



## Arizona Nuclear Power Project

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REGION V I&E

September 9, 1985  
ANPP-33411-TDS/TPS

U. S. Nuclear Regulatory Commission  
Region V  
1450 Maria Lane - Suite 210  
Walnut Creek, California 94596-5368

Attention: Mr. D. F. Kirsch, Acting Director  
Division of Reactor Safety & Projects

Subject: Final Report - DER 85-23  
A 50.55(e) Evaluation Relating To Diesel Generator  
Start Failure Due To Mechanical Valve Failure  
File: 85-019-026; D.4.33.2

Reference: A) Telephone conversation between Jo Bianchi,  
Office of D. F. Kirsch, and P. Coffin on  
June 7, 1985  
B) ANPP-32999, dated July 10, 1985 (Interim Report)  
C) ANPP-33207, dated August 13, 1985 (Time Extension)

Dear Sir:

Attached is our final written report of the deficiency referenced above which has been determined to be Not Reportable under the requirements of 10CFR50.55(e) and 10CFR21.

Very truly yours,

E. E. Van Brunt, Jr.  
Executive Vice President  
Project Director

EEVB/TPS/nj

Attachment

cc: See Page Two

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Mr. D. F. Kirsch  
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Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
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FINAL REPORT - DER 85-23  
DEFICIENCY EVALUATION 50.55(e)  
ARIZONA NUCLEAR POWER PROJECT (ANPP)  
PVNGS UNITS 1, 2, 3

I. Description of Deficiency

On March 5, 1985, during testing, Unit 1 Diesel Generator "A" failed to attain the required voltage, frequency, and speed within 10 seconds (actual time: 10.51 seconds) per Technical Specification 4.8.1.1.2.a.4 (see Reference 1).

On March 8, 1985, during testing, Unit 1 Diesel Generator "B" failed to attain the required voltage, frequency, and stopped within 10 seconds (actual time: 11.6 seconds, 12.55 seconds, and 12.06 seconds, respectively) in accordance with Technical Specification 4.8.1.1.2.a.4 (see Reference 1).

Again, on March 29, 1985 during testing, Unit 1 Diesel Generator "B" failed to attain the required frequency within 10 seconds (actual time: 10.64 seconds) per Technical Specification 4.8.1.1.2.a.4.

Evaluation

The Diesel Generator (D/G) provides emergency power to equipment required for safe plant shutdown in the event of loss of preferred power. There are two D/G sets per power plant (Train A and Train B). Each unit is required to start, come up to full rated speed, voltage, and frequency within 10 seconds. Starting air is provided by two independent starting air systems; each consisting of a compressor, an air dryer, and an air receiver. The air system also supplies air to the control air system in the D/G package. A portion of the control air is routed to the Turbocharger Manifold Temperature Control Valves (valves TV-265, TV-266, TV-267, and TV-268). These valves act as pilot valves to temperature valves TV-271, TV-272, TV-273, and TV-274 which regulate jacket water to the turbocharger intercooler/heaters.

Air to the temperature control valves is taken off the control air system header. (See attached sketch, Figure 1.) The valves bleed air, thus reducing air pressure in the control air header. When a diesel start signal (test mode) is initiated, reduced air pressure in the air header is not sufficient to fully actuate the pneumatic valve that vents air from the fuel cylinder control valve pneumatic actuator and the fuel control cylinder (UV-248 and SV-242, respectively, Figure 1). Air is not vented from the "OFF" side and admitted to the "ON" side of the fuel control cylinder fast enough to enable the diesel generator to start in 10 seconds.

In the emergency mode, Class 1E solenoid valves UV-10 and UV-12 provide positive assurance of venting of the fuel control system in place of pneumatic valve UV-248. Therefore, slow actuation of UV-248 due to low air pressure has no affect on diesel generator operation in the emergency mode.

The installed valves are the valve port overlap type which bleed continuously. This was determined by dismantling and inspecting the valve internals. Valve port overlap valves have two grooves in the spool as did the PVNGS valves (Reference 1). The root cause of the failure of the temperature control valves to operate properly is that the valves now installed do not have the correct internals. Per Cooper Energy Services letter, Reference 2, the proper valves for the system are center dead spot valves which do not bleed air during actuation. These valves perform a non-safety-related function and are designated, and were procured, as a non-"Q" component.

## II. Analysis of Safety Implications

Reduction of air pressure in the control air system increases the start time for the diesel generator during the test mode. However, the diesel generator is designed to use solenoid valves to vent air from the pneumatic control valve and fuel control cylinder in the emergency mode, therefore, reduced air pressure has no affect on starting capability.

Based on the above, it is concluded that the diesel generator would have performed its intended safety function if this condition had remained uncorrected. This condition is therefore evaluated as not reportable under the conditions of 10CFR50.55(e) and 10CFR21.

## III. Corrective Action

Replace the existing valves TV-265, TV-266, TV-267, and TV-268 with center dead spot valves Amot Corporation model number 4021C11C7. The work will be performed under Work Request number 108529 for Unit 1, Work Request number 108530 for Unit 2, and a subsequently issued DCP for Unit 3. Work is expected to be completed prior to fuel load for Units 2 and 3 and during the first outage for Unit 1.

Cooper will be requested to evaluate other material supplied by Amot Corporation that may be used in a safety-related capacity and verify the adequacy of the material supplied. Discrepancies will be documented by the appropriate deficiency document and this DER will be referenced.

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IV. References

1. EER 85-DG-033
2. Cooper Energy Services Letter CES No. 493, June 27, 1985,  
MIC 245674.

# DIESEL GENERATOR CONTROL AIR TO FUEL RACK

REF.DWG 13-M-DGP-001  
(SHEET 8 OF 8)

FIGURE 1

