



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NOV 6 1990

Docket Nos.: 50-277/278

LICENSEE: Philadelphia Electric Company, et. al.
FACILITY: Peach Bottom Atomic Power Station, Units 2 and 3
SUBJECT: SUMMARY OF SEPTEMBER 10, 1990 MEETING ON STATION BLACKOUT

On April 17, 1989, Philadelphia Electric Company (PECo) submitted the results of an evaluation of the ability of the Peach Bottom Atomic Power Station (PBAPS) to withstand and recover from a station blackout (SBO) as required by 10 CFR 50.63. On January 4, 1990, NUMARC requested licensees to supplement their initial responses to the SBO rule. PECo submitted a revised response on April 3, 1990. On August 8, 1990, the staff's safety evaluation was transmitted to PECo; the staff concluded that Peach Bottom did not conform with the SBO rule and the guidance of RG 1.155. PECo requested a meeting with the NRC staff to discuss the basis for the staff's determination.

The requested meeting was held September 10, 1990, at the NRC offices in Rockville, Maryland. The list of attendees is attached.

Peach Bottom has four shared emergency diesel generators (EDGs). Each EDG is connected to one of the four safety buses in each unit. PECo's evaluation was based on the premise that if there was a loss-of-offsite power (LOOP) event taking out the multiple outside power connections, the station blackout was assumed to affect both units at the same time (i.e., there is not one blacked-out unit and one non-blacked-out unit). PECo concluded that the emergency AC power configuration was group "D" based on:

- a. There are three shared EAC power supplies not credited as alternate AC power sources for the station.
- b. Two EAC power supplies are necessary to operate safe shutdown equipment for both units for an extended period following a station LOOP event.

The NRC reviewers stated that contrary to the licensee's EAC categorization of 2-out-of-3, assuming that 2 emergency diesel generators could safely shutdown both units in the event of a LOOP event, Peach Bottom would have a 2-out-of-4 EAC power configuration group. The NRC staff stated that before one EDG can be subtracted from the site total EDGs, the use of EDGs as an Alternate AC (AAC) source has to meet the requirement of 10 CFR 50.2, i.e., the combination of EDGs have to exceed the minimum redundancy requirements for safe shutdown of all units. Based on Peach Bottom's EDG configuration, it does not have excess redundancy and therefore can not subtract one EDG from the site total EDGs. There is no excess redundancy in the Peach Bottom EDGs for crediting the use of one of the EDGs as an AAC.

PECo explained that they had followed the NUMARC guidance and had subtracted one EDG from the site total of 4 EDGs, to be designated the Alternate AC (AAC) so as not to double-count the AAC EDG as an EAC and AAC power source.

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The NRC reviewers stated the following with regard to the licensee's designation of one EDG out of four EDGs being set aside for use as an AAC source. As described in 10 CFR 50.63, at sites where onsite emergency AC sources are shared between units, the alternate AC source must have the capacity and capability as required to ensure that all units can be brought to and maintained in safe shutdown (non-DBA). If one assumes that two EDGs are capable of powering all LOOP safe shutdown loads for both units and given that Peach Bottom is a two unit site with four shared EDGs, the staff stated that this configuration is similar to the configuration of a two-unit site with two EDGs dedicated to each unit, although the EDGs are all shared between both units.

However, for the two-unit site configuration with two EDGs dedicated to each unit, the staff recognized that although the minimum redundancy requirements of 10 CFR 50.63 for alternate AC power sources were not strictly met, there may be some plants where each EDG is of sufficient capacity to fully power all the normal LOOP loads of the non-blackout (NBO) unit, and also has sufficient excess capacity available for powering the required safe shutdown loads of the SBO unit. In recognition of the existence of this type of situation, the staff has interpreted this availability of excess capacity as meeting the intent of the rule provided certain specific requirements are met for the EDG designated as the alternate AC source.

Thus, if one assumes that two EDGs are capable of powering all LOOP safe shutdown loads for both units, one EDG at Peach Bottom would need to have sufficient capacity to bring to and maintain in safe shutdown one NBO unit and one SBO unit. At Peach Bottom, the EDGs do not have the excess capacity defined above for qualification as an alternate AC source, and thus do not meet the SBO rule alternate AC source option requirements.

As discussed in the August 1990 safety evaluation, the NRC staff also questioned whether two EDGs could safely shutdown both units in the event of a LOOP event. The concerns were based on a review of available information of LOOP loads and EDG capacities as presented in the facility's UFSAR and the licensee's submittals in response to the station blackout rule. In addition, the staff expressed concerns due to the asymmetry of the safe shutdown loads on each bus, which raised the question of whether any two EDGs are capable of powering all of the needed LOOP safe shutdown loads for both units.

The NRC reviewers stated that based on their review of the UFSAR, Peach Bottom's EAC Category appears to be 3 out of 4. PECO explained that the UFSAR discusses the design basis event for the EDGs, i.e., a site LOOP and a LOCA at one unit. In this case, 3 of the 4 EDGs are needed to safely shutdown both units. However, the site LOOP is not a design basis event, and that upon evaluation, PECO has determined that for this event, only 2 EDGs are needed to safely shutdown both units. PECO explained further that certain of the LOCA electrical loads would either not be automatically loaded on to the EDGs or that other LOCA loads could be removed as part of the operator load management. PECO further stated that credit had been taken for operator actions outside the control room in order to determine that 2 EDGs could safely shutdown both units in the event of a site LOOP, and that these

operator actions had been walked-through, were reasonable, and there was more than adequate time (more than 30 min.) in which to accomplish these actions. The NRC reviewers requested that PECO submit a detailed description of these operator actions and a comparison to the operator actions that would be necessary to safely shutdown both units if 3 EDGs were available in the event of a site LOOP.

