

PHILADELPHIA ELECTRIC COMPANY

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(215) 841-5001



February 3, 1978

Docket Nos. 50-277  
50-278

Director  
Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Sir:

Attached is our response to the questionnaire on reliability of standby diesel generator units, which was requested in Mr. Karl R. Goller's letter of December 15, 1977. Also attached are the maintenance procedures requested on page 15 of the questionnaire and the surveillance test procedures requested on page 21.

Should you have any questions or require further information, please do not hesitate to contact us.

Very truly yours,

Attachment

- S. Are any foreign gases such as propane, freon, halon, carbon dioxide, etc. stored in the: Diesel Engine room?  
Yes        No X or adjacent buildings? Yes X No

If yes, (other than hand portable fire extinguishers), then identify gases and give approximate tank size.

Gases	Volume (ft <sup>3</sup> )
<u>CO<sub>2</sub></u>	<u>97</u>
<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>

- T. Does control system automatically bypass, in emergency starting, any engine temporarily out of service for maintenance? Yes        No X System manually blocked for maintenance

If yes, then how many failures to bypass have occurred?  
      

- U. Does the control system automatically override the test mode under emergency conditions? Yes N/A No        No test position

- V. Have repetitive mechanical failures occurred in any component part or subsystem of the engine, generator, or switch gear, etc.?  
Yes X No

If yes, then which part or subsystem? Valves in air start system

How many failures? About 30

Give nature of failure. Seat or stem failures, leaks through.  
        
      

- W. Would periodic (yearly or other) evaluation and/or testing by "outside experts" contribute significantly to the diesel-generator reliability? Yes        No X

Give brief reasons for the answer. Philadelphia Electric Company's operating and maintenance groups have attained knowledge in the area of operation, testing, inspection and repair such that the service of outside experts are seldom required.

- X. 1. Give the accumulated time-load operating record for each diesel-generator unit from installation to the present (Running Hours):

Preoperational test Date July 1973

: Engine :	* Surv. Testing & :	* Emergency :	Total :
: Serial No. :	Maintenance Hrs. :	and Other :	Hours :
:	No Load :	Loaded, :	Service Hrs. :
: 38D870015 :	:	:	:
: DSM12 :	100 :	300 :	178 :
: 38D87018 :	:	:	:
: DSM12 :	100 :	300 :	591 :
: 38D87020 :	:	:	:
: DSM12 :	100 :	300 :	197 :
: 38D87022 :	:	:	:
: DSM12 :	100 :	300 :	166 :
:	:	:	:
:	:	:	:

\*Approximate

2. Surveillance test load (percent of continuous rating) 80%  
of normal rated load of 2.5MW
3. Give the projected or planned time-load operation for each diesel-generator unit during the next 12 months.

: Surveillance & :	Emergency :	Total :
: Maintenance Hrs. :	and other :	Hours :
:	Service Hrs. :	:
:	:	:
:	:	:
: 70 :	30 :	100 :

4. Provide the following summary of the periodic surveillance testing experience:

- a. Starting date of surveillance testing (OL date) Aug. 1973
- b. Periodic test interval Weekly
- c. Total number of surveillance tests performed ≈ 1000
- d. Total number of test failures 4 (See Additional Comments)

failure to start 1 failure to accept load 2  
 failure to carry load -0- failures due to operator error 1  
 failure due to equipment not being operative during emergency conditions -0-

- e. Supply a copy of the surveillance test procedures with this completed questionnaire.

Additional Comments

Breakdown of Test failures

1. Failure to Start - Dirt or foreign material interfered with field flashing logic relays
2. Failure to accept load - D.G. breaker inoperable (charging spring not charged due to charging motor brush wear.)
3. Failure to accept load - Failure of D.G. breaker to close due to bent linkage.
4. Operator error - D.C. Control to machine left open.

Y. General Suggestions

Briefly give constructive criticism or suggestions as to improvement in reliability of the diesel generators. These remarks may cover tests, maintenance, practices, orders, policy, adjustments, etc.