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AUTH.NAME AUTHOR AFFILIATION
SCHUYLER,J.O. Pacific Gas & Electric Co.
RECIP.NAME RECIPIENT AFFILIATION
EISENHUT,D.G. Division of Licensing

SUBJECT: Forwards addl info to 821229 proposed Amend Request 82-09 to License DPR-76 re mods to vital 120-volt ac inverters associated busses,Rearrangement of new inverters designed to meet single failure criterion.

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PACIFIC GAS AND ELECTRIC COMPANY

PG&E — 77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211 • TWX 910-372-6587

J. O. SCHUYLER
VICE PRESIDENT
NUCLEAR POWER GENERATION

September 12, 1983

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-76
Diablo Canyon Unit 1
Additional Information on
License Amendment Request No. 82-09
Modifications to Vital 120 VAC
Inverters and Associated Busses

Dear Mr. Eisenhut:

In a December 29, 1982 letter, PGandE proposed to amend its Diablo Canyon Power Plant Facility Operating License DPR-76. That amendment request, number 82-09, provided information for changing Technical Specification 3.8.2.1 and 3.8.2.2 "Limiting Condition for Operation for Onsite Power Distribution" to include the addition of two new inverters.

The enclosure provides additional information to confirm that:

(1) The additional inverters and their associated vital AC busses meet General Design Criterion 17 and are consistent with Regulatory Guide 1.6.

(2) The rearrangement of the new inverters has been designed to meet the single failure criterion.

(3) The load on the Class 1E batteries has not increased due to the additional inverters.

(4) The existing and additional inverters will be seismically qualified. This qualification is currently being confirmed by Westinghouse.

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Sincerely,

J O Schuyler

Enclosure

cc: Service List

A001
1/1

ENCLOSURE

Additional Information

Modifications to Vital 120 VAC Inverters

License Amendment Request 82-09

A. General Design Criterion 17 (GDC 17)

The proposed two additional inverters (11A and 13A) and their associated vital AC busses meet General Design Criterion 17 (GDC 17) and are consistent with NRC Regulatory Guide 1.6, as indicated below:

1. Independence, redundancy and testability (four existing and [two] new additional)

   Each of the six inverters is independently connected to its respective instrument distribution panel so that the loss of an inverter cannot affect more than one of the six distribution panels.

   In addition, each distribution panel can be manually switched to receive alternate backup power from a vital bus. The transfer breakers are mechanically interlocked to prevent paralleling the normal sources with the alternate backup source.

   Therefore, no single failure in the instrumentation and control power supply system or its associated power supplies can cause a loss of power to more than one of the redundant load groups (i.e., busses 11 and 11A, 12, 13 and 13A, and 14).

   The manual transfer breakers provide means of testing the inverters.

   Independence between load groups has been maintained as per original design. The physical location of the two new inverters is separate from existing inverters, thus maintaining independence.

2. Capacity

   The installation of two new 7.5 kVA inverters and their associated busses is necessary to increase the capacity of the class 1E instrument AC system from 30 kVA to 45 kVA, to accommodate additional loads associated with equipment added to meet NUREG-0737 requirements.

   The load connected to each new inverter is within its rated capacity.

   With the additional DC inverter load on the existing batteries, the capacity is such that at least a two hour station blackout margin exists as provided in the previous design.

3. Provision to minimize loss of power

Each of the six distribution panels is capable of receiving power from three sources, i.e. a) 125 VDC station battery; b) 480 VAC, 3 phase, 60 Hz distribution system (vital power supply); c) common backup source of 120 VAC, single phase from vital Bus G.

Sources (b) and (c) have access to the preferred (offsite) and standby (onsite, diesel generator) power sources. There is no automatic transfer between power sources (b) and (c) which eliminates paralleling of redundant load groups.

B. Single Failure Analysis

Both new inverters are served by two independent reliable power sources. A third power source can be manually switched on to provide a backup source to the new distribution panels.

Inverter 11A is served by 480 V Bus F with Battery 11 providing its alternate source of power. Both sources are independent of each other; hence, a loss of either power source would not affect the availability of the other. Likewise, inverter 13A is served by two independent sources - 480V Bus H and Battery 13.

In addition, a third source of power is available from a vital bus to supply the new distribution panels.

Therefore, a loss of any single power source would not degrade the integrity of new inverters 11A and 13A and their respective AC instrument panels.

C. Addition of Inverters to Vital Batteries

In preparation for the addition of two more inverters, the Class 1E battery load was reviewed. Several sizeable non-vital loads were transferred to a newly installed non-vital battery to accommodate the additional inverter loads and provide capacity for future load growth. These non-vital loads transferred to the non-vital battery include:

NON VITAL LOAD	AMPS	DURATION
Turbine Emergency Bearing Oil Pump	213A	100 min
Seal Oil Air Side Backup Pump	92A	100 min
Feedwater Turbine 11 Lube Oil Pump	29A	15 min
Feedwater Turbine 12 Lube Oil Pump	29A	15 min
Non-Vital Emergency Lights	350A	120 min
Site Emergency Alarm System	218A	60 min
P2000 Computer Inverter	15A	120 min
Total	946A	

The total load for the two new inverters is 190A (95A each) maximum at maximum capacity. Therefore, the additional inverter load of 190A is less than the previous non-vital load total of 946A that was supplied by the Class 1E batteries.

D. Environmental Qualification

The inverters have been purchased from Westinghouse as Class 1E equipment and are installed in an area not subject to harsh environment. Their seismic qualification is identical to the qualification of the original inverters. (Refer to "Seismic Evaluation for Postulated 7.5M Hosgri Earthquake", paragraph 10.3.10). Westinghouse is comparing this seismic qualification with current seismic requirements to assure conformance.