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AUTH.NAME AUTHOR AFFILIATION
CONWAY,W.F. Arizona Public Service Co. (formerly Arizona Nuclear Power
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SUBJECT: Responds to NRC comments on periodic testing of alternate sources in reference to 920211,920320 & 920728 ltrs.

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TITLE: OR Submittal: Station Blackout (USI A-44) 10CFR50.63, MPA A-22

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WILLIAM F. CONWAY
EXECUTIVE VICE PRESIDENT
NUCLEAR

102-02300-WFC/JNI
October 2, 1992

U. S. Nuclear Regulatory Commission
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Mail Station P1-37
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References: 1) Letter dated February 11, 1992, from C. M. Trammell, NRC, to W. F. Conway, APS, "Station Blackout Safety Evaluation Palo Verde Nuclear Generating Station"

2) Letter 161-04684-WFC/NLT, dated March 20, 1992, from W. F. Conway, APS, to NRC, "Response to the NRC Station Blackout Safety Evaluation Recommendations"

3) Letter dated July 28, 1992, from C. M. Trammell, NRC, to W. F. Conway, APS, "Supplementary Safety Evaluation for Station Blackout, Palo Verde Nuclear Generating Station (TAC Nos. M68579, M68580, and M68581)"

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)**
**Units 1, 2, and 3**
**Docket Nos. STN 50-528/529/530**
**Response to NRC Comments on Periodic Testing of Alternate AC (AAC) Sources (Supplementary Safety Evaluation for Station Blackout)**
**File: 92-001-419; 92-056-026**

The NRC issued a Safety Evaluation Report (Reference 1) based on Arizona Public Service Company's (APS) response to the Station Blackout Rule (10 CFR 50.63). APS responded to the NRC Station Blackout Safety Evaluation recommendations in Reference 2. The NRC Supplementary Safety Evaluation for Station Blackout (Reference 3) indicated that the APS response (Reference 2) was acceptable, except that the operability test at 3-month intervals should include the gas turbine generators being tested under load.

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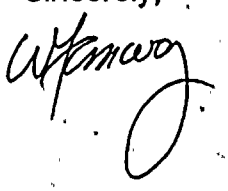
The NRC requested APS to revise the commitment to include a load test during the 3-month operability test and respond within 30 days. During a telephone conversation between C. M. Trammell, NRC and T. R. Bradish, APS on August 28, 1992 the due date was extended from September 2, 1992 to October 2, 1992.

APS has evaluated the NRC request and has determined that loading of the Alternate AC source during the 3-month operability testing would not be appropriate. The basis for this determination is presented in the enclosure.

If you have any questions, please call Thomas R. Bradish at (602) 393-5421.

Sincerely,



WFC/JNI/jni

Enclosure

cc: J. B. Martin
J. A. Sloan

# ENCLOSURE

# PERIODIC TESTING OF ALTERNATE AC SOURCES

## ENCLOSURE

## PERIODIC TESTING OF ALTERNATE AC SOURCES

### NRC EVALUATION:

The following is an excerpt from "Supplementary Safety Evaluation for Station Blackout, Palo Verde Nuclear Generating Station," letter dated July 28, 1992, from C. M. Trammell, NRC, to W. F. Conway, APS:

2.2 Proposed [Alternate] AC (AAC) Power Source (SE Section 2.2.2)

SE Recommendation: The licensee needs to clarify its intent with respect to the 3-month testing requirement of the AAC power source.

Licensee Response: The licensee stated that it will comply with NUMARC 87-00, Appendix B, Criterion B.10 regarding periodic testing of the AAC power source. The licensee will develop specific plant operating procedures in accordance with manufacturer recommendations containing the following elements:

1) A periodic operability test will be performed on each of the two gas turbine generators on 3-month intervals. This test will include starting and operating each unit unloaded for a sufficient period to achieve stable operating parameters (temperatures, pressures, voltages, etc.).

