided an electronic request for additional information concerning this license amendment request. The Enclosure to this letter provides APS' response to this request.

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

Should you have questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,

CDM/TNW/DWG/ca

Enclosures:

1. Notarized Affidavit
2. APS' Response to NRC Request for Additional Information Regarding Request for Operating License Amendment – Modification to Diesel Generator Jacket Water Makeup System

cc:

B. S. Mallett	Regional Administrator, NRC Region IV
M. B. Fields	NRC NRR Project Manager
G. G. Warnick	NRC Senior Resident Inspector for PVNGS

Enclosure 1
Notarized Affidavit

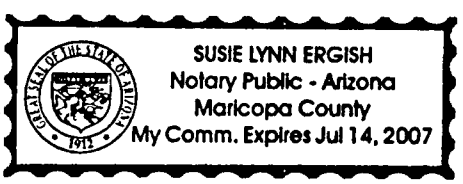
STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, David Mauldin, represent that I am Vice President Nuclear Engineering, Arizona Public Service Company (APS), that the foregoing document has been signed by me on behalf of APS with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.

David Mauldin

Sworn To Before Me This 7th Day Of March, 2006.

Notary Public



Notary Commission Stamp

Enclosure 2

APS' Response to NRC Request for Additional Information Regarding Request for Operating License Amendment – Modification to Diesel Generator Jacket Water Makeup System

The following responses are for those electronically provided NRC requests for additional information (RAIs) for the Palo Verde Nuclear Generating Station (PVNGS) concerning Arizona Public Service Company (APS) request for license amendment to modify the emergency diesel generator (DG) jacket water makeup system, dated June 3, 2005.

NRC Request for Additional Information:

By letter dated June 3, 2005, Arizona Public Service Company (APS) [requested] an amendment to the Facility Operating License (Nos. NPF-41, NPF-51, and NPF-74) for PVNGS Units 1, 2 and 3. The [License Amendment Request (LAR)] seeks NRC approval for plant modifications made to the diesel generator cooling water system (DGCWS) for each emergency diesel generator (EDG). These modifications were implemented during the 1993 and 1999 time period. The first modification, installed in 1993 time period, abandoned the automatic solenoid fill valve (due to leakage problems) and implemented the use of a manual bypass valve for filling the jacket water standpipe (surge tank). In 1999 another modification was performed to remove the abandoned automatic solenoid valve and its associated circuitry and level switch/low-low level alarm. The 1999 modification also increased the size of the manual makeup valve to restore the capacity of the makeup system to that of what the automatic valve capacity had. With regard to these modifications, the staff has [prepared] the following RAIs:

NRC Question #1:

Provide diagrams to show the configurations of the DGCWS before and after the modifications. The diagrams should clearly identify the boundaries/interfaces between the safety related DGCWS and the makeup water source systems. (Clearly indicate which portions of these systems are safety related and which portions of these systems are non-safety related).

APS Response:

Attached are drawings that show the configurations of the diesel generator cooling water system (DGCWS) before and after the modification to remove the solenoid valve and associated level instrumentation from the diesel generator standpipe. The drawings include:

1. P&ID 13-M-DGP-001 (sheet 1 of 8), rev. 32 for the Diesel Generator system. This revision is for the pre-modification configuration, circa. 1993 (solenoid valve shown installed).

2. P&ID 01-M-DGP-001 (sheet 1 of 9), rev. 43 for the Diesel Generator system. This revision is for the post-modification configuration, circa. 2002 (solenoid valve shown removed).

3. P&ID 01-M-CTP-001, rev. 20 for the Condensate Storage and Transfer (CT) system, circa 2000. This drawing is included to show that the CT piping to the DGCWS is Quality/Safety-related back to the Condensate Transfer pumps.

4. 01-P-CTF-701, rev. 0 for the Diesel Generator Bldg isometric for the Condensate Transfer system, circa 1991. This piping isometric shows the interface between the Condensate Transfer System and Diesel Generator System.

5. 01-P-DWF-701, rev. 0 for the Diesel Generator Bldg isometric for the Demineralized Water (DW) system, circa 1991. This piping isometric shows the interface between the Demineralized Water system and Diesel Generator system pre-modification.

6. 01-P-DWF-701, rev. 1 for the Diesel Generator Bldg isometric for the Demineralized Water system, circa 2003. This piping isometric shows the interface between the Demineralized Water system and Diesel Generator system post-modification.

NOTE: Designations on the drawings above denote Quality Assurance Classification (Q, QAG, NQR), Seismic Category (1, 2, 3, 9), Code Classification (A through U), and Safety Separation Group (A, B, C, D, E, N).

Refer to Diesel Generator System P&ID 13-M-DGP-001 (the following refers to "A" train components - "B" train components are similar and shown on same drawings).

- The boundary between Condensate Transfer and Diesel Generator systems is at valve DGA-V024.

- The boundary between Demineralized System and Diesel Generator System is at valve DGA-V002.

