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 AUTH. NAME: CURTIS, N.W. AUTHOR AFFILIATION: Pennsylvania Power & Light Co.
 RECIP. NAME: GRIER, B.H. RECIPIENT AFFILIATION: Region 1, Philadelphia, Office of the Director

SUBJECT: Interim deficiency rept re original design of diesel generator exhaust lines, initially reported on 810123. Design Change Request 231 issued. Third exhaust expansion joint added to exhaust lines. Final rept during May 1981.

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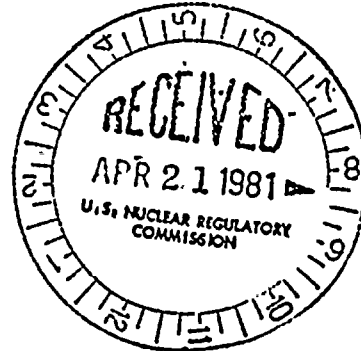
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NORMAN W. CURTIS
Vice President-Engineering & Construction-Nuclear
770-5381

April 16, 1981

Mr. Boyce H. Grier
Director, Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406



SUSQUEHANNA STEAM ELECTRIC STATION
INTERIM REPORT OF A DEFICIENCY RELATING
TO DIESEL GENERATOR EXHAUST LINES
ERS 100450/100508 FILE 840-4
PLA-656

Dear Mr. Grier:

This letter serves to confirm information provided by telephone to NRC Region I (Mr. L. Narrow) by Mr. A. R. Sabol of PP&L on January 23, 1981. During that conversation, Mr. Narrow was advised that the subject condition was determined to be reportable under the provision of 10 CFR 50.55(e).

The deficiency involves the original design of the diesel generator exhaust lines for the Susquehanna Steam Electric Station (SSES). A description of the problem, its cause, safety implications and the corrective action taken is attached as an interim report pursuant to the provisions of 10 CFR 50.55(e).

Further investigation is considered necessary to determine whether the present classification of the exhaust piping as ASME Code Class 3 is still compatible in light of the revised design exhaust temperature now utilized. Upon receipt of this information and its review and evaluation by PP&L, the Commission will be advised of our determination and of any further action deemed necessary.

Since the details of this report provide information relevant to the reporting requirements of 10 CFR 21, this correspondence is considered to also discharge any formal responsibility PP&L may have for reporting in compliance thereto.

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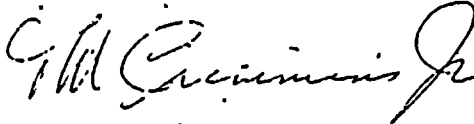
Mr. Boyce H. Grier

- 2 -

April 16, 1981

We expect to issue a letter closing this issue during May, 1981. We trust the Commission will find this report to be satisfactory.

Very truly yours,



for N. W. Curtis
Vice President-Engineering & Construction-Nuclear

FLW:sab

Attachment

cc: Mr. Victor Stello (15)
Director-Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. G. McDonald, Director (1)
Office of Management Information & Program Control
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Gary Rhoads
U. S. Nuclear Regulatory Commission
P.O. Box 52
Shickshinny, 18655

SUBJECT:

Deficiency in the Original Design of the SSES Diesel Generator Exhaust Lines

DESCRIPTION OF DEFICIENCY & CAUSE:

The Emergency Diesel Generator exhaust system was deficient in its original design. This design was approved, released for construction and the exhaust lines were then installed according to original design criteria. The design for the exhaust lines was determined to be deficient with respect to the criteria established in the Final Safety Analysis Report and with the exhaust system requirements for the diesels procured for SSES.

FSAR Subsection 9.5.8.3, Rev. 1 dated 8/78 stated that each diesel engine, at full load, exhausts 48,000 cfm at a temperature of approximately 950 F. This data has been confirmed through information from Cooper Bessemer.

The criteria used by Bechtel for the design of the diesel exhaust system was based on 700 F design exhaust temperature. In May of 1980 Bechtel reanalyzed the original diesel exhaust system design for a 1000 F exhaust temperature and found that the thermal loads combined with other pipe loads would produce excessive thermal movement of the expansion joints and excessive stresses of the equipment installed in the system. The original design of the diesel exhaust system was determined to be inadequate.

ANALYSIS OF SAFETY IMPLICATIONS:

The failure of the exhaust system within each of the individual diesel rooms could create an abnormal environmental condition. This condition may cause failure of diesels to continue to operate, especially when the diesel generator is being used for safe shutdown of the plant or during other modes of operation of the plant. Preliminary calculations indicate that the room ambient temperature could reach between 266 F and 380 F. This depends on the partial/or thorough mixing and partial/complete heat transfer between supply air and exhaust gases.

From Bechtel's analysis, the failure of an expansion joint within the diesel room could cause the exhaust gases to enter and heat up the generator room environment and possibly cause generator failure by high temperature.

A Cooper Bessemer representative has indicated that the diesel generator unit could malfunction if a high temperature (160 F - 170 F) environment existed within the diesel room.

The original design did not conform to the criteria and bases established in the Safety Analysis Report. The original design was, however, approved and released for construction/installation. If this design were to have remained uncorrected, it could have adversely effected the safe operation of the Susquehanna Steam Electric Station at anytime through the lifetime of the plant. PP&L has, therefore, concluded that the condition is reportable under the provisions of 10 CFR 50.55(e).

CORRECTIVE ACTION:

In July of 1980, Bechtel issued Design Change Request (DCR) #231 to correct the above deficiency. A third exhaust expansion joint was added (two exhaust expansion joints were provided in the original design) to each of the exhaust lines to absorb the excessive thermal movement and meet excessive nozzle loads.

Evaluation of the present classification of the exhaust piping as ASME Code Class 3 with respect to the revised design temperature is underway. Future corrective action will be based upon the results of this evaluation. We expect to resolve this concern during May, 1981.