PECO stated that they had used the 200 hour EDG rating in determining the EAC category. The NRC reviewers stated that their position is that only the continuous or 2000 hour EDG rating is acceptable, and that the basis for this position was a need for margin and excess redundancy. PECO stated that this position was not in the rule or previously available guidance.

Following the meeting, the licensee representatives advised me that they were going to recommend to their management that PECO raise the "Backfit" issue on some of the staff's positions. They subsequently advised me that in their response they would note that the staff's SE and TER contained positions contrary to those specified in previous guidance documents but would not claim this was a "Backfit" over concern for the repercussions.

PECO stated that due to the EDG configuration, i.e., four EDGs each shared between both units, and in accordance with NUMARC guidance, they based their SBO analysis on the assumption that the SBO occurs to both units. The NRC reviewers stated that PECO must assume a SBO at one unit and a LOOP at the other unit. There was further discussion concerning the Peach Bottom EDG configuration compared to a 2 unit site with 2 EDGs dedicated to each unit.


Based on the costs of adding a fifth diesel generator at Susquehanna, PECO estimated that it would cost about 100 million to add a 5th diesel generator at Peach Bottom. The staff estimate is in the order of \$25 to \$30 million, assuming it would only be an alternate AC power source.

Other items discussed:

- ° The NRC reviewers requested that PECO provide the non-NUMARC methodology room heat-up calculations.
- ° PECO will provide an explanation for containment isolation valves MO-14-70 and MO-23-31.
- ° PECO will provide a commitment to an EDG reliability program that includes the elements specified in Reg. Guide 1.155.
- ° There is no need to submit SBO procedures.

The NRC's letter of August 8, 1990 requested that PECO provide a revised response within 60 days. In view of the staff positions in the safety evaluation and those presented at the subject meeting, PECO stated that they

would have to reevaluate and reassess their previous responses and various options. This will probably require much more than 60 days. Within the next month, PECO will advise us of their proposed actions and a schedule for submission of a revised evaluation.



Richard J. Clark, Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
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ENCLOSURE

NRC/PECO MEETING ON
STATION BLACKOUT

<u>NAME</u>	<u>ORGANIZATION</u>
Dick Clark	NRC/DRP/PDI-2
Jim Knight	NRC/NRR/DST/SELB
Faust Rosa	NRC/NRR/DST/SELB
Paul Gill	NRC/NRR/DST/SELB
Roy Karimi	SAIC
Steven M. Mirsky	SAIC
Vittorio Pareto	Devonrue
Rod Krich	PECO
Bill Mindick	PECO
Michael P. Gallagher	PECO
Ken Burke	PECO
Skip Booz	PECO
Patrick Harris	SERCH Licensing/Bechtel
George Gaydos	SERCH Licensing/Bechtel
Stan Maingi	Commonwealth of Pennsylvania
Patrick Milano	NRC/NRR/SPLB
Janak H. Raval	NRC/NRR/SPLB
Ralph Architzel	NRC/NRR/SPLB

Mr. George A. Hunger, Jr.
Philadelphia Electric Company

Peach Bottom Atomic Power Station,
Units 2 and 3

cc:

Troy B. Conner, Jr., Esq.
1747 Pennsylvania Avenue, N.W.
Washington, D.C. 20006

Single Point of Contact
P. O. Box 11880
Harrisburg, Pennsylvania 17108-1880

Philadelphia Electric Company
ATTN: Mr. D. B. Miller, Vice President
Peach Bottom Atomic Power Station
Route 1, Box 208
Delta, Pennsylvania 17314

Mr. Thomas M. Gerusky, Director
Bureau of Radiation Protection
Pennsylvania Department of
Environmental Resources
P. O. Box 2063
Harrisburg, Pennsylvania 17120

Philadelphia Electric Company
ATTN: Regulatory Engineer, A1-2S
Peach Bottom Atomic Power Station
Route 1, Box 208
Delta, Pennsylvania 17314

Board of Supervisors
Peach Bottom Township
R. D. #1
Delta, Pennsylvania 17314

Resident Inspector
U.S. Nuclear Regulatory Commission
Peach Bottom Atomic Power Station
P.O. Box 399
Delta, Pennsylvania 17314

Public Service Commission of Maryland
Engineering Division
ATTN: Chief Engineer
231 E. Baltimore Street
Baltimore, MD 21202-3486

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

Mr. Richard McLean
Power Plant and Environmental
Review Division
Department of Natural Resources
B-3, Tawes State Office Building
Annapolis, Maryland 21401

Mr. Roland Fletcher
Department of Environment
201 West Preston Street
Baltimore, Maryland 21201

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Original signed by
Richard J. Clark
Richard J. Clark, Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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As stated

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NRC & Local PDRs

PDI-2 Reading

JPartlow

WRussell

FRosa

PGill

ACRS(10)

OGC

JCaldwell

SVarga

BBoger

WButler

RClark

GSuh

MO'Brien

EJordan

PDI-2/PM

GSuh *sys*

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PDI-2/PM *de*

RClark: *tr*

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SEL *FR*

FRosa

11/6/90

PDI-2/D

WButler *WB.*

11/6/90