- The Condensate Transfer piping is Quality Class Q and Safety Separation Group "A" as noted by the piping designation CT-A-024-HCCA-2". This classification extends back to the Condensate Transfer Pumps as shown on P&ID 01-M-CTP-001. The DG piping at the CT boundary (line A-005-HCCA-2") is also Quality Class Q and Safety Separation Group "A".

- Other designations on the drawings for the Demineralized Water, Condensate Transfer, and Diesel Generator systems are "Q1C" which is Quality Class "Q", Seismic Category "1", and Code Classification "C" which is for ASME B&PV, Section III, Class 3 components.

- "S3D" on the drawings refer to any structure/component not "Q" or "R" class, Seismic Category "3" (not classified as category 1 or 2), and "D" for ANSI B31.1, Power Piping Code.

NRC Question #2:

In the LAR submittal, APS states that the DGCWS is designed as a closed loop system with only a minor loss of inventory postulated during any of its operating modes, and it has an administrative allowable leakage limit of 1.6 gph. Define what the "minor loss" is, and justify how the "minor loss" and the administrative allowable leakage limit of 1.6 gph are established.

APS Response:

Normal or "minor loss" is defined as loss of jacket water (JW) from valve packing and/or pump mechanical seals and is predicted to be 0.124 gal/hr (gph). Leakage from valve stems is considered to be equal to the maximum allowable seat leakage (2 cm^3/hr per inch of nominal valve size). Leakage from mechanical pump seals is conservatively determined to be 60 drops/min or 6 ounces per hour. Normal system evaporation of JW is considered to be negligible (less than 0.0006 gph).

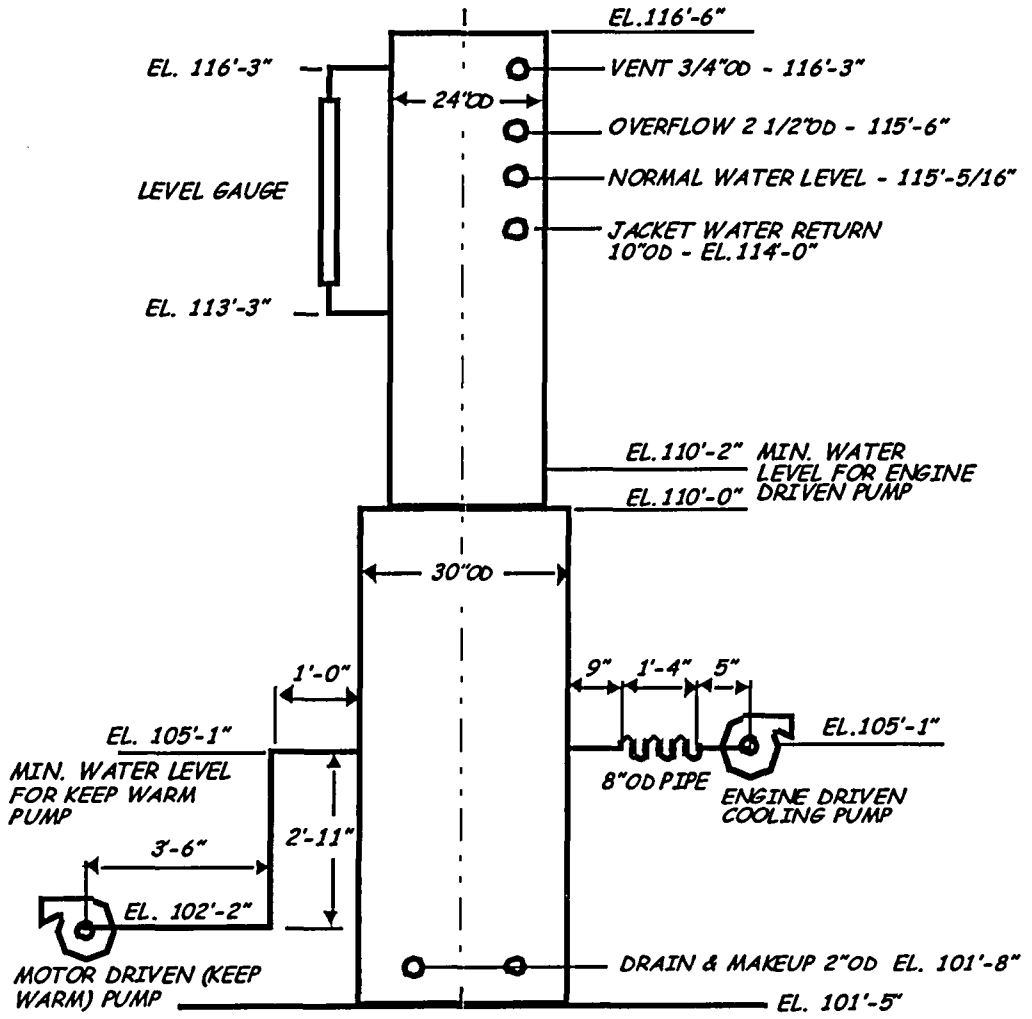
The administrative allowed JW leakage rate of 1.6 gph is based on the loss of 10" of water in the JW standpipe site glass in a 12 hour period. The 10" sight glass level was chosen as it is verifiable by Operator rounds. This administrative limit constitutes a volume of 19.58 gals between the lower site glass tap-elevation of 113'-3" and a sight glass level of 10" (elevation 114'-1"). A leakage rate of 1.6 gph allows verifiable monitoring of the loss of this volume (19.58 gal) given 12-hour operator rounds. 19.58 gal/12 hours = 1.6 gph.

