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SUBJECT: Special rept: on 890916, diesel generator B crankcase overpressurization.

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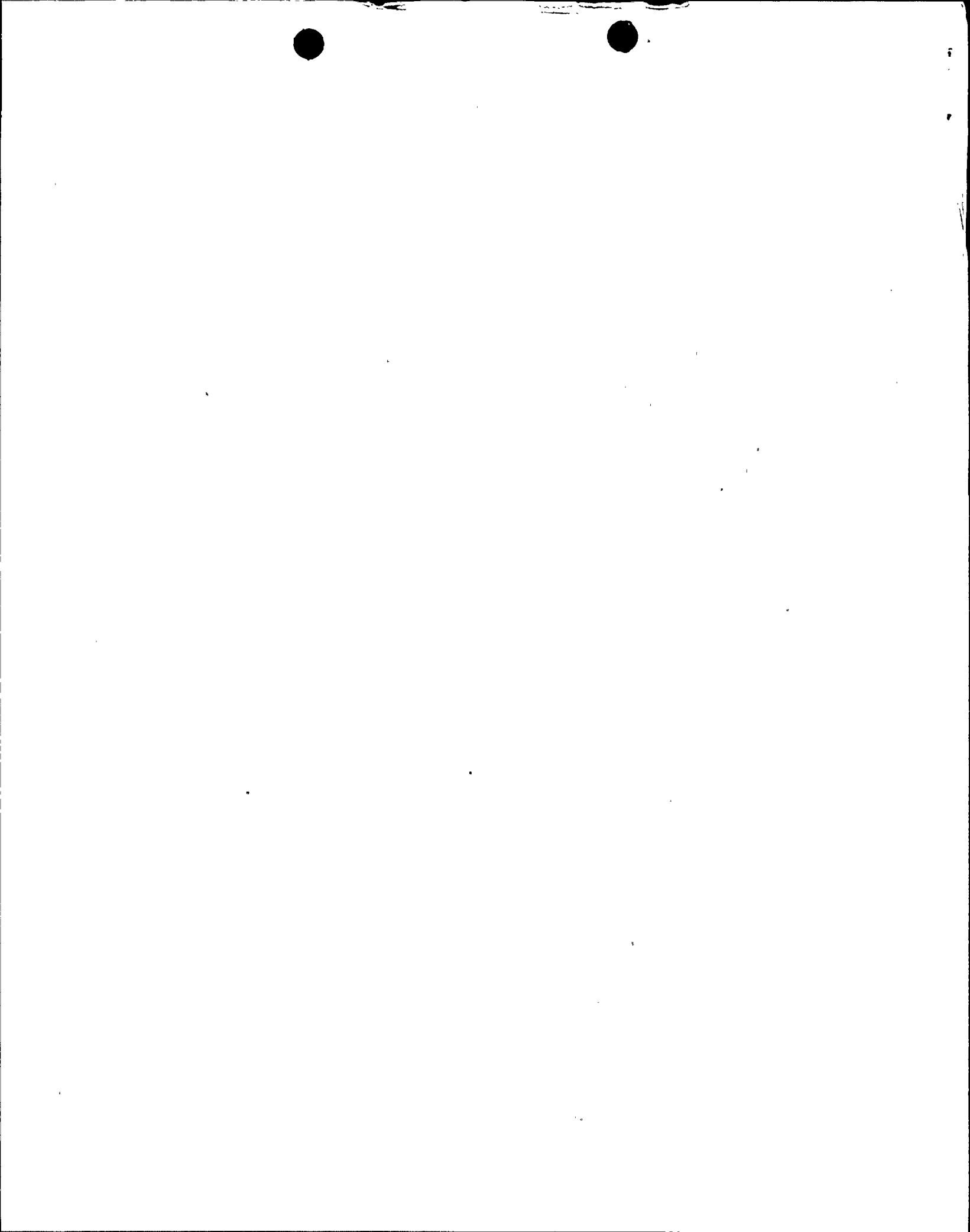
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# Pennsylvania Power & Light Company

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October 16, 1989

Mr. W.T. Russell  
Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

SUSQUEHANNA STEAM ELECTRIC STATION  
SPECIAL REPORT - 'B' DIESEL  
CRANKCASE OVERPRESSURIZATION  
PLAS - 386 FILE R41-2

Docket No. 50-387  
License No. NPF-14

Dear Mr. Russell:

All Diesel Generator failures, valid or invalid, are to be reported as required by Regulatory Guide 1.108, Section C.3.b and Technical Specification 4.8.1.1.4.