2) On approximately an 18-month interval, periodic tests of each gas turbine generator will be performed to demonstrate AAC operability. This test will include a timed start (within the one-hour time period specified for [Station Blackout] SBO) and operation of each unit in parallel with the offsite source (which is feeding the emergency buses), at rated load, until stable operating parameters are achieved.

Staff Evaluation: The Staff finds the above licensee's response to be acceptable, except that the operability test at 3-month intervals should include the gas turbine generators being tested under load. NUMARC 87-00, Item B.10, states that the AAC source shall be started and brought to operating conditions that are consistent with its function as an AAC source. The Staff interprets this to mean that the AAC should be load tested to verify that it can meet its intended operability and reliability. Technical Specifications are being considered by the NRC for nonsafety-related SBO equipment which may prescribe further requirements as necessary to verify the operability and reliability of the AAC power source per Reg. Guide 1.155, paragraph 3.3.5, item 5.

## APS EVALUATION

NUMARC 87-00, Item B.10, states that the Alternate AC (AAC) source shall be started and brought to operating conditions that are consistent with its function as an AAC source. APS interprets this to mean that the AAC should be energized to verify that it can meet its intended operability and reliability. APS does not interpret this to require loading the AAC source. APS contacted NUMARC concerning the intent of Item B.10. NUMARC indicated the intent was to bring the AAC power source to operating conditions (voltage and frequency) and concurred with APS' position.

The AAC source at Palo Verde Nuclear Generating Station (PVNGS) will consist of two Gas Turbine Generators (GTGs) located outside the PVNGS protected area (see Figure 1). The installation is designed to be used solely as standby generation for the AAC power source and is not intended to be used as a peaking unit. The design of the AAC source provides controls and indication in a local control room located outside the protected area near the GTGs. The design does not include GTG controls or control indication in the PVNGS Control Rooms. This configuration meets the design basis of powering a deenergized plant electrical bus during a SBO event.

