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ACCESSION NBR: 9010170012      DOC. DATE: 90/10/02      NOTARIZED: NO      DOCKET #  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv      05000387  
 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylv      05000388  
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 HEHL, C.W.      Region 1 (Post 820201)

SUBJECT: Submits 10CFR50.9 rept on affect of racked out breaker on dynamic qualification of load ctrs.

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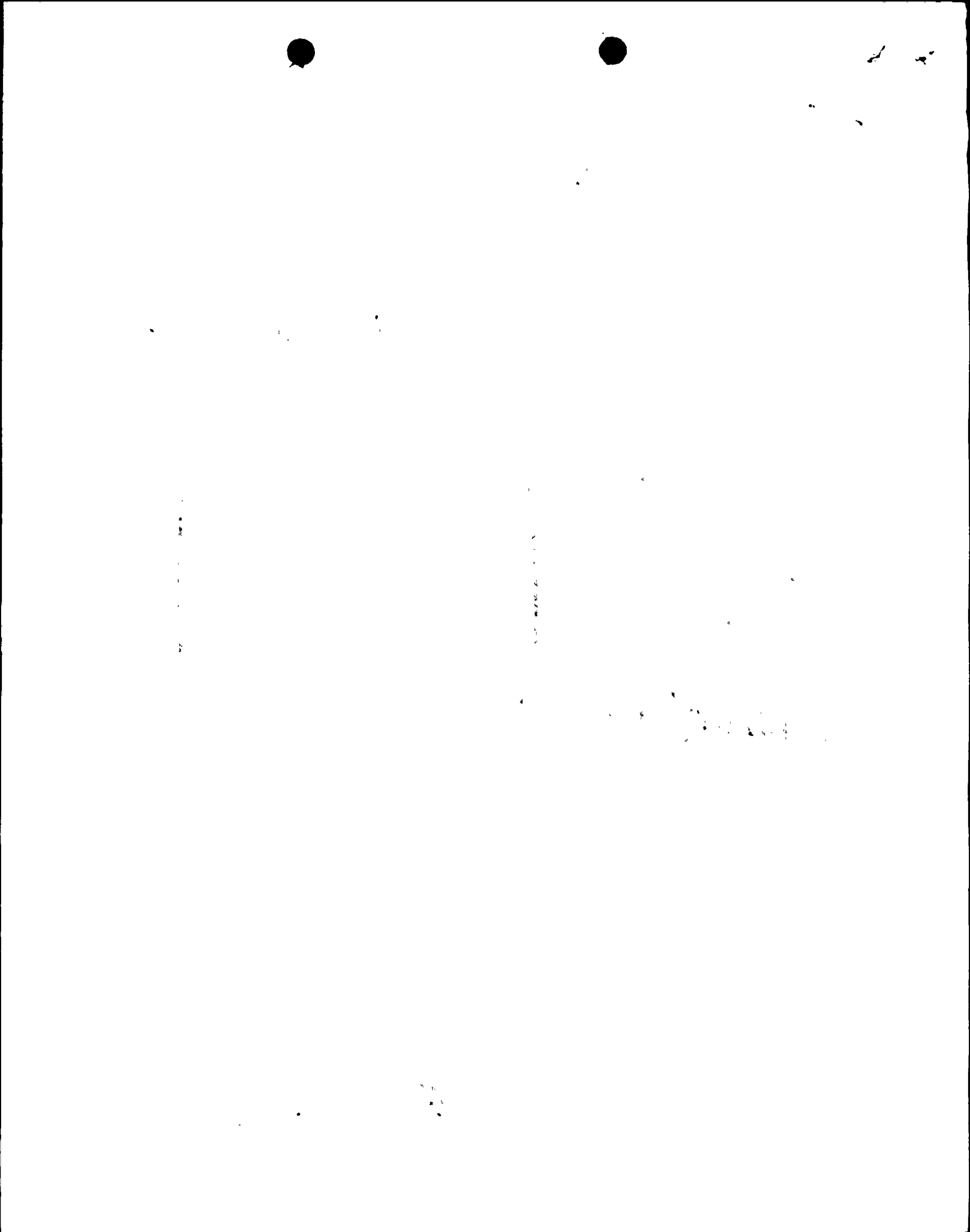
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**SUSQUEHANNA STEAM ELECTRIC STATION  
LOCFR50.9 REPORT ON THE AFFECT OF RACKED  
OUT BREAKER ON THE DYNAMIC QUALIFICATION  
OF LOAD CENTERS**