It should be noted that the standpipe level required to maintain minimum NPSH is 110'-2" (approximately 3 feet below the bottom tap of the sight glass). This constitutes a volume difference of 72.4 gallons between the bottom tap of the sight glass and the minimum NPSH level. This results in a maximum allowable leakage over a 25 hour period (for Appendix R considerations) of 2.9 gph (72.4gal/25 hours = 2.9 gph).

Verifying that leakage is within the administrative limit of 1.6 gph, provides a measure of confidence that the diesel generator will have an adequate volume under conditions in which no operator action is credited for 25 hrs.

Figure 1 below provides a typical description of the Diesel Generator Jacket Water Standpipe for both diesel generators in all three units.

Figure 1



NRC Question #3:

In the LAR submittal, APS states that PVNGS has procedures in place to instruct the operators to monitor the surge tank water level every 12 hours when the engine is in a standby condition, thirty minutes after initial loading, and every two hours during loaded operation. These procedures also instruct the operators to refill the surge tank, if needed. Since EDGs are designed as onsite emergency power source to cope with station blackout events and loss-of-coolant accidents, and the DGCWS is one of the supporting systems for each EDG, explain the extent that these procedures [have] been incorporated into the plant emergency operating procedures (EOPs) and the operators been trained on these procedures.

APS Response:

Immediate Monitoring

Guidance for immediately monitoring the emergency diesel generators by plant operators following the onset of an emergency event is described in the administrative procedure for the conduct of shift operations (Ref. 1). This procedure states that upon notification of an emergency, area operators shall immediately commence a walkdown of their respective areas looking for potential problems, paying particular attention to steam or water leaks and flags on electrical equipment. In addition, the administrative procedure for area operator practices (Ref. 2) provides standard post trip actions for the auxiliary operators to perform. In this procedure, the auxiliary operator responsible for monitoring the diesel generators is directed to check the proper operation of the diesel generators following a reactor trip. These tasks are standard expectation for all emergency events and are routine in nature. No unique classroom training is provided for this task. However, as part of "on the job training", the qualification card requires proficiency in these activities.

Loaded Operation Monitoring

Guidance to begin monitoring in accordance with the 30 minute and two hour frequencies is provided by guidance in the control room "Alarm Response" procedure (Ref. 3). Upon acknowledgement of a diesel generator start condition, annunciation will be received in the control room. The alarm response procedure directs the auxiliary operator to check proper operation of the diesel generator and to begin monitoring the diesel generator using the diesel generator log sheets (Ref. 4) which includes a specific entry for JW standpipe level.

The diesel generator log sheets require taking readings 30 minutes after the diesel generator is loaded and every two hours afterward. The only event that requires the diesel generator to be "loaded" is a loss of offsite power to the associated class 4.16 KV electrical bus. Monitoring of the diesel generator in this manner is a routine activity for auxiliary operators as it is required to be performed at other times when the diesel generators are started and loaded (e.g., under testing, normal operations, etc.). No unique classroom training is

provided for this task. However, as part of "on the job training", the qualification card requires proficiency in this activity.

It should be noted that in the standards established in the users guide for Emergency Operating Procedures (Ref. 5), which the licensed operation's staff is trained to, the licensed operators are directed to first stabilize the plant and then after the plant is stabilized, resume use of alarm response procedures. Depending on the complexity of the event, the specific time that the control room operators enter the alarm response procedures may vary.

Even though APS does not credit operator action to refill the standpipe in the first 25 hours to meet Appendix R requirements, APS still recognizes that an enhancement could be made to the standard post trip actions for area operators to specifically direct them to monitor the diesel generators "in accordance with the diesel generator test logs." Procedurally, this would re-enforce the need to perform monitoring of the diesel generators in accordance with the 30 minute and 2 hour frequencies described in the logs. APS plans to implement this enhancement to the procedure no later than April 28, 2006. In addition, the current training cycle for area operators (Non-Licensed Operator Continuing Training Cycle 2 of 2006) includes a briefing to remind the operators of the need to continue monitoring the diesel generators on the frequency described in the test logs following an emergency start.

References

1. 40DP-9OP02, Conduct of Shift Operations, Revision 32
2. 40DP-9OP20, Area Operator Practices, Revision 20
3. 41AL-1RK1A, Panel B01A Alarm Responses, Revision 40
4. 40DP-9OP08, Diesel Generator Test Record, Revision 38
5. 40DP-9AP16, Emergency Operating Procedure Users Guide, Revision 4

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THAT CAN BE VIEWED AT THE RECORD TITLED:

"P & I DIAGRAM DIESEL GENERATOR SYSTEM"
DRAWING NO. 13-M-DGP-001
REV. 32

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D-01

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REV. 43

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