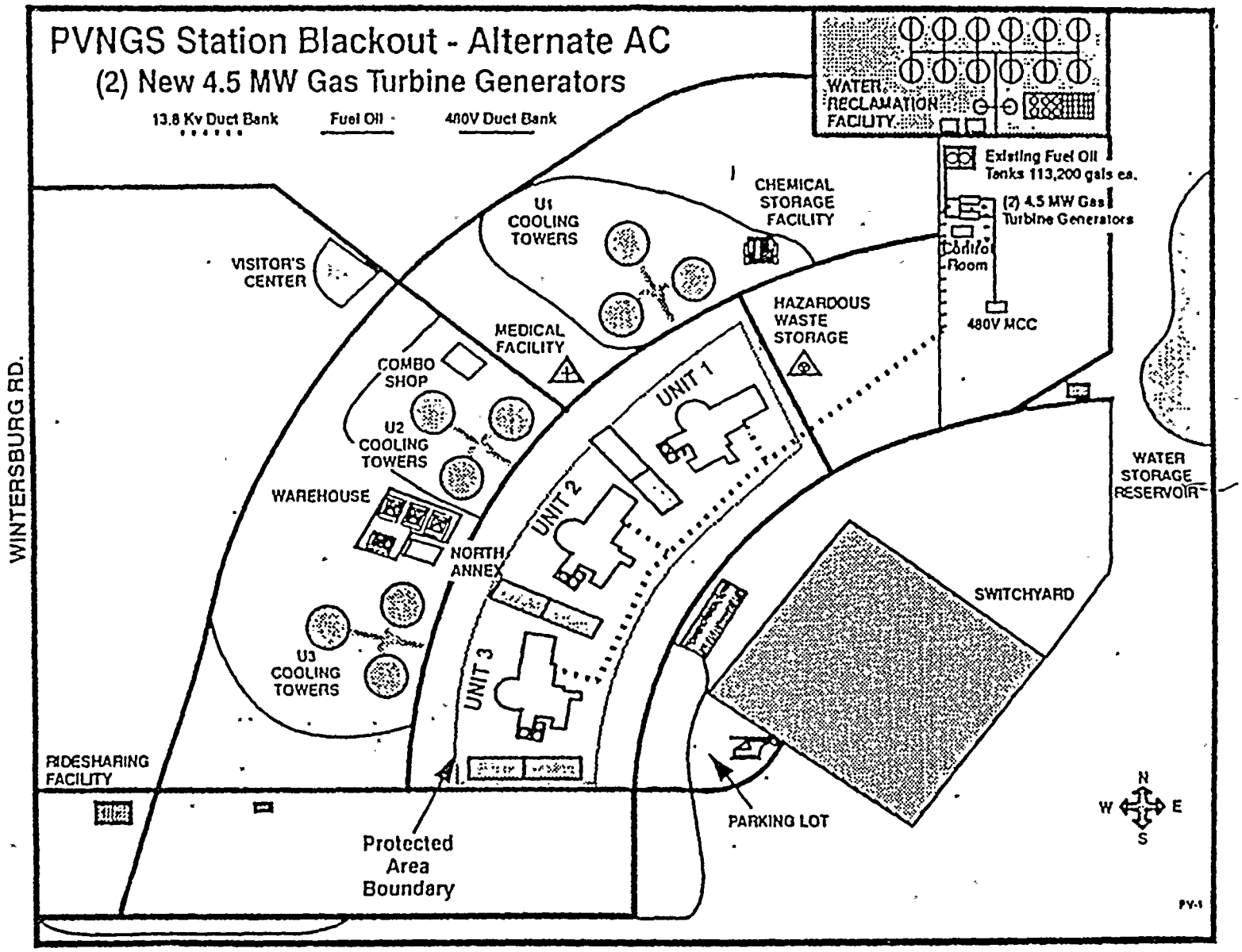
The GTGs feed the Unit 1, 2, and 3 electrical buses (13.8 kV) downstream of the start-up transformers and upstream of the Class 1E bus interface (see Figure 2). Therefore, loading the AAC source would require paralleling the GTGs with the 13.8 kV electrical buses.

During a SBO the GTGs are energized, paralleled, and loaded by an operator at the local control room outside the plant protected area. APS did not design the AAC source for paralleling the GTGs with an energized Unit 1, 2, or 3 electrical bus during operation, Modes 1, 2, 3, or 4. Any paralleling evolution creates the potential for transients caused by equipment malfunctions or human error. The situation where the operator performing the actions is located far from the affected plant control room and where the control room does not have indication or control of the GTGs increases the potential for problems to occur. At PVNGS, Units 1, 2, and 3 share three startup transformers to provide the redundant offsite power, and therefore a transient has the potential to affect more than one unit.

Furthermore, PVNGS Technical Specification 3.8.1.1, for Modes 1, 2, 3, or 4, states: "As a minimum, the following A.C. electrical power sources shall be OPERABLE: a. Two physically independent circuits from the offsite transmission network to the switchyard and two physically independent circuits from the switchyard to the onsite Class 1E distribution system, and. . . ." Based on the Technical Specification requirements and preferred operating philosophy it would not be appropriate to deenergize the 13.8 kV electrical bus during Modes 1, 2, 3, or 4 and enter a Limiting Condition for Operation action statement (including a start of the diesel generator).