**PLA-3437**

**FILE R41-2**

Docket Nos. 50-387  
and 50-388

Dear Mr. Hehl:

This letter notifies the NRC of an issue we are pursuing relative to the effect that racking out of breakers in the 125V, 250V and 480V load centers has on the dynamic qualification of the load centers. This report is being submitted pursuant to LOCFR50.9. A verbal report was made August 29, 1990.

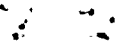
The 480V load centers generally supply power to 480V loads larger than 100 hp and power for their respective motor control centers. The motor control centers supply 480V loads smaller than 100 hp while 480V, 480/277V, 208/120V panels provide miscellaneous loads such as unit heaters, space heaters, lighting systems, etc.

The safety related dc system for each generating unit consists of four 125V dc subsystems, two 250V dc subsystems and two ±24V dc subsystems. The diesel generator E building has a 125V dc subsystem.

Four Class IE 125V dc power subsystems, identified as Channels A, B, C, and D for each unit provide control power for associated Class IE ac power load group channels. Each 125V dc subsystem consists of one load center, one Class IE and one nonClass IE distribution panel, one 125V battery bank and one battery charger.

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Two Class 1E 250V dc subsystems, identified as Divisions I and II, are provided for each unit to supply dc power required for loads such as dc motor driven pumps and valves, inverters for the plant computer and vital 120V ac power supplies.

The condition of having racked out or missing breakers in the 125V, 250V and 480V load centers is not specifically covered by our existing dynamic qualification documentation. The load centers were qualified using a dynamic analysis approach. A finite element model was developed for each type of load center. The breakers were assumed to be in the connected position. The breakers and other safety related devices housed within the load centers were qualified by shaker table testing.

We do not find the operability of the load center to be affected by this condition. To rack out a breaker, it must be moved approximately 4" away from the bus. This movement of the breaker's center of gravity is not significant since the load centers are approximately 5' deep. Also, each breaker (which weighs approximately 100-200 pounds) represents a relatively small percentage of the load center's weight (which is a minimum of 3300 pounds).

A preliminary investigation of this concern indicates that the computed dynamic response of the load center is not affected significantly. Any small variation in the dynamic response by having a few racked out or missing breakers in each load center is covered by areas of conservatism found within the existing dynamic qualification (e.g. damping values, margins between TRS and RRS for device testing, margins between synthetic time history response spectra and actual required response spectra, etc.).

Based on a walkdown, racked out breakers in the 125V, 250V, and 480V load centers are physically restrained in that position (i.e. they are not free to slide). The racked out breakers cannot produce impact loads on the load centers.

With the exception of spare breakers, breakers at Susquehanna SES are normally racked in. However, to provide adequate personnel safety during periods when maintenance is being performed on a system's equipment, selected breakers may be racked out.

Spare load center breakers in the past have been left racked out. This practice has been discontinued. As immediate corrective action, all spare breakers have been returned to their racked-in position.

Seismic qualification of racked out breakers is expected to be completed by October 12, 1990. We will use the results of this qualification to determine the requirements for racking out breakers.

Very truly yours,



H. W. Keiser

cc: NRC Document Control Desk (original)  
NRC Region I  
Mr. G. S. Barber, NRC Sr. Resident Inspector  
Mr. M. C. Thadani, NRC Project Manager



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