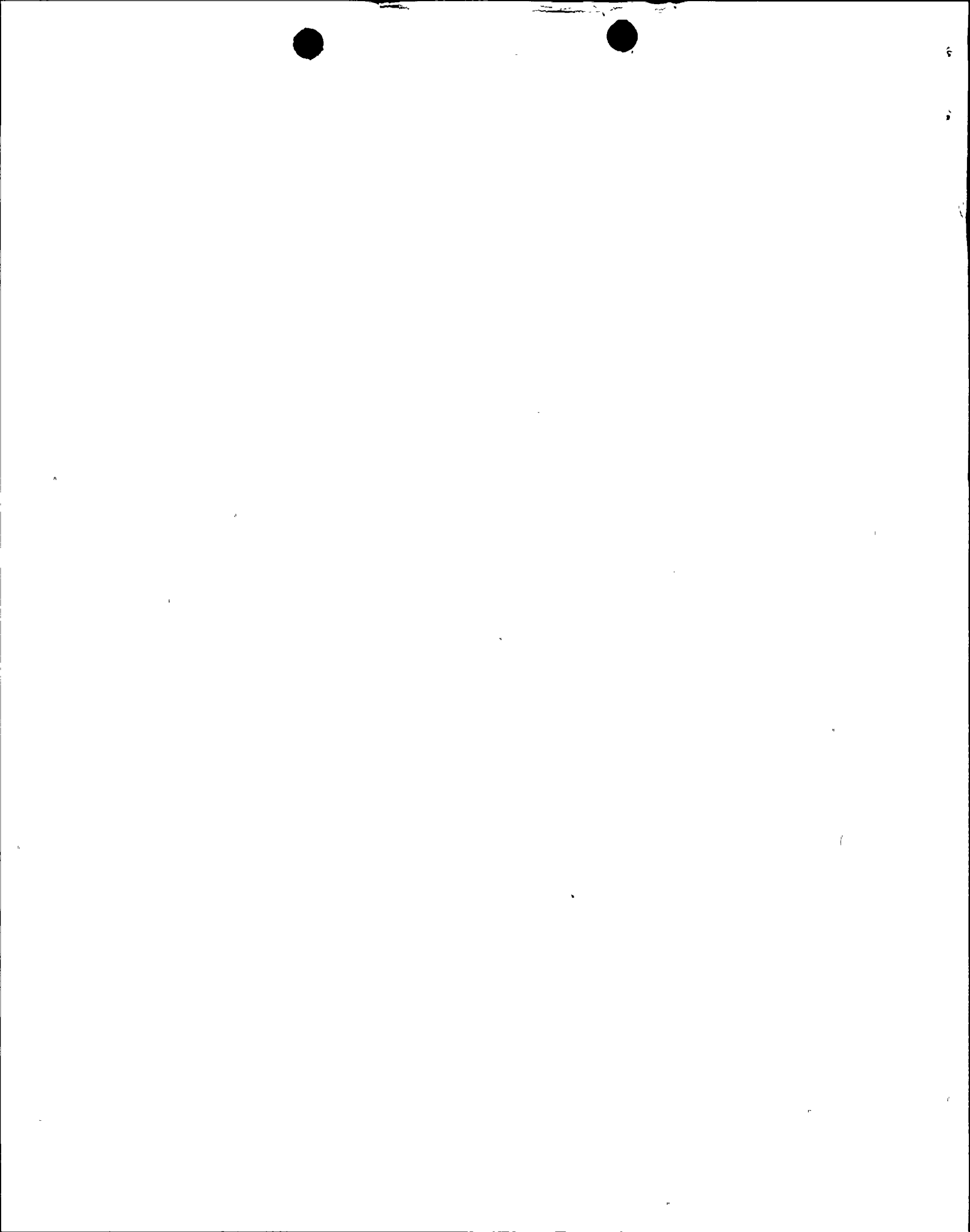
On September 16, 1989 at 0830 hours the 'B' Diesel Generator (D/G) was started for the purpose of performing surveillance test SE-024-B05, "18-Month D/G 'B' 24 Hour Run and 4000 KW Load Rejection". The D/G had been synchronized to the power system grid at 0839 hours and was loaded to greater than 4700 KW per test requirements. At 0950 hours a crankcase explosion occurred. Due to excessive smoke in the diesel bay, the operator was unable to get to the local control panel to shutdown the diesel with the emergency stop pushbutton. As such, the D/G was unloaded and manually shutdown from the control room, which results in the D/G completing an approximate 5 minute cooldown run and then stopping. Surveillance test SE-024-B05 was terminated. The 'B' D/G was declared inoperable and an LCO was entered in accordance with Technical Specification 3.8.1.1. Following the substitution of the 'E' D/G for the 'B' D/G, LCO 3.8.1.1 was cleared on 9/18/89.