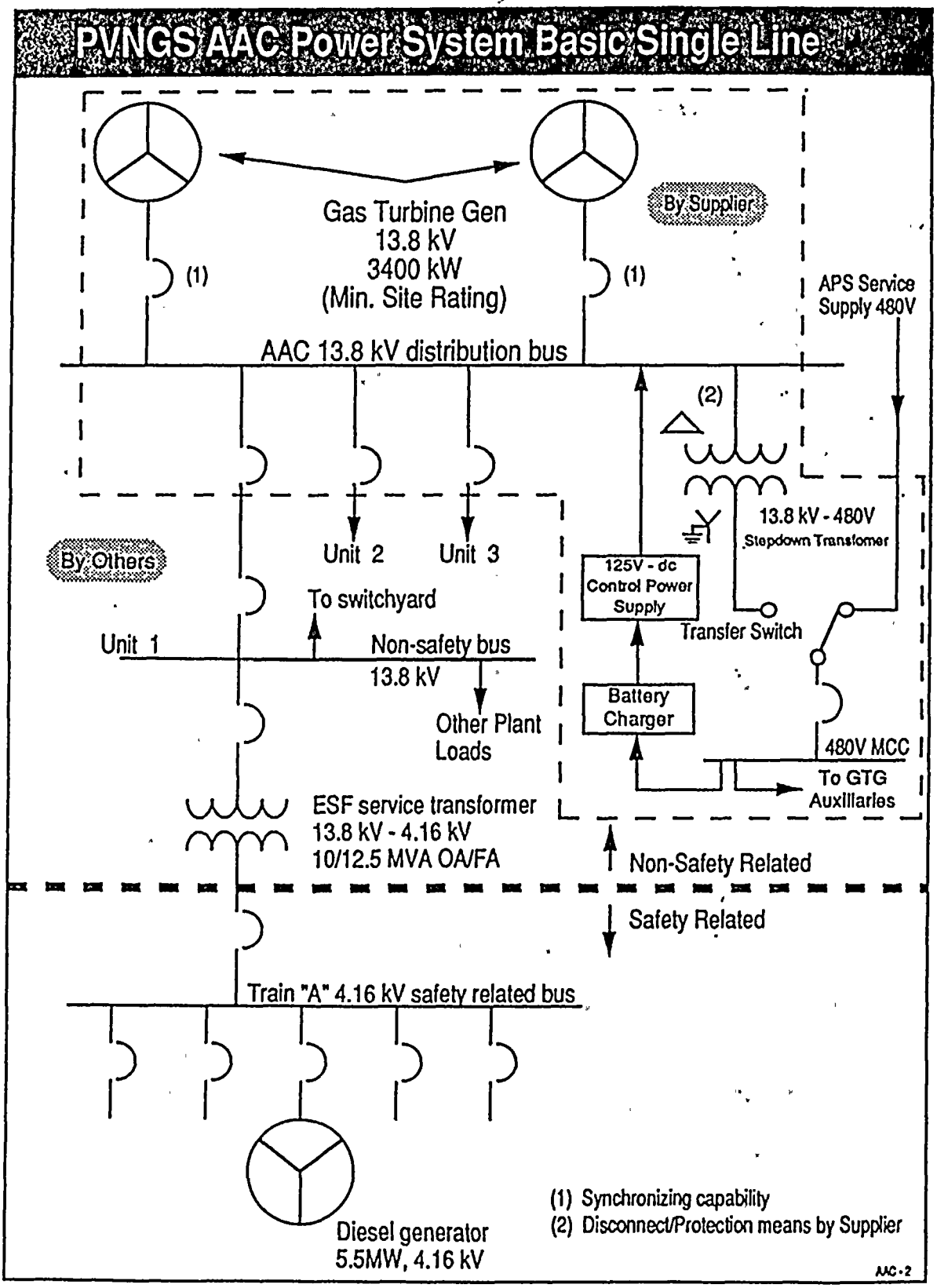
Based on the preceding evaluation APS concludes that loading of the Alternate AC source during the 3-month operability testing would not be appropriate.

APS proposes to perform the 18 month interval test of the GTGs during refueling outages that have a Train A 13.8 kV electrical bus scheduled for maintenance. These outages will be scheduled such that testing of each of the GTGs would occur approximately once every 12 months. Testing of the GTGs will include a timed start (within the one-hour time period specified for SBO) and operation of each unit in parallel with the offsite source (which is feeding the emergency buses), at rated load, until stable operating parameters are achieved.




Plant Layout

**Figure 1**




Single Line Diagram

Figure 2