Upon investigation into the cause of the crankcase explosion, heavy scoring of the no. 7 Left piston and cylinder liner was observed. This heavy scoring apparently generated the heat necessary for the crankcase explosion. The investigation also revealed heavy scuffing and heat-generated discoloration of the no. 7 Right cylinder liner.

The root cause of the 'B' D/G crankcase explosion has not been definitively determined. A metallurgical analysis to determine the actual cause of the cylinder failure is being conducted by the Nuclear Plant Engineering section.

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The 'B' D/G run during which the crankcase explosion occurred was considered a valid test and valid failure. The Diesel Generator Start Log indicates that there are two (2) diesel failures in the last one hundred (100) starts. The diesel test interval is one start in every fourteen (14) days, per Regulatory Guide 1.108, Section C.2.d.

ADDITIONAL INFORMATION

Subsequent to the 'B' D/G crankcase explosion, a crankcase explosion occurred on the 'C' D/G on October 7, 1989 during performance of its 24 hour run. Based on two crankcase explosions within 3 weeks, it was judged prudent to notify the NRC and an ENS notification was made per 10CFR50.72(b)(2)(iii) on 10/7/89.

As a result of the 'C' crankcase explosion, an operability review of the four remaining diesels was conducted. It was concluded that the remaining diesels were operable and capable of performing their design functions. This conclusion was based on review of valid diesel generator testing performed in 1989 and review of the diesel generator surveillance test program.

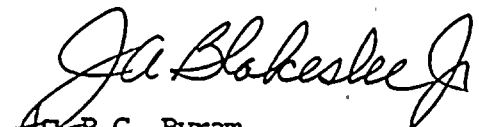
A total of 59 valid tests were performed on the 'A', 'B', 'D', and 'E' diesel generators during this period. All of the tests were successful except for one. This data represents a start and load reliability of greater than 98 percent for 1989.

The only valid failure was the crankcase explosion on the 'B' Diesel Generator on 9/16/89. Preliminary investigations of the failure show no common cause with three previous diesel generator crankcase explosions.

A review of engineering surveillance testing was also conducted. The Technical Specifications require comprehensive testing of all of the diesel generator emergency design functions. All tests are current.

PP&L believes the high reliability and the successful surveillance program is justification for considering the 'A', 'B', 'D' and 'E' diesel generators operable.

Investigation into the cause of the 'C' D/G crankcase explosion is continuing. The results of the investigations into the causes of both the 'C' D/G and 'B' D/G crankcase explosions will be provided in Licensee Event Report 89-024-00 and any supplements to that report, as required.

  
R.G. Byram  
Superintendent of Plant - Susquehanna

RRW/